

CWDD 103

**Administration and Hosting Configuration
(Lab Manual)**

School of Vocational Studies



उत्तराखण्ड मुक्त विश्वविद्यालय

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CERTIFICATE IN WEB DESIGNING & DEVELOPMENT (CWDD)

CWDD 103- Administration and Hosting Configuration (Lab Manual)

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UNIT 1: LAB MANUAL

CWDD 103- Administration and Hosting Configuration

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1.1. Responsive web HTML 5 and CSS3

1.1.1 Objective

- To be able to use HTML5 and CSS3 for creating Responsive Web Layouts.

1.1.2 Introduction

Responsive design is an advanced approach to web page design that makes use of flexible layouts, flexible images and CSS media queries. The goal of responsive design is to build web pages that detect the user's screen size and orientation and change the layout consequently. Web pages can be viewed using many different devices such as desktops, tablets, and phones. Responsive design gives you techniques so that your web page should look good, and be easy to use, regardless of the device.

1.1.3 Requirements

Following tools are required to perform the forthcoming lab practicals.

- Notepad
- Apache Server
- Basic Knowledge of HTML and CSS

1.1.4 Responsive Web - Viewports

Viewport defines the area of web page that is visible to user. This viewport always varies with different devices (smaller in phones and bigger in desktops).

HTML5 introduced a Meta tag to give web designers a facility so that they can control the viewport. This tag should be included in <head> section of all web pages.

```
<meta name="viewport" content="width=device-width,
initial-scale=1.0">
```

Description of Meta tag

Attribute

Description

- | | |
|-----------------------|---|
| 1) Width=device-width | this sets the width of the viewport to the physical-width of the device screen (which will vary depending on the device). |
| 2) initial-scale=1.0 | property controls the zoom level when the page is first loaded by browser. |

1.1.5 Responsive Web - Grids

The Grid view provides the column in web page to place elements on the page. A responsive web layout has 12 columns spanning the 100% of device width. These grids increases and decreases according to the size of the web browser window.

We can create responsive grids with the help of below CSS. For creating design responsive, we always give size in percentage (%).

```
<style>
    .one {width: 8.33%; float: left; padding: 15px;}
    .two {width: 16.66%; float: left; padding: 15px;}
    .three {width: 25%; float: left; padding: 15px;}
    .four {width: 33.33%; float: left; padding: 15px;}
    .five {width: 41.66%; float: left; padding: 15px;}
    .six {width: 50%; float: left; padding: 15px;}
    .seven {width: 58.33%; float: left; padding: 15px;}
    .eight {width: 66.66%; float: left; padding: 15px;}
    .nine {width: 75%; float: left; padding: 15px;}
    .ten {width: 83.33%; float: left; padding: 15px;}
    .eleven {width: 91.66%; float: left; padding: 15px;}
    .twelve {width: 100%; float: left; padding: 15px;}
</style>
```

All columns must be floating to the left. We can also adjust its padding to 15px (not compulsory, can be adjusted according to design pattern).

1.1.6 Responsive Web - Media Queries

Now, we know that responsive design always changes its layout according to device size. This is done with the help of CSS Media Queries. CSS Media queries allow you to set CSS rules based on device's screen size and orientation.

```
/* Mobile Styles */
@media only screen and (max-width: 400px) {
    body {
        background-color: #F09A9D; /* Red */
    }
}

/* Tablet Styles */
@media only screen and (min-width: 401px) and (max-width: 960px) {
    body {
        background-color: #F5CF8E; /* Yellow */
    }
}

/* Desktop Styles */
@media only screen and (min-width: 961px) {
    body {
        background-color: #B2D6FF; /* Blue */
    }
}
```

When you resize your browser, you should see three different background colors of the page (output as seen in the below figure):

- 1) Blue when page-width is greater than 960px wide,
- 2) Yellow when page-width is between 401px and 960px,
- 3) Red when page-width is less than 400px.

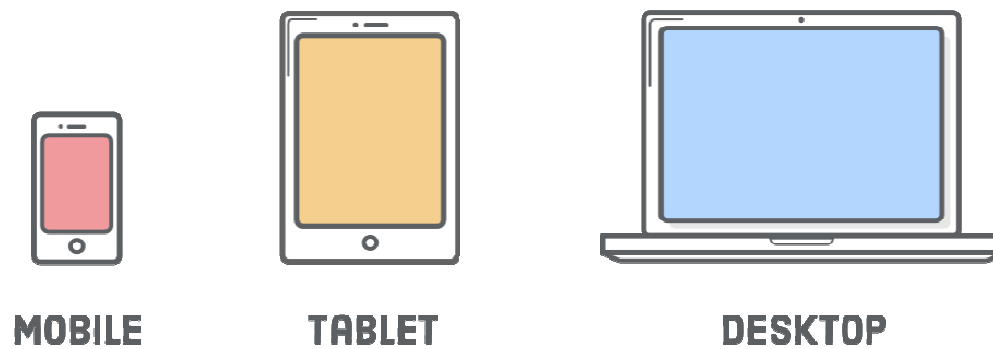


Fig 1.1 (Output of above Media Queries)

Media queries let us design the same HTML content as different CSS layouts. Therefore, instead of maintaining one website for smart phones and an entirely distinct site for laptops/desktops, we can use the same HTML markup (and web server) for both of them.

This means that at any time we add/edit a new content in our HTML, those changes are automatically reflected in both mobile and widescreen layouts.

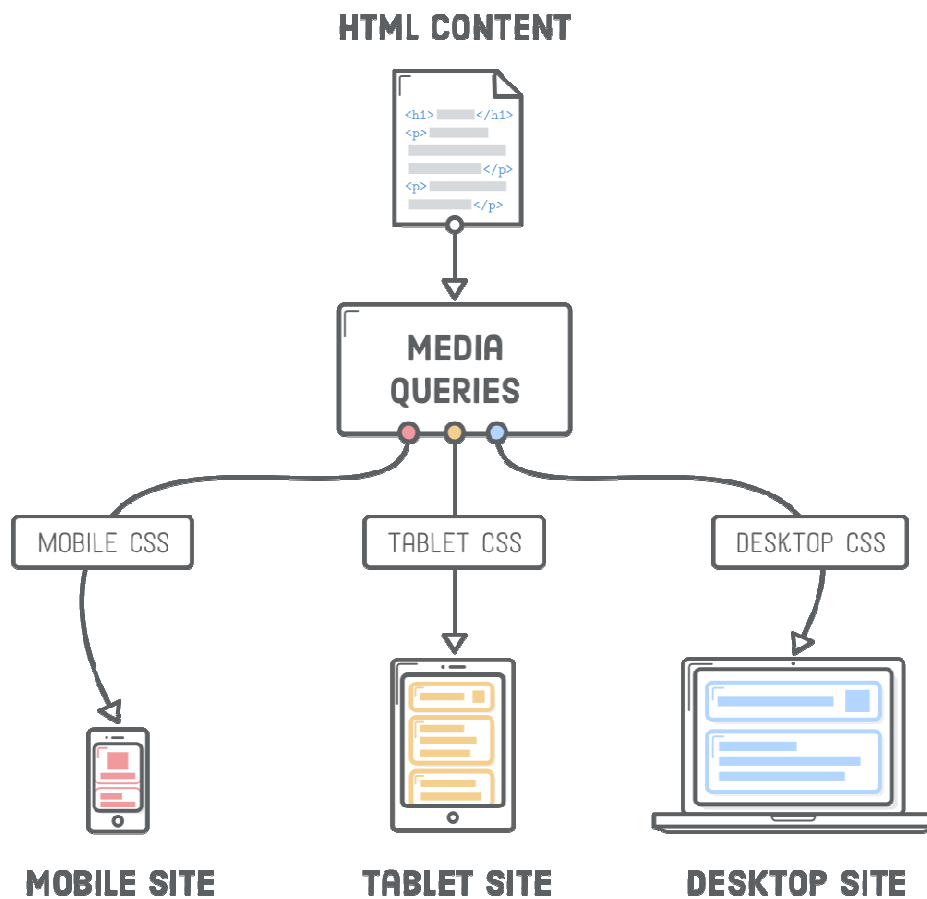


Fig 1.2 (Where media Queries work)

Media queries always begin with the **@media** followed by some kind of conditional statement, and then some curly brackets.

Inside the curly brackets, you put a normal CSS rules. The browser only pays attention to those rules if the condition is true.

The **only screen** “media type” means that the enclosed styles will apply to devices with display screens (not to printed documents).

The **min-width** and **max-width** parts are “media features”, and they specify the device dimensions you are targeting.

1.1.7 Responsive Web - Images

Images are the integral part of any web design. Responsive images automatically adjust to fit the size of the device screen.

a) Set the ***width*** of image to 100% for creating image responsive:

```
img {  
    width: 100%;  
    height: auto;  
}
```

b) Set the ***max-width*** of image to 100% for creating image responsive. The image will scale down according to device, but never scale up to be larger than its original size:

```
img {  
    max-width: 100%;  
    height: auto;  
}
```

Above both examples (a & b) sets the ***height*** of image to ***auto***, this means that height of image is adjusted according to width automatically.

1.1.8 Responsive Web - Videos

Now-a-days videos are used in web designs to make them more interactive. Responsive video player automatically adjust to fit the size of the device screen.

a) Set the ***width*** of video to 100% for creating video player responsive:

```
video {  
    width: 100%;  
    height: auto;  
}
```

b) Set the ***max-width*** of video to 100% for creating video responsive. The video-player will scale down according to device, but never scale up to be larger than its original size:

```
video {  
    max-width: 100%;  
    height: auto;  
}
```

Above both examples (a & b) sets the **height** of video to **auto**, this means that height of video player is adjusted according to width automatically.

1.1.9 Practical Example for lab practice

Desired Result (Output)

Welcome to your first Responsive web Page!

Responsive Designs

Responsive design is an advanced approach to web page design that makes use of flexible layouts, flexible images and CSS media queries. The goal of responsive design is to build web pages that detect the user's screen size and orientation and change the layout consequently. Web pages can be viewed using many different devices such as desktops, tablets, and phones.

Responsive design gives you techniques so that your web page should look good, and be easy to use, regardless of the device



Requirement

- Notepad++
- Apache Server
- Basic Knowledge of HTML and CSS



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Fig 1.3 (Responsive output in desktop screen)

Welcome to your first Responsive web Page!

Responsive Designs

Responsive design is an advanced approach to web page design that makes use of flexible layouts, flexible images and CSS media queries. The goal of responsive design is to build web pages that detect the user's screen size and orientation and change the layout consequently. Web pages can be viewed using many different devices such as desktops, tablets, and phones.

Responsive design gives you techniques so that your web page should look good, and be easy to use, regardless of the device.



Requirement

Fig 1.4 (Responsive output in mobile screen)

Welcome to your first Responsive web Page!

Responsive Designs

Responsive design is an advanced approach to web page design that makes use of flexible layouts, flexible images and CSS media queries. The goal of responsive design is to build web pages that detect the user's screen size and orientation and change the layout consequently. Web pages can be viewed using many different devices such as desktops, tablets, and phones.

Responsive design gives you techniques so that your web page should look good, and be easy to use, regardless of the device.



Fig 1.5 (Responsive output in tablet screen)

Above output shows that Responsive layout changes according to the width of the device, i.e. it changes its orientation. This is done with the help of HTML5 and CSS3.

Below are the steps for generating output displayed above. Follow the code step-by step.

Step 1) Create a HTML file and name it as “*responsive.html*”

```
<!--Declare that you are using HTML 5 -->
<!DOCTYPE html>
<html>
<head>
<!-- Specifies the character encoding for the HTML document. -->
    <meta charset="utf-8" />

    <!-- Set the viewport width to device width for mobile -->
    <meta name="viewport" content="width=device-width,initial-
scale=1.0">

    <title>Welcome to Responsive Page</title>

    <!-- Included CSS Files -->
    <link rel="stylesheet" href="style.css">
</head>

<body>
<div class="row">
<div class="twelve columns">
    <p align="center"><h2>Welcome to your first Responsive
web Page!</h2></p>
    <hr>
</div>
</div>
```

```

<div class="row">
  <div class="twelve columns">
    <div class="row">
      <div class="eight columns">
        <h3>Responsive Designs</h3>
        <p>Responsive design is an advanced approach
to web page design that makes use of flexible layouts, flexible
images and CSS media queries. The goal of responsive design is
to build web pages that detect the user's screen size and
orientation and change the layout consequently. Web pages can be
viewed using many different devices such as desktops, tablets,
and phones.</p><br />
        <p>Responsive design gives you techniques so
that your web page should look good, and be easy to use,
regardless of the device</p>
        
        <hr />
      </div>

      <div class="four columns">
        <h4>Requirement </h4>
        <ul>
          <li>Notepad++</li>
          <li>Apache Server</li>
          <li>Basic Knowledge of HTML and
CSS</li>
        </ul>
        <br />
        <hr />
        
      </div>
    </div>
  </div>
</div>
<div class="row">
  <div class="twelve columns">

```

```

        <hr />
        <p align="center">©2018. Design for UOU. </p>
    </div>
</div>
</body>
</html>

```

Steps 2) Now create a file name as “*style.css*” and define the responsive styling for above html file.

```

/* with box-sizing element's specified width and height are not
affected by padding or borders. ----- */
*{box-sizing: border-box;}

html { font-size: 62.5%; }

body {font-family: sans-serif; font-size: 14px; font-size:
1.4rem; line-height: 1; color: #222222; position: relative; -
webkit-font-smoothing: antialiased; }

p { font-size: 14px; line-height: 1.6; margin-bottom: 17px; }

h2, h4 {line-height: 1.1; margin-bottom: 14px; margin-top: 14px;
}

h2 { font-size: 37px; }

h4 { font-size: 23px; }

hr { border: solid #ddd; border-width: 5px 0 0; clear: both;
margin: 22px 0 21px; height: 0; }

/* Lists ----- */
ul{ font-size: 14px; line-height: 1.6; margin-bottom: 17px;
list-style-position: inside; }

```

```

/* The Grid ----- */

.row { width: 1000px; max-width: 100%; min-width: 768px; margin:
0 auto; }

.columns { float: left; min-height: 1px; padding: 0 15px;
position: relative; }

.row .one {width: 8.333%;}
.row .two {width: 16.667%;}
.row .three {width: 25%;}
.row .four {width: 33.333%;}
.row .five {width: 41.667%;}
.row .six {width: 50%;}
.row .seven {width: 58.333%;}
.row .eight {width: 66.667%;}
.row .nine {width: 75%;}
.row .ten {width: 83.333%;}
.row .eleven {width: 91.667%;}
.row .twelve {width: 100%;}

/* Responsive Image css -----*/
img { max-width: 100%; height: auto; padding: 5px 5px 5px 5px;}

/* media queries for small and mobile screens-----
--- */

@media only screen and (max-width: 767px) {
body { width: 100%; min-width: 0; margin-left: 0; margin-right:
0; padding-left: 0; padding-right: 0; }

.row { width: auto; min-width: 0; margin-left: 0; margin-right:
0; }

.columns { width: auto !important; float: none; }
}

```

Note: We have used two images *responsive.jpg* & *logo.jpg* in HTML file. You can use any image of your choice.

Step 3) we have four files now:

- 1) responsive.html
- 2) style.css
- 3) responsive.jpg
- 4) logo.jpg

If you have installed XAMPP then create a folder named ***responsiveHTML*** in ***xampp/htdocs*** folder and place above four files in that folder.

Step 4) Run XAMPP and then open your browser and type URL

localhost/responsiveHTML/responsive.html

Step 5) Change your browser screen size and check your HTML file changes its orientation according to width automatically.

Congratulation you have successfully learned to make responsive web pages using HTML5 and CSS3.

1.1.10 Responsive Web Frameworks

There are many Responsive Web frameworks, very useful for the front-end development of the website. They have ready-to-use CSS libraries needed for creating beautiful and responsive layout.

Some of them are:

1. Bootstrap - <http://getbootstrap.com/>
2. JQuery-mobile - <https://jquerymobile.com/>
3. Foundation - <https://foundation.zurb.com/>
4. Material UI - <http://www.material-ui.com/>
5. Pure.CSS - <https://purecss.io/>
6. Skeleton - <http://getskeleton.com/>
7. Montage - <http://montagestudio.com/montagejs/>
8. Siimple - <https://siimple.juanes.xyz/>
9. Gumby - <https://gumbyframework.com/>

10. Semantic UI - <https://semantic-ui.com/>

With the use of any of the above framework website designed are functional, fast and easy. One should focus on the HTML part and the framework does rest of the work.

These frameworks provide all the UI elements needed for the responsive website development.

1.2 Web server and domain registration

When you done developing your website. You want it to get online. Now before getting your website online you need to have a domain name. These domain names are web addresses such as **google.com**, **uou.ac.in** etc that most browsers used to find a website.

Before registering Web server we see that how a domain name is registered

1.2.1 Domain Name Registration

For registration of domain name, you need to follow the following steps:

- 1) The first step in registering a domain name is to choose a name for your website. The name can be nearly anything you want, but to be most efficient it should imitate the behavior of your website. If you are selling books, for example, it helps to have a domain name that has some reference to books e.g. **onlinebooks.com**.

Rules for choosing a domain name

- 1.1 Only letters, numbers or hyphens are acceptable.
- 1.2 Its maximum length should be up-to 70 characters. However, we advise you to keep it as short as possible (so that users can remember it).
- 1.3 Numerous extensions are available for domain names such as **.com**, **.org**, **.in**, **.au**, **.ac.in** etc. So choose according to your website nature. For example if you own a business website than choose **.com**

- 2) Once the name finalized, it has to register with a registrar (certified by ICANN -Internet Corporation for Assigned Names and Numbers). There are number of registrar available in the market. We are using **hosting.co.in** for explaining you how can we register a domain name. Almost all registrars use the same process to register the domain name. The domain name will registered for the period of 1-10 years as needed.

- 3) Open hosting.co.in and go to page domain registration. You will see below page

Register a New Domain

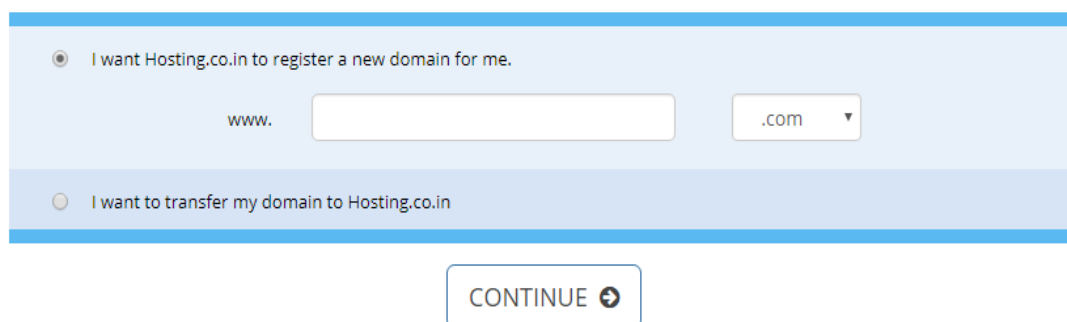
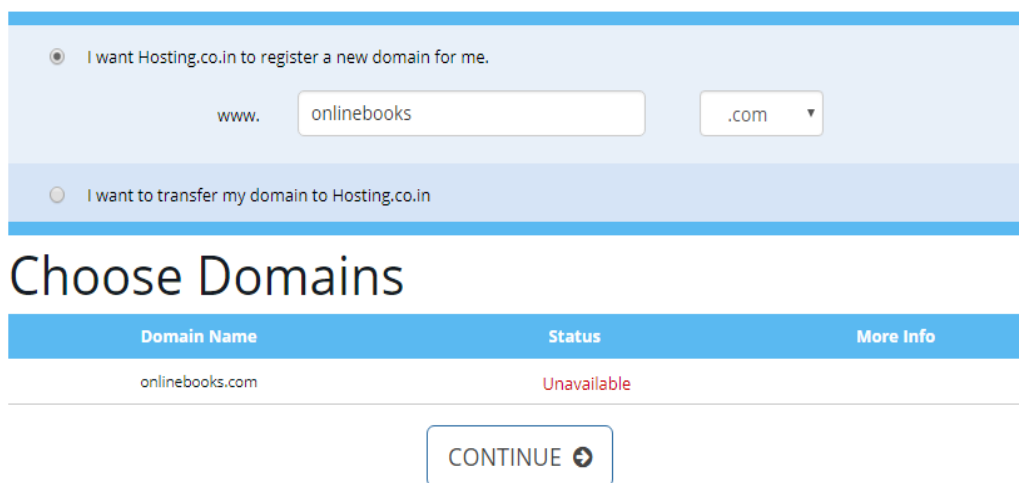


Fig 1.6 (Domain registration screen in hosting.co.in)

- 4) Type your domain name in **www** text field and choose the domain extension according to your choice from the **.com** box, and the press continue button. The domain name you choose will only registered for you if it is free and no one registered it before. If it is registered before then the panel above will give you message that this domain name is unavailable. (See fig 1.7)

Register a New Domain



Domain Name	Status	More Info
onlinebooks.com	Unavailable	

Fig 1.7 (Screen showing that onlinebooks.com is unavailable)

- 5) Now you have to choose domain name such that it is not taken by anyone. See below we have changed domain to onlinebooks-uttarakhand.com, and it is available. The screen also shows the price option for 1-10 years. Select 1 year option and press continue

Register a New Domain

Domain Name	Status	More Info
onlinebooks-uttarakhand.com	Available! Order Now	1 Year/s @ Rs. 615.00 1 Year/s @ Rs. 615.00 2 Year/s @ Rs. 1230.00 3 Year/s @ Rs. 1845.00 4 Year/s @ Rs. 2460.00 5 Year/s @ Rs. 3075.00 6 Year/s @ Rs. 3690.00 7 Year/s @ Rs. 4305.00 8 Year/s @ Rs. 4920.00 9 Year/s @ Rs. 5535.00 10 Year/s @ Rs. 6150.00

Fig 1.8 (Screen showing that onlinebooks-uttarakhand.com is available)

- 6) It will take you to shopping cart page

Shopping Cart

Description	Price
Domain Registration - onlinebooks-uttarakhand.com - 1 Year/s	Rs. 815.00
» ID Protection	
[Configure Domain Extras] [Remove]	
Subtotal:	Rs. 815.00
IGST @ 18.00%:	Rs. 146.70
Total Due Today:	Rs. 961.70

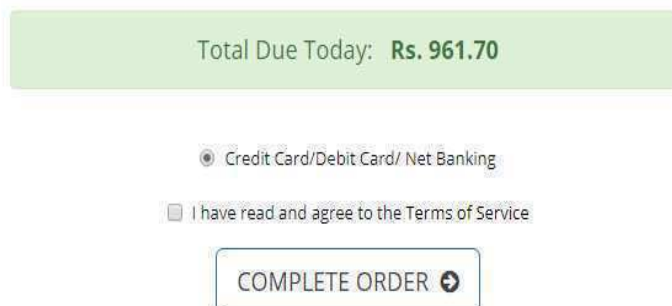
Have a promotion code? Click here to add it

CONFIRM ORDER

Fig 1.9 (Shopping Cart for onlinebooks-uttarakhand.com booking)

- 7) If you confirm order then the shopping cart will take you to payment method option.

Payment Method



Total Due Today: **Rs. 961.70**

☒ Credit Card/Debit Card/ Net Banking

☐ I have read and agree to the Terms of Service

COMPLETE ORDER ➔

Fig 1.10 (Payment method screen)

- 8) You can pay by Credit Card/Debit Card/Net Banking. Once you pay the amount, your domain name will be booked and the registrar confirming your domain name booking will send an e-mail to you. Do not forgive to enter your contact detail before completing order. You can also create your account in the registrar website, so that you can get your dashboard and can see/manage all your orders there.

1.2.2 Web Server Hosting

As you have purchased your domain name, you have to link it with some space where you put all your website files, so that user can access it from all over the globe. Purchasing the web server hosting is almost similar to domain name purchasing.

- 1) First, know which server is best suited for you. It depends on the technologies you have used to develop website. For example if have developed it using PHP/JAVA then you must need Linux Hosting, or if you have used .net technologies than you have to get Windows hosting. Almost all hosting provider gives you the facilities to choose your desired web hosting. We are again using **hosting.co.in** for web hosting in our examples.
- 2) Login to **hosting.co.in** and go to web hosting plans. Here we are giving some Linux hosting plans for your reference.
(You can get an idea about web hosting)

Linux Unlimited Hosting

GOLD	PLATINUM	PLATINUM PLUS
₹1500 / Per Year ₹ 900 /First Year	₹4000 / Per Year ₹ 2000 /First Year	₹ 7000 /Per Year
1 Domain Hosting	Unlimited Domain Hosting	Unlimited Domain Hosting
Unlimited Web Space	Unlimited Web Space	Unlimited Web Space
Unlimited Email IDs	Unlimited Email IDs	Unlimited Email IDs
2 GB Space Per Email ID	2 GB Space Per Email ID	2 GB Space Per Email ID
Website Builder Free	Website Builder Free	Website Builder Free
1 GB RAM	2 GB RAM	3 GB RAM
Unlimited MySQL Database	Unlimited MySQL Database	Unlimited MySQL Database
Unlimited Sub Domain	Unlimited Sub Domain	Unlimited Sub Domain
Unlimited Bandwidth	Unlimited Bandwidth	Unlimited Bandwidth
BUY NOW	BUY NOW	BUY NOW

Fig 1.11 (For Example- Unlimited Linux hosting plans from hosting.co.in)

- 3) Suppose we are ready to buy Gold plan (Rs 900 /year). Then click on Buy button below that plan.
- 4) You will see a screen where you have to give the domain name of your choice for hosting. Click on “I already have a domain name” and type your domain name *onlinebooks-uttarakhand.com*. Now press continue button.

Gold

The product/service you have chosen requires a domain name. Please enter your domain name below.

☐ Use a domain already in my shopping cart

☐ I want Hosting.co.in to register a new domain for me.

☐ I want to transfer my domain to Hosting.co.in

☒ I already have a domain name

www.

CONTINUE ➔

Fig 1.12 (Domain name choose screen)

- 5) Now you will be redirect to shopping cart screen.

Shopping Cart

Description	Price
Linux Web Hosting - Gold (onlinebooks-uttarakhand.com)	Rs. 1500.00
Edit Configuration Remove	
Domain Registration - onlinebooks-uttarakhand.com - 1 Year/s	
[Configure Domain Extras] [Remove]	
Rs. 600.00 One Time Discount:	Rs. 600.00
IGST @ 18.00%:	Rs. 272.70
CONFIRM ORDER ➔	

Fig 1.13 (Shopping Cart screen for web hosting)

- 6) Click confirm order and then make payment as described in **fig 1.10**
- 7) You will get an email confirming about your web server registration. In addition, this mail has login credential of your Cpanel (Control panel for hosting website). We will check how to use Cpanel in next section.

1.3 Publishing a website

We have registered a domain name and hosting in the previous sections. In this section we see that how we publish our website in the hosting.

- 1) Check that your website home page should be named as ***index***.
- 2) Now, check your email to get login detail of your web hosting Cpanel. It has Cpanel URL with username and password.
- 3) Open Cpanel login it will look like ***fig 1.14***. Now enter username and password as provided by registrar and click Log in.

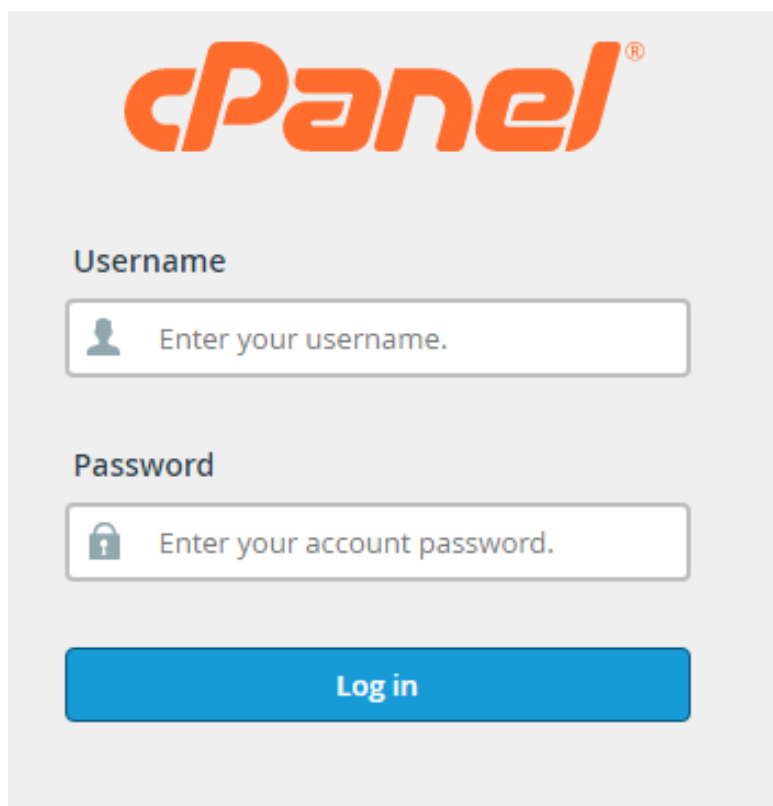


Fig 1.14 (Cpanel Login Screen)

- 4) You will be redirected to Cpanel dashboard ***fig 1.15*** (Its look will change according to your registrar, but the option will be the same).

It contains softwares used for managing your hosting, domain name and website. We will only focus on website publishing. There is a link named ***File Manager*** under ***file tab***. We will click on that link for further processing.



Fig 1.15 (Cpanel Dashboard)

- 5) File manager redirect you to a panel from where you can upload your website content.

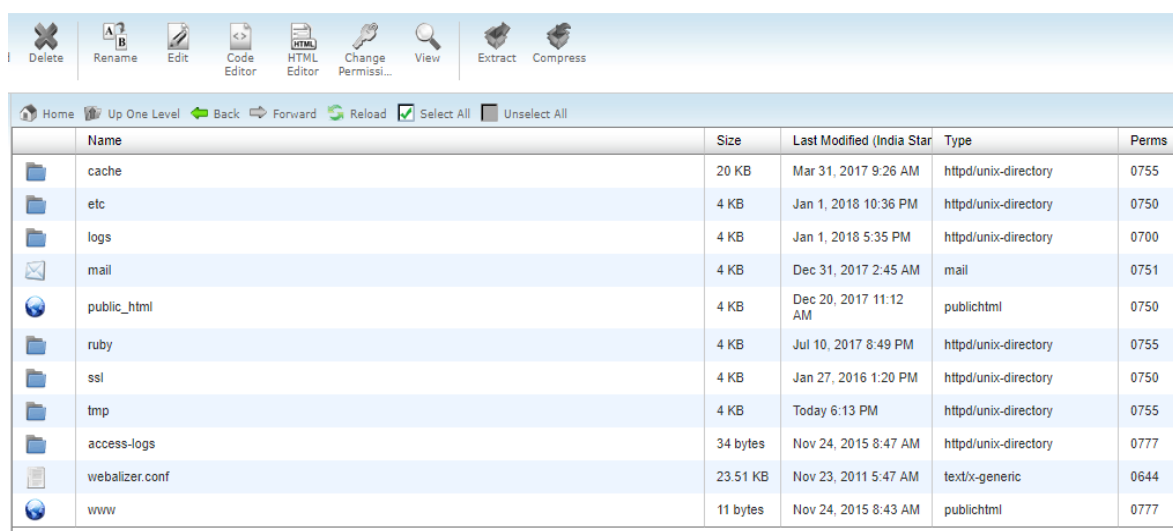


Fig 1.16 (File Manager)

- 6) The above file manager have folder named **www**. Upload all of your content to that folder. **Index** file will be the root file for you website, therefore it must be resides inside **www** folder.
- 7) Check your website by opening a browser and type website name **www.onlinebooks-uttarakhand.com**
- 8) Your website will open correctly as developed, if you have done the entire steps as suggested.

Why Use cPanel?

1. *Easy to Use*

cPanel has interactive and simple interface. It is easy to learn. For doing any task, you just had to press a button. For e.g. to install WordPress you have to click on WP icon on your cPanel dashboard.

2. *It's Safe*

Using cPanel is risk free. This software stops web-hosting customers from doing anything harmful to the system.

3. *Backup*

Backups are required to bring back your data to a point in the past. If something goes wrong with your computer, data, etc. then you need this backup to restore all files. cPanel gives you a “Backup Wizard”, to create backups of all your hosted files in a Click.

4. *Compatibility*

cPanel is compatible with all modern browser. Additionally, cPanel can maintain third party software add-ons that can help users in building dynamic and robust websites.

5. *Portability*

cPanel is very portable, this means that the user can transfers websites from one hosting company to other without any technical problem.

These five advantages of cPanel also make understandable why this Linux-based control panel has remained very accepted/popular and relevant more than 20 years since its start.

1.4 Summary

In this Manual, we practice how to create responsive web layout using HTML5 and CSS3. Then we have registered a domain name of our choice. After that, we also purchased web server hosting for that domain name. At the end, we publish our website to our hosting panel.

1.5 Glossary

1. **HTML: *Hyper Text Markup Language*** is a markup language for creating web pages.
2. **CSS: *Cascading Style Sheet*** is to give styling to HTML.
3. **XAMPP: *XAMPP*** is a completely free, easy to install Apache distribution containing Apache, MySql, PHP, and Perl.
4. **Apache: *The Apache*** HTTP Server, colloquially called Apache, is free and open-source cross-platform web server software.
5. **Web Server: *A web server*** is a computer system that processes requests via HTTP, the basic network protocol used to distribute information on the World Wide Web.

1.6 Answer to check your progress

- Q1. Define HTML5.
- Q2. How CSS is used to give style for HTML?
- Q3. What are Media Queries? Explain.
- Q4. Name different frameworks used for creating responsive websites.
- Q5. What is Cpanel? Explain.

1.7 References/Bibliography

1. <https://www.w3schools.com/>
2. <http://www.tutorialspoint.com/>
3. <https://www-s.acm.illinois.edu/>
4. <http://www.springer.com/gp/book/>
5. <https://www.phptpoint.com/web-tutorial/>

1.8 Suggested Readings

1. <https://www.thehostingwebsite.com/website-hosting-process/>
2. <http://api.jquerymobile.com/>
3. <https://www.w3schools.com/bootstrap/>
4. <https://getbootstrap.com/docs/4.0/getting-started/introduction/>

1.9 Terminal Questions

- Q1. Write steps for registering a domain name.
- Q2. What are the steps for registering web hosting for your domain name?
- Q3. What do you mean by publishing a website? Explain the steps of publishing.
- Q4. Create a responsive webpage using bootstrap framework.

UNIT 2: LAB MANUAL

CWDD 103- Administration and Hosting Configuration

- 2.1. OBJECTIVES
- 2.2. WEB SERVER CONFIGURATION
 - APACHE
 - CONFIGURATION
 - WAMP
- 2.3. SEARCH ENGINE OPTIMIZATION
 - WORKING OF SEARCH ENGINE
 - STEP BY STEP SEO
- 2.4. OPEN SOURCE TOOLS FOR WEB
 - NOTEPAD++
 - NETBEANS
 - GITHUB
- 2.5. POINTS TO REMEMBER
- 2.6. GLOSSARY
- 2.7. CHECK YOUR PROGRESS
- 2.8. BIBLIOGRAPHY/REFERENCES
- 2.9. SUGGESTED READINGS

2.1 OBJECTIVES

After implementing this unit you will be able to-

- Deal with server side configuration easily.
- Install apache with ease in any of OS *i.e.* closed source or open source.
- Run the web server.
- Easily deal with Optimization and implement SEO friendly website development.
- Understand Searching in search engine.
- Develop a website with open source tools.
- Communicate with the specific community to help and hands on experience.
- Understand to be cost effective while developments because Open source tools are almost free to use.

2.2 WEB SERVER CONFIGURATION

INTRODUCTION-

A web server is an arrangement that delivers services or content to you (end user/client) over the internet. It consists of a physical server, server operating system (OS) and software used for {HTTP} communication make possible.

A web server is also known as an *internet server*.

Apache-

{Apache} is the most broadly used web server in the world. “Roughly 60%-70% of the world’s web server use apache server. Reason behind so popular because its open source (so money saved), highly secure, very fast & very reliable. It can be customized to meet our needs with the help of using various modules & extensions.”

To define it in a bit more technical terms, it is a modular, process based web server that creates a new thread every time a new connection is made.

“Apache is also has a major advantage, that it can support multiple website hosting on a single server.” There are actually two types of hosting:-

- **IP address based hosting**

For IP based hosting- “we need to have a different IP for every website that we are hosting”. IPs then attached to a single or multiple NICs (Network Interface Card).

- **Name based Virtual hosting**

For Name based hosting- “we used to host multiple virtual websites using a single IP address.”

Configuration

An excellent official .msi installation wizard is available from the “[<http://httpd.apache.org/download.cgi> for linux and <https://www.apachelounge.com/download/> for windows].” This option is certainly recommended for you as you are installing Apache for the first time.

Steps for you to install Apache:

Step 1. Remove {IIS}

If you have a Professional or Server version of Windows, you may already have IIS (Internet Information Server) installed. Remove IIS either disabling its services if you prefer to install apache.

***Note:** “What is IIS? Internet Information Services/Server (IIS) turns a computer into a Web server that can provide www (World Wide Web) publishing services. IIS is a component of the Microsoft Windows operating system.”*

Step 2. Download the files

Please use “unofficial Windows binary from Apache Lounge”. This version has performance and stability improvements over the official Apache distribution, “although yet to notice a significant difference. However, it is provided as a manually installable ZIP file from {www.apachelounge.com/download/}. Download the file.”

Step 3. Extract the files

You have to install Apache in *C:/Apache24*, so extract the ZIP file to the root of the C: drive.

It can be installed anywhere on your system, but you will require to change the configuration file paths accordingly.

Step 4. Configure Apache

Apache is configured with the text file {**httpd.conf**} contained in the Apache folder. Open it with your favourite text editor for *e.g.* notepad, notepad++ etc.

Note that all file path settings use a ‘/’ forward-slash rather than the Windows backslash. If you installed Apache anywhere other than C:Apache24, now is a good time to search and replace all references to “c:/Apache24”.

There are several lines you should change for your production environment:

Line 58: listen to all requests on port 80:

```
Listen *:80
```

Line 158, enable mod-rewrite by removing the # (optional, but useful):

```
LoadModule rewrite_module modules/mod_rewrite.so
```

Line 222, specify the server domain name:

```
ServerName localhost:80
```

Line 224, allow .htaccess overrides:

```
AllowOverride All
```

Step 5. Change the web page root

WAMP SERVER-

It is the development environment for windows. It contains Windows Apache MMySQL and PHP. It permits you to develop web applications with Apache2, PHP and a MySQL database. With all these PhpMyAdmin allows you manage databases easily on click and go.

FUNCTIONALITIES RELATED TO WAMP SERVER

Its functionalities are very easy and comprehensive to use.

With Left click

- Management of apache and MySql services.
- Switching to online/ offline (give access to everyone or only localhost)
- Installation and switch Apache, MySql and PHP releases.
- Management of servers settings
- Logs accessibility.
- You can also access of setting files.
- You can also create alias.

With Right click

- You can change menu language of WampServer.

WAMP Server Installation

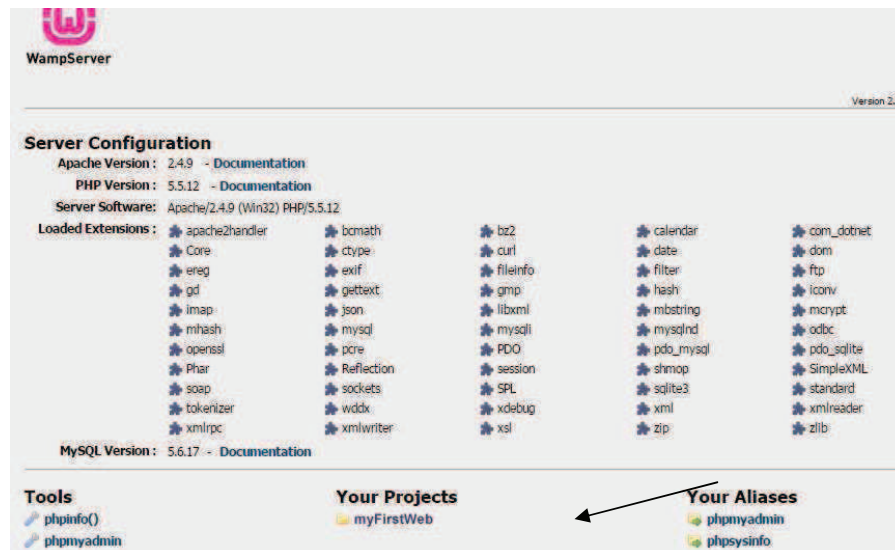
- You can follow the instructions after double clicking on the downloaded file. Everything is automatic.



- The WampServer package is delivered with the latest releases of Apache, MySQL and PHP.
- Once the WampServer is successfully installed you can manually add additional Apache, Php, MySQL versions.

Using WAMP Server

- The root directory for you is automatically created named “www” usually at c:\wamp\www.
- Now you can create sub-directories and put your php files in your sub-directory.
- In the WampServer menu click on the “localhost” link or open your internet browser and go to the URL : *http://localhost*.
- Now in projects tab your sub-directory is showing. Just click on your sub-directory to open your web application or website.



- Or you can also click on PhpMyAdmin to use mySql database.



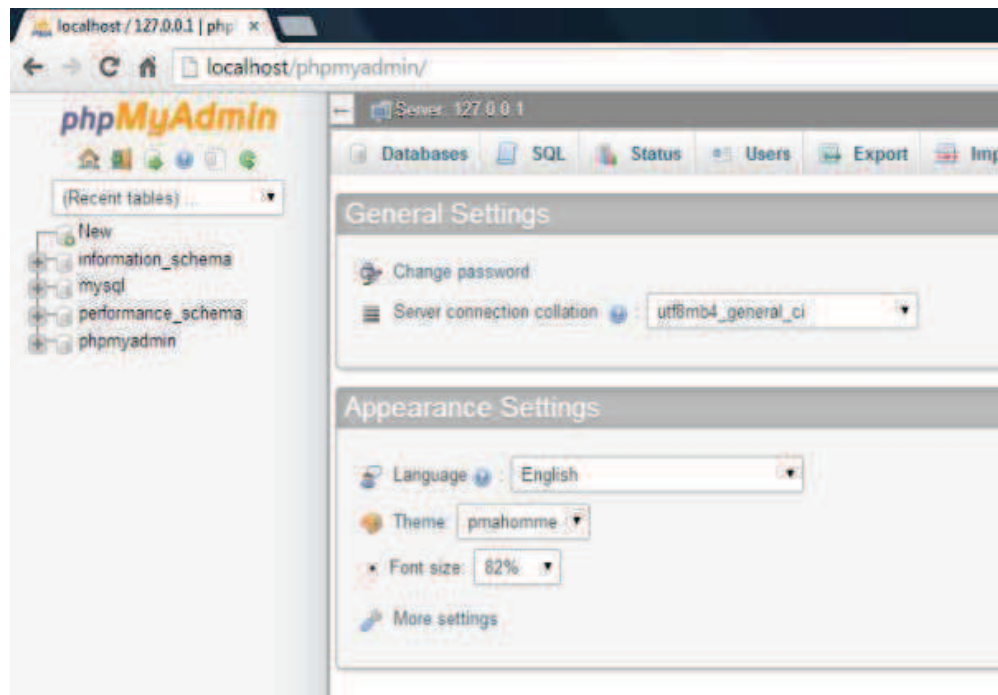
Using PhpMyAdmin

Tobias Ratschiller, founder of the software company Maguma, start working on a PHP-based web front-end to MySQL in 1998, encouraged by Peter Kuppelwieser's MySQL-Webadmin. He gave up the project (and phpAdsNew, of which he was also the original author) in 2000 because of lack of time.

By that time, phpMyAdmin had already become one of the most popular PHP applications and MySQL administration tools, with a large community of users and contributors. In order to coordinate the growing number of patches, a group of three developers, Olivier Müller, Marc Delisle and Loïc Chapeaux, registered the phpMyAdmin project at SourceForge.net and took over the development in 2001. Since 2015 the development is completely based on GitHub.

PhpMyAdmin is a free tool written in PHP. It act as an interface to mySQL and you can handle the administration of mySQL. Frequently operations involved (managing databases, tables, columns, relations, indexes, users, permissions, etc) can be performed via PhpMyAdmin, while you still have the ability to execute any SQL statement.

To ease usage to a wide range of people, phpMyAdmin is being translated into 72 languages and supports both LTR and RTL languages.



Features of PhpMyAdmin

- spontaneous web interface
- Support for most MySQL features:
 - browse and drop databases, tables, views, fields and indexes
 - create, copy, drop, rename and alter databases, tables, fields and indexes

- maintenance server, databases and tables, with proposals on server configuration
 - execute, edit and bookmark any SQL-statement, even batch-queries
 - manage MySQL user accounts and privileges
 - manage stored procedures and triggers
- Importing data from CSV and SQL
- various formats can exported: CSV, SQL, XML, PDF, ISO/IEC 26300 - OpenDocument Text and Spreadsheet, Word, LATEX and others
- Administration of multiple servers
- Creation of graphics for your database layout in various formats
- Creation of complex queries using Query-by-example (QBE)
- Searching globally in a database or a subset of it
- Transformed stored data into any format using a set of predefined functions, like displaying BLOB-data as image or download-link
- And much more...

2.3 *SEARCH ENGINE OPTIMIZATION*

Working of Search Engine

Step by step SEO

The process of improving the visibility of a website on organic ('natural' or unpaid) search engine result pages (SERPs) is the objective of Search Engine Optimization. The above said aim is accomplished through the implementation of search engine friendly website architecture, optimized internal navigation and link landscape, as well as optimization of the content (comprised, at a minimum, of readability & usability improvements, and grammatical corrections). SEO is as much art as it is science, but at its core it is the discipline of making user-friendly & useful content understandable and easily digestible by search engines.

Benefits of SEO

Search Engine Optimization is capable of providing you a strategic edge over your competitors:

- Has a positive psychological impact on a visitor.
- Help you create a brand identity.
- Higher 'brand recall'.
- Increase in targeted on-line traffic.
- Better web site positioning.

- Ability to dominate over competition with your mirror sites.
- Fast, measurable ROI. Increased and boosted product sales, and online visibility.
- Lower client acquisition costs.
- Broader web-marketing share.
- Compete efficiently against larger competitors.
- Continuous Visibility.
- Makes the most out of the best tool for advertising.
- The cheapest marketing tool, even on the net.
- Increases your revenue. Many non-brick and mortar firms have grown only with online presence and the best example is *Amazon.com*.

Working of Search Engine

Search engines carry out numerous activities in order to deliver search results.

- **Crawling:** Practice of obtaining all the web-pages anchored (linked) to a website. This task is performed by software called a crawler or a spider (or Googlebot, in case of Google).
- **Indexing:** Practice of generating index for all the obtained web pages and keeping them into a giant database from where it can later be reclaimed. basically, the process of indexing is identifying the words and expressions that best describe the page and assigning the page to particular keywords.
- **Processing:** When a search request comes, the search engine processes it, i.e., it compares the search string in the search request with the indexed pages in the database.
- **Calculating Relevance:** It is likely that more than one page contains the search string, so the search engine starts calculating the relevancy of each of the pages in its index to the search string.
- **Retrieving results:** The last step in search engine activities is retrieving the best matched results. Basically, it is nothing more than simply displaying them in the browser. Search engines such as Google and Yahoo! often update their relevancy algorithm dozens of times per month. When you see changes in your rankings, it is due to an algorithmic shift or something else beyond your control.

Key Searches techniques-

Title Tag: Most search engines will truncate meta titles to 70 characters.

Meta Description: Most search engines will truncate meta descriptions to 160 characters.

Most Common Keywords Test: There is likely no optimal keyword density (search engine algorithms have evolved beyond keyword density metrics as a significant ranking factor). It can be useful, however, to note which keywords appear most often on your page and if they reflect the intended topic of your page. More importantly, the keywords on your page should appear within natural sounding and grammatically correct copy.

Keyword Usage: Keyword(s) should be included in Title tag Keyword(s) included in Meta-Description tag.

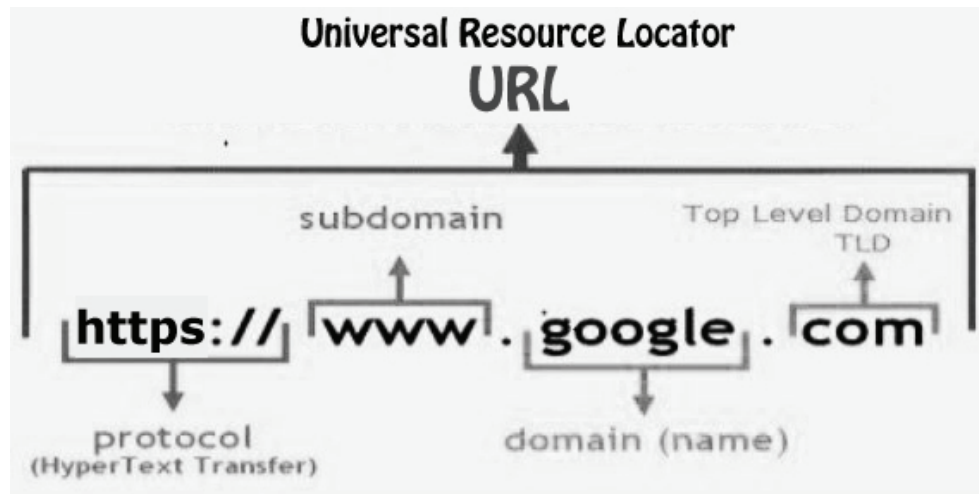
<h1> Headings Status H1 headings help indicates the important topics of your page to search engines. While less important than good meta-titles and descriptions, H1 headings may still help define the topic of your page to search engines.

Robots.txt Test This file can protect private content from appearing online, save bandwidth, and lower load time on your server. A missing "robots.txt" file also generates additional errors in your apache log whenever robots request one. Read more about the robots.txt file, and how to create one for your site.

Sitemap Test Sitemaps can help robots index your content more thoroughly and quickly.

Step by step SEO-

Choosing Domain

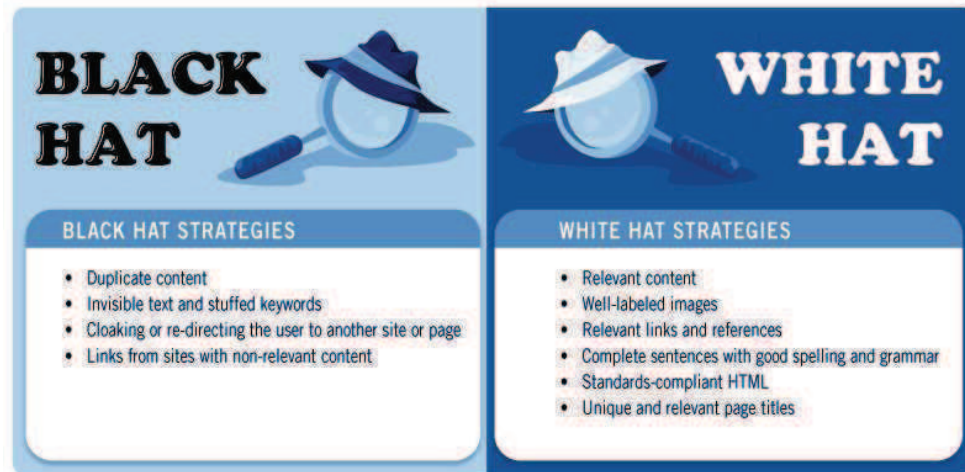


Always starts choosing a user friendly domain for your website. You need to consider some genuine points as below:

- Your target audience
- Your product presentation should clear you want to sell.
- Find out something unique which makes your business different from others positively.

- Apply of keywords in the domain

Knowing SEO tricks & methods-



It includes:

- Without using any deception search engine always follow
- As the search engine indexes and ranks the content the same will be seen by the user without any manipulation.
- It helps you to create web page content for the users and not only for the search engines.
- Under white hat [SEO] practice, the quality of the web pages is good and useful.

Black Hat SEO-

It includes:

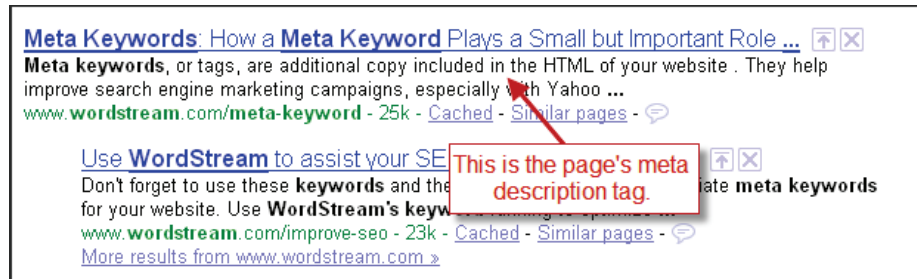
- This practice involves deception and is disapproved by the search engines.
- Redirecting users to human friendly pages from search engine friendly page, or redirecting users to any page which is different from the page which was earlier ranked by search engine
- Using Meta Tag stuffing in which keywords are repeated in meta tags but the content is not related to those keywords
- Using mirror websites in which multiple websites or different URLs use conceptually similar content

Optimization of keywords, meta tags, title & author

Paying heed upon Keyword Frequency, Keyword Weight, Keyword Proximity, Keyword Prominence, Keyword Placement, etc. is important for optimizing Keywords. This is where you should use your main keywords-

- In { <title> tag(s) }
- In { <meta name="description"> }
- In { <meta name="keyword"> }
- In { <h1> or other headline tags }
- In { keywords link tags }
- In the { body copy }
- In { alt } tags
- In { <!-- insert comments here> } comments tags
- In the URL or website address

Optimization of Meta Tag



Building links and Mobile SEO

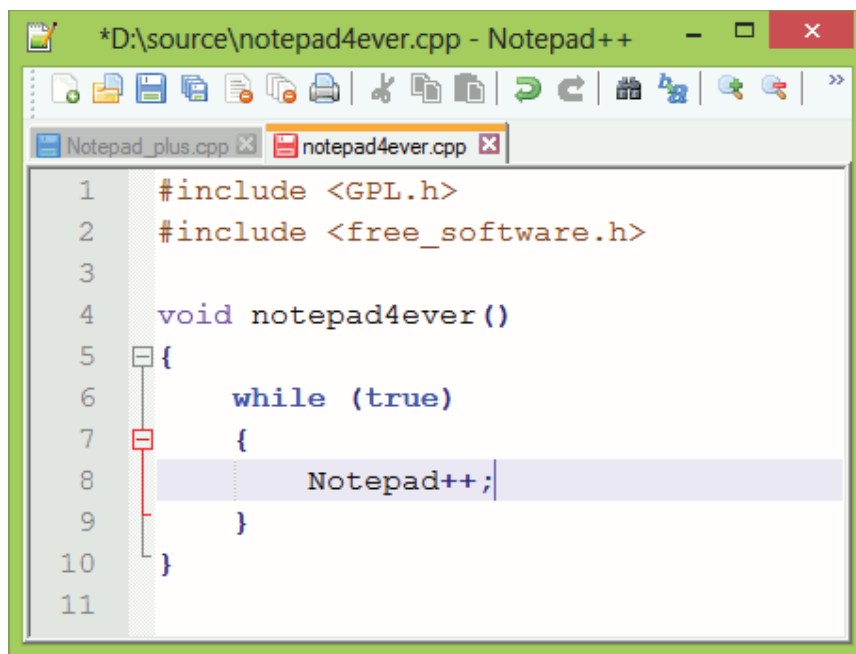
- *{Create a blog}*: A blog is essential to many strategies outlined here, such as linking out. You absolutely need a blog in today's online environment to survive.
- *{Internal linking}*: Create internal links into every page of your site means link your different pages with different pages internally
- *{Ask people you know for a link}*: Whether it's your friends, relatives, employees, colleagues, business partners, clients, or anyone else, ask them for a link. Someone you know has a website or blog, so take advantage.
- *{Research your competitors}*: Plug in your competitors and export their backlinks to a CSV file. Do this for all your competitors so you can get all their links in one place in a spreadsheet workbook. Then you can sort them by various link metrics to find the best opportunities.
- *{Paid directories}*: Some directories ask for money before accepting your link(s) in their listings. {searchenginewatch.com/tag/yahoo-directory}, for example, is a paid directory.

2.4 OPEN SOURCE TOOLS FOR WEB

Essentially, open source software is free software for your business or personal use. Open source developers freely share their knowledge and make the source code available to the public. The software is distributed with a license which allows other developers can modify it and/or add to it.

Generally, the major difference between open source software and commercially available programs is you don't pay for it. That said some developers make free products for all users while other developers create commercially available products. Some developers create a free and paid version of their products. The free program is a stripped down version of the complete version which gives you full functionality

Notepad++



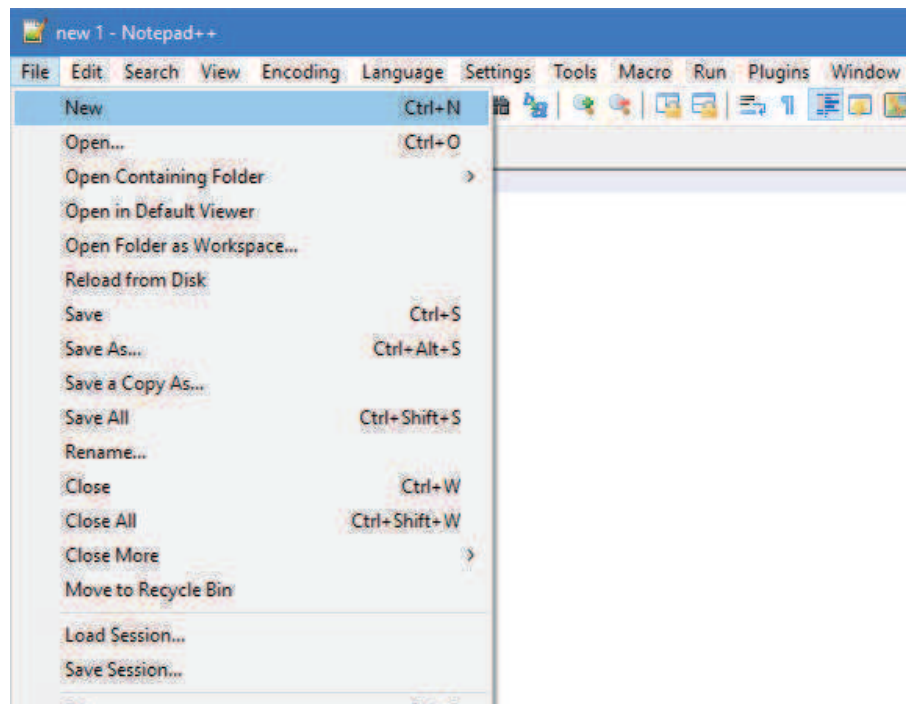
It is free open source code editor and a very good replacement of notepad, which supports several languages.

Notepad++ is written in C++ and uses pure [Win32 API] and [STL] which ensures high speed in execution and smaller in size.

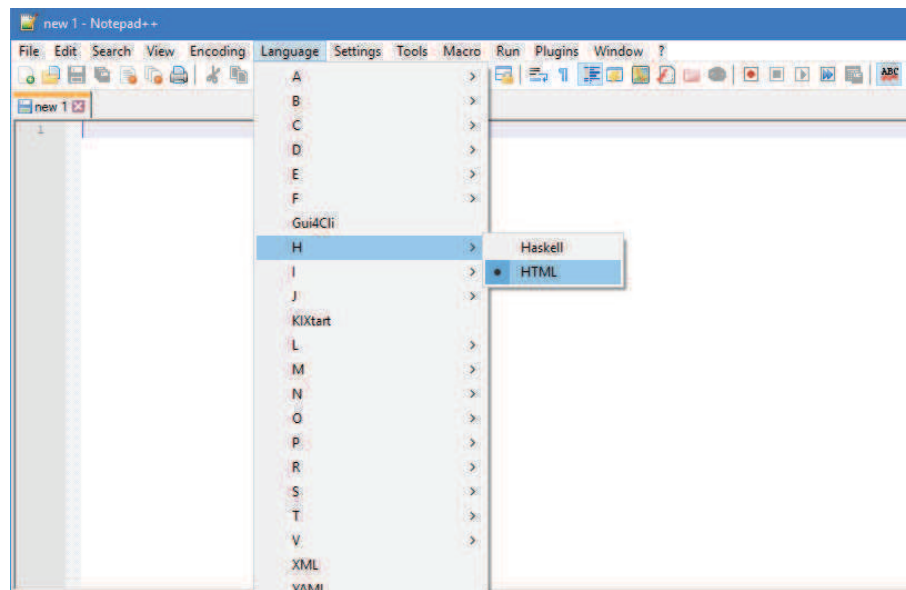
You can download from the {url}- [notepad-plus-plus.org] in [32-bit x86] and [64-bit x64].

Steps to write html code with its help:

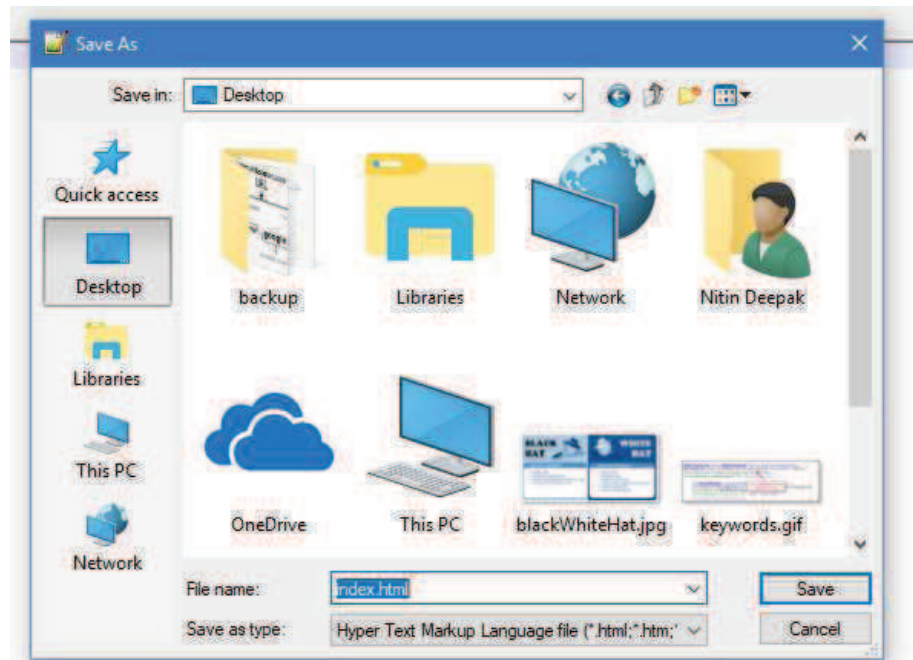
1. Download Notepad++ with the above given {URL}.
2. Install notepad++
3. Got to File -> New or (Ctrl+N)



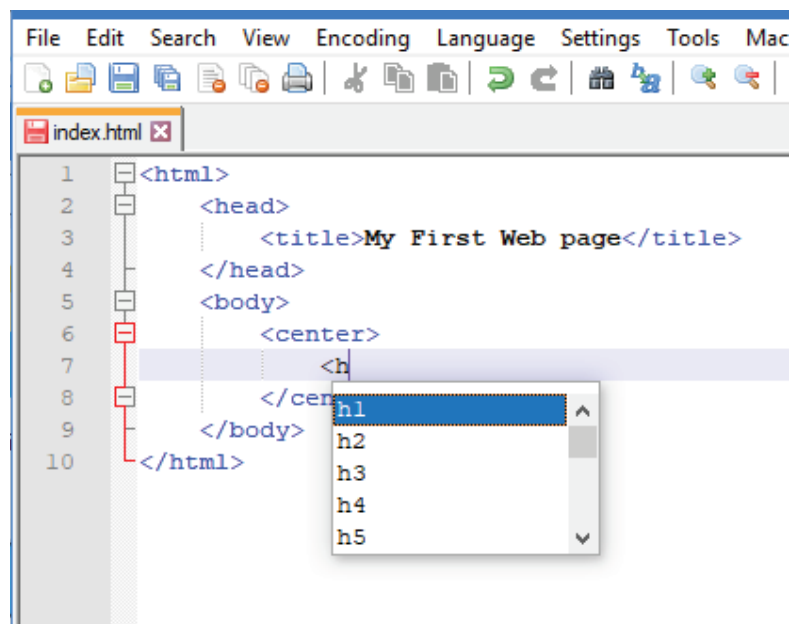
4. Then go to menu Language -> H -> HTML



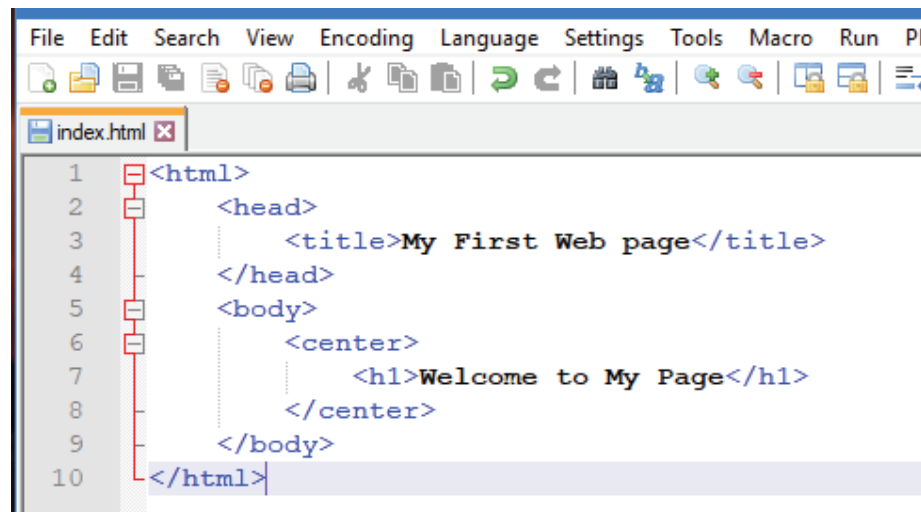
5. Firstly Save a file named index.html. Note extension should be .html then only you will get full html help while writing {HTML}.



6. Write html and enjoy help for the same consistently while using.



7. Then play a file in browser for to see the output.



```

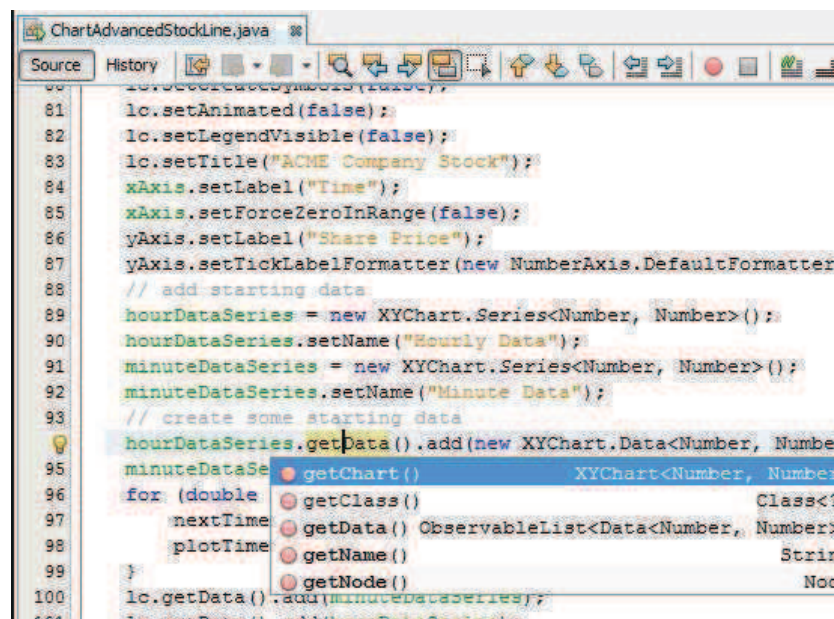
1 <html>
2   <head>
3     <title>My First Web page</title>
4   </head>
5   <body>
6     <center>
7       <h1>Welcome to My Page</h1>
8     </center>
9   </body>
10 </html>

```

Netbeans-

{NetBeans IDE} is the official {IDE} for {Java 8}. With its editors, code analyzers, and converters, you can quickly and smoothly upgrade your applications to use new Java 8 language constructs, such as lambdas, functional operations, and method references.

An {IDE} is much more than a text editor. The {NetBeans} Editor indents lines, matches words and brackets, and highlights source code syntactically and semantically. It lets you easily refactor code, with a range of handy and powerful tools, while it also provides code templates, coding tips, and code generators.



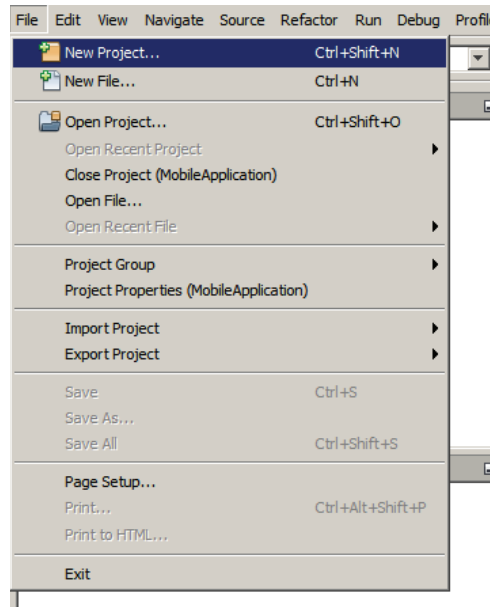
```

81 lc.setAnimated(false);
82 lc.setLegendVisible(false);
83 lc.setTitle("ACME Company Stock");
84 xAxis.setLabel("Time");
85 xAxis.setForceZeroInRange(false);
86 yAxis.setLabel("Share Price");
87 yAxis.setTickLabelFormatter(new NumberAxis.DefaultFormatter);
88 // add starting data
89 hourDataSeries = new XYChart.Series<Number, Number>();
90 hourDataSeries.setName("Hourly Data");
91 minuteDataSeries = new XYChart.Series<Number, Number>();
92 minuteDataSeries.setName("Minute Data");
93 // create some starting data
94 hourDataSeries.getData().add(new XYChart.Data<Number, Number>());
95 minuteDataSeries.getData().add(new XYChart.Data<Number, Number>());
96 for (double nextTime = plotTime; nextTime <= plotTime + 1; nextTime++) {
97     // create some starting data
98     // create some starting data
99 }
100 lc.getData().add(minuteDataSeries);
101 lc.getData().add(hourDataSeries);

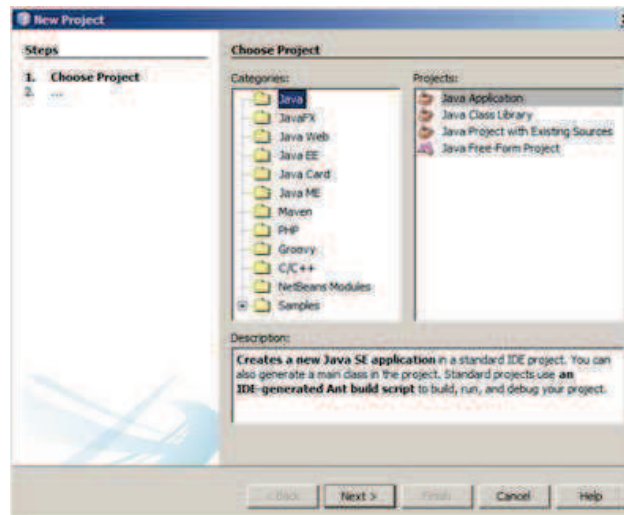
```

Steps of using {NetBeans}:

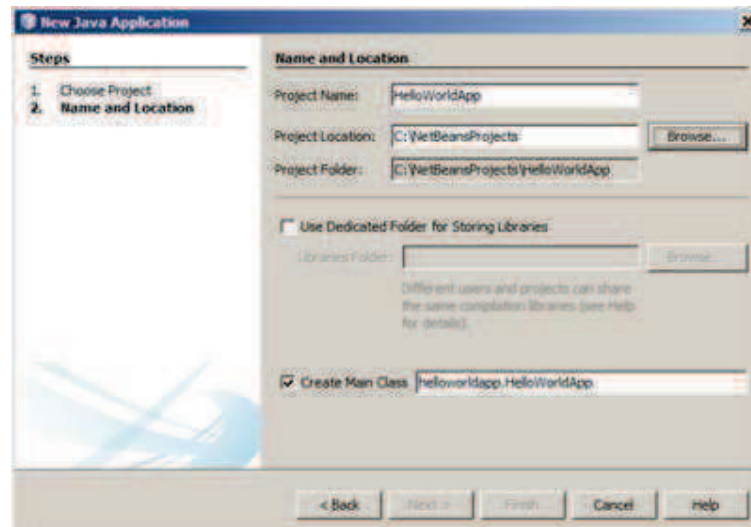
1. Start NetBeans {IDE}.
2. In the {IDE}, choose File > New Project, as shown in the figure below.



3. In the [New Project] wizard, expand the Java category and select Java Application as shown in the figure below. Then click Next.



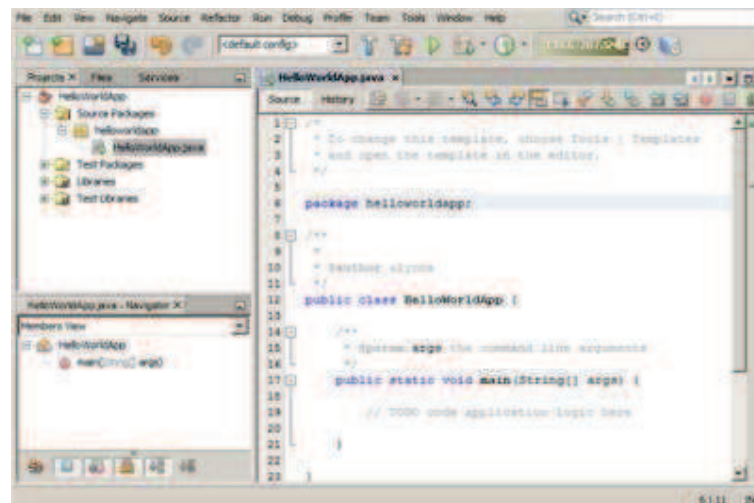
4. In the Name and Location page of the wizard, do the following (as shown in the figure below):
 - a. In the Project Name field, type - HelloWorldApp -.
 - b. Leave the Use Dedicated Folder for Storing Libraries checkbox unselected.
 - c. In the Create Main Class field, type - helloworldapp.HelloWorldApp -.



5. Click finish.

The project is created and opened in the IDE. You should see the following components:

- The Projects window, which contains a tree view of the components of the project, including source files, libraries that your code depends on, and so on.
- The Source Editor window with a file called HelloWorldApp open.
- The Navigator window, which you can use to quickly navigate between elements within the selected class.



GitHub-

[Git] is a distributed revision control and source code management system with an emphasis on speed. Git was initially designed and developed by Linus Torvalds for Linux kernel development. Git is a free open software distributed under the terms of the GNU General Public License version 2.

Version Control System

Version Control System (VCS) is software that helps software developers to work together and maintain a complete history of their work.

Listed below are the functions of a VCS:

- Allows developers to work simultaneously.
- Does not allow overwriting each other's changes.

It maintains the history of every version. Following are the types of VCS:

- Centralized version control system (CVCS).
- Distributed/Decentralized version control system (DVCS)

Let us see the basic workflow of Git.

Step 1: You modify a file from the working directory.

Step 2: You add these files to the staging area.

Step 3: You perform commit operation that moves the files from the staging area. After push operation, it stores the changes permanently to the Git repository.

STEPS OF WORKING WITH GitHub


Firstly, Install Git (the version control software GitHub is built on).

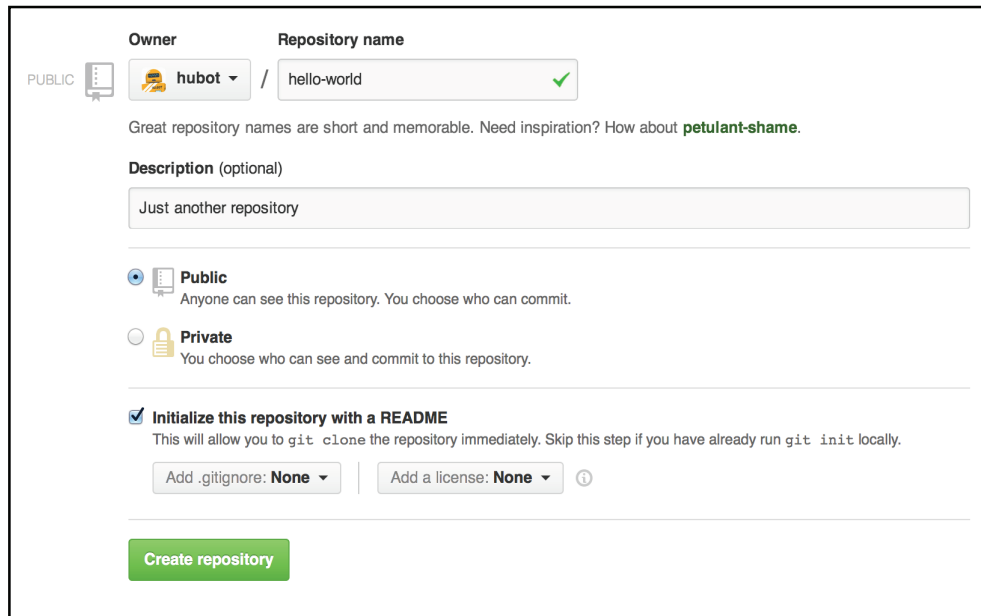
Step 1: Create a repository

A repository is usually used to organize a single project. Repositories can contain folders and files, images, videos, spreadsheets, and data sets – anything your project needs. We recommend including a README, or a file with information about your project. GitHub makes it easy to add one at the same time you create your new repository. It also offers other common options such as a license file.

Your hello-world repository can be a place where you store ideas, resources, or even share and discuss things with others.

To create a new repository

1. In the upper right corner, next to your avatar or identicon, click  and then select New repository.
2. Name your repository hello-world.
3. Write a short description.
4. Select initialize this repository with a README.



The screenshot shows the GitHub repository creation interface. At the top, there's a 'PUBLIC' label and a 'hubot' owner dropdown. The 'Repository name' field contains 'hello-world' with a green checkmark. Below this is a hint: 'Great repository names are short and memorable. Need inspiration? How about **petulant-shame**.' The 'Description (optional)' field contains 'Just another repository'. There are two radio buttons for visibility: 'Public' (selected) and 'Private'. Below these are checkboxes for 'Initialize this repository with a README' (checked) and 'Add .gitignore: None' and 'Add a license: None' (both selected). A green 'Create repository' button is at the bottom.

Click **Create repository**.

Step 2: Create a Branch

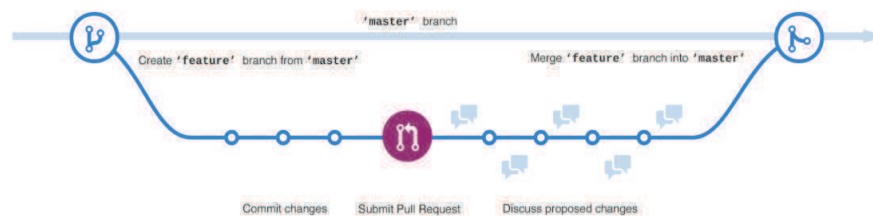
Branching is the way to work on different versions of a repository at one time.

By default your repository has one branch named **master** which is considered to be the definitive branch. We use branches to experiment and make edits before committing them to **master**.

When you create a branch off the **master** branch, you're making a copy, or snapshot, of master as it was at that point in time. If someone else made changes to the **master** branch while you were working on your **branch**, you could pull in those updates.

This diagram shows:

- The master branch
- A new branch called feature (because we're doing 'feature work' on this branch)
- The journey that feature takes before it's merged into master.



Have you ever saved different versions of a file? Something like:

- story.txt

- story-joe-edit.txt
- story-joe-edit-reviewed.txt

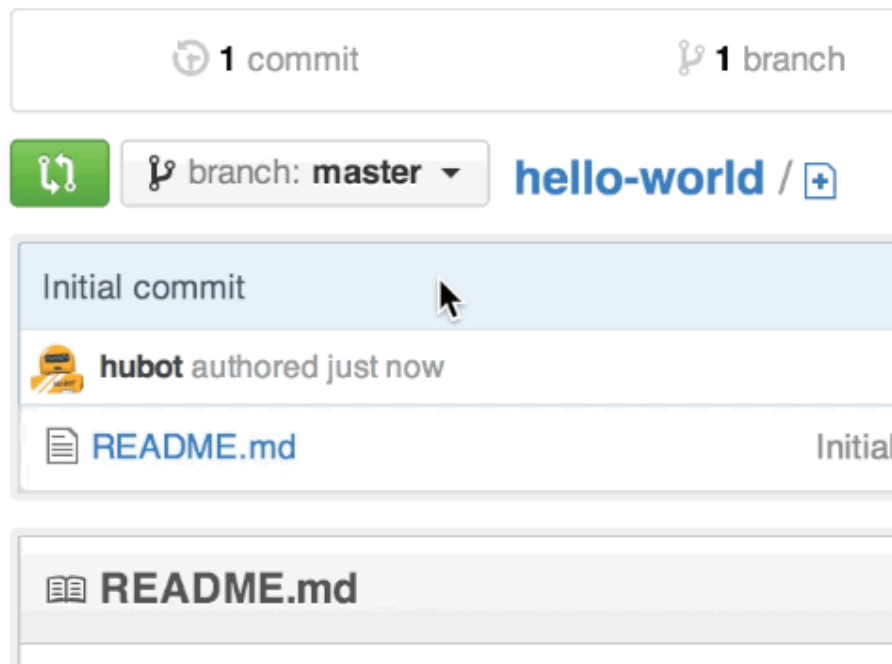
Branches accomplish similar goals in GitHub repositories.

Here at GitHub, our developers, writers, and designers use branches for keeping bug fixes and feature work separate from our **master** (production) branch. When a change is ready, they merge their branch into **master**.

To create a new branch -

1. Go to your new repository hello-world.
2. Click the drop down at the top of the file list that says branch: master.
3. Type a branch name, readme-edits, into the new branch text box.
4. Select the blue Create branch box or hit “Enter” on your keyboard.

Just another repository — Edit



Now you have two branches, master and readme-edits. They look exactly the same, but not for long! Next we'll add our changes to the new branch.

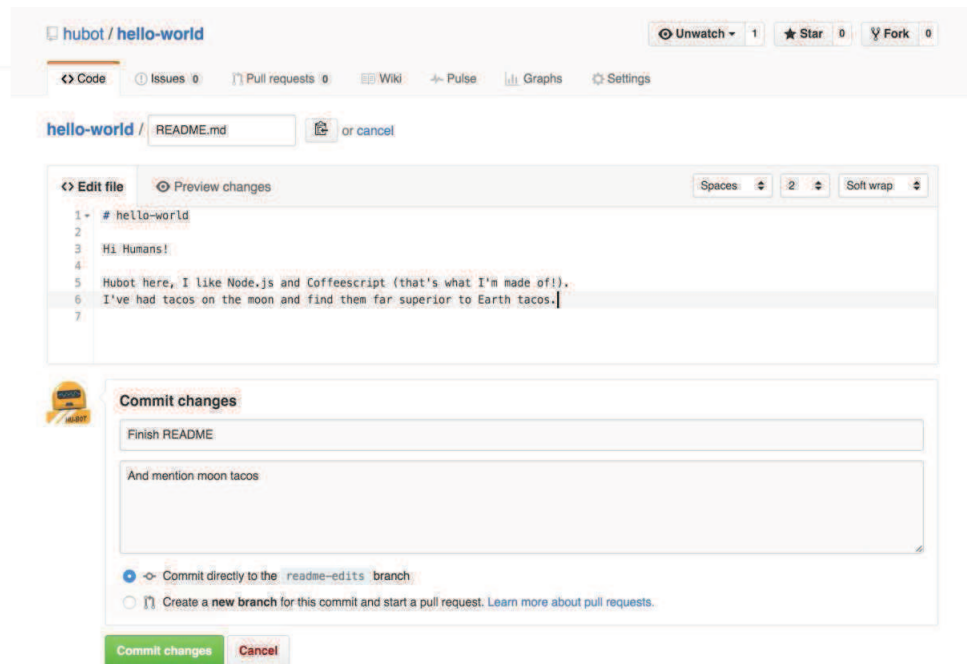
Step 3: Make and commit changes

Bravo! Now, you're on the code view for your readme-edits branch, which is a copy of master. Let's make some edits.

On GitHub, saved changes are called commits. Each commit has an associated commit message, which is a description explaining why a particular change was

made. Commit messages capture the history of your changes, so other contributors can understand what you've done and why.

1. Make and commit changes -
2. Click the README.md file.
3. Click the pencil icon in the upper right corner of the file view to edit.
4. In the editor, write a bit about yourself.
5. Write a commit message that describes your changes.
6. Click Commit changes button.



These changes will be made to just the README file on your readme-edits branch, so now this branch contains content that's different from master.

Step 4: Open a Pull Request

Nice edits! Now that you have changes in a branch off of master, you can open a pull request.

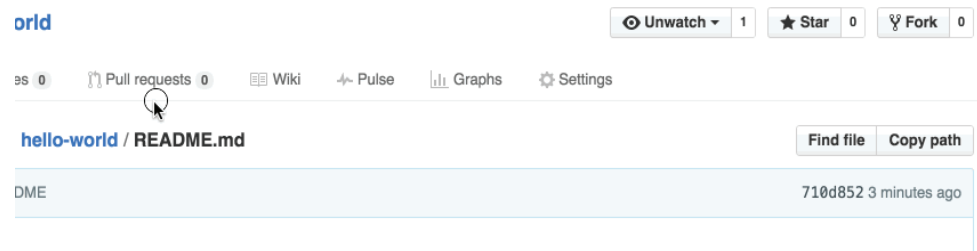
Pull Requests are the heart of collaboration on GitHub. When you open a pull request, you're proposing your changes and requesting that someone review and pull in your contribution and merge them into their branch. Pull requests showdiffs, or differences, of the content from both branches. The changes, additions, and subtractions are shown in green and red.

As soon as you make a commit, you can open a pull request and start a discussion, even before the code is finished.

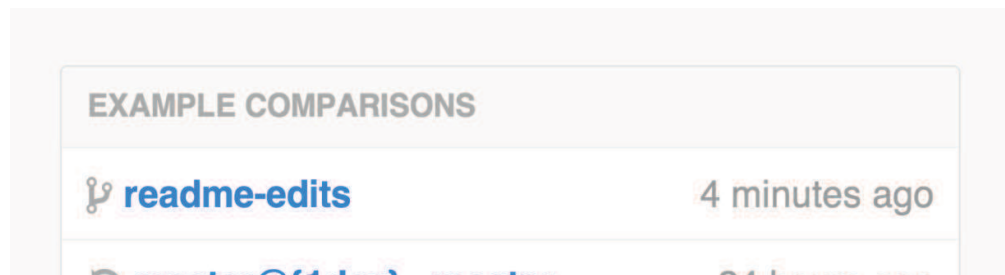
By using GitHub's @mention system in your pull request message, you can ask for feedback from specific people or teams, whether they're down the hall or 10 time zones away.

You can even open pull requests in your own repository and merge them yourself. It's a great way to learn the GitHub Flow before working on larger projects.

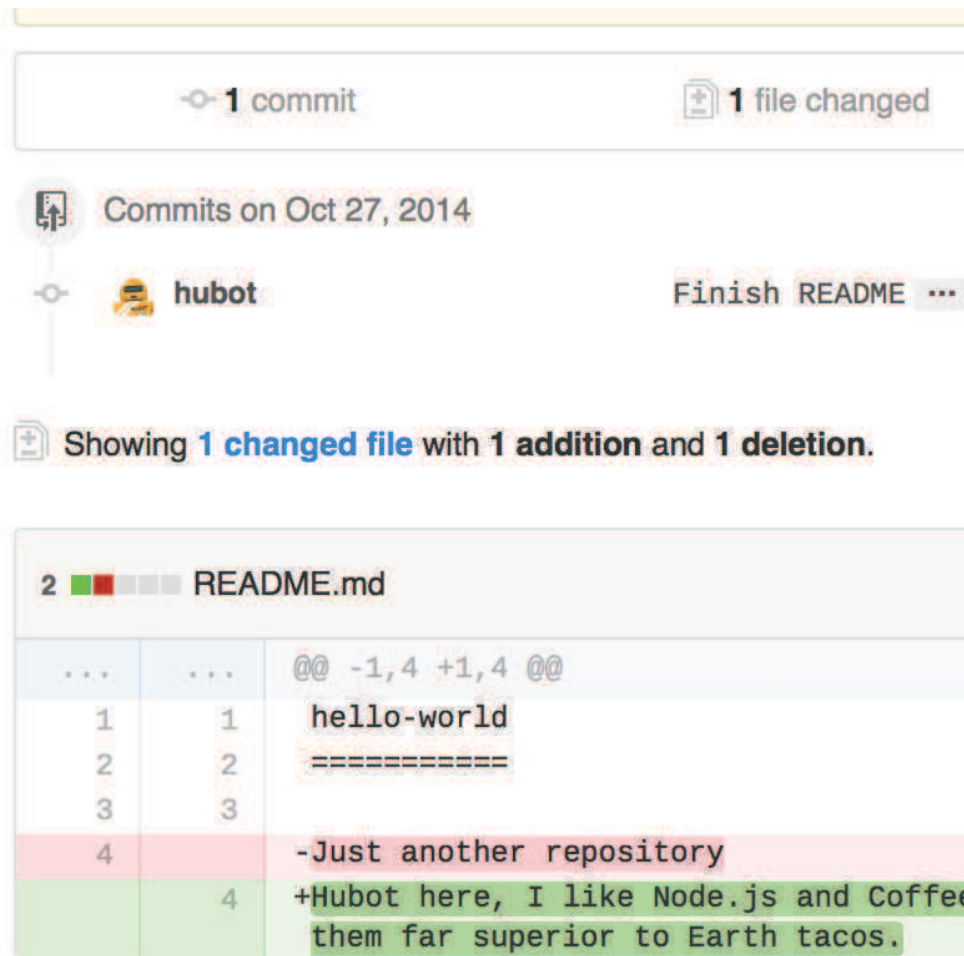
Step 1: Click the Pull Request tab, then from the Pull Request page, click the green New pull request button.



Step 2: Select the branch you made, `readme-edits`, to compare with `master` (the original).



Step 3: Look over your changes in the diffs on the Compare page, make sure they're what you want to submit.



1 commit 1 file changed

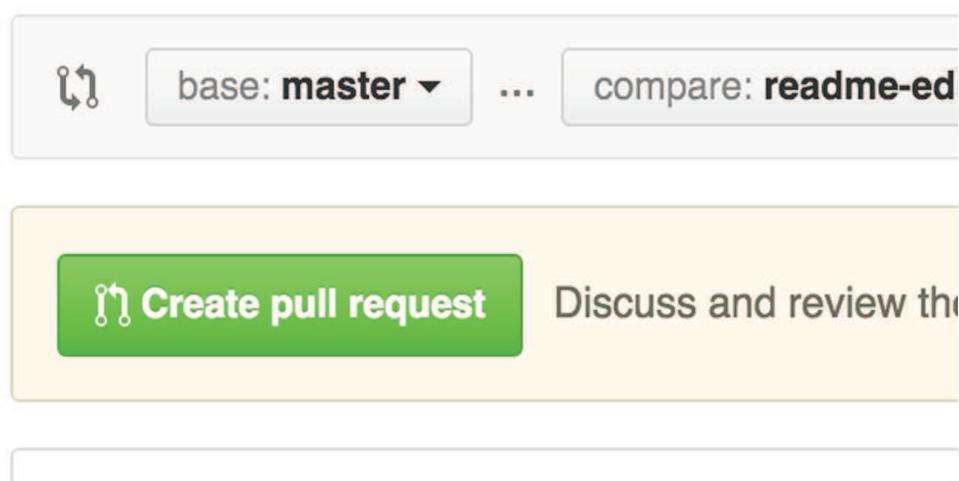
Commits on Oct 27, 2014

hubot Finish README ...

Showing 1 changed file with 1 addition and 1 deletion.

2 README.md	
...	@@ -1,4 +1,4 @@
1	hello-world
2	=====
3	
4	-Just another repository
	+Hubot here, I like Node.js and Coffee
	them far superior to Earth tacos.

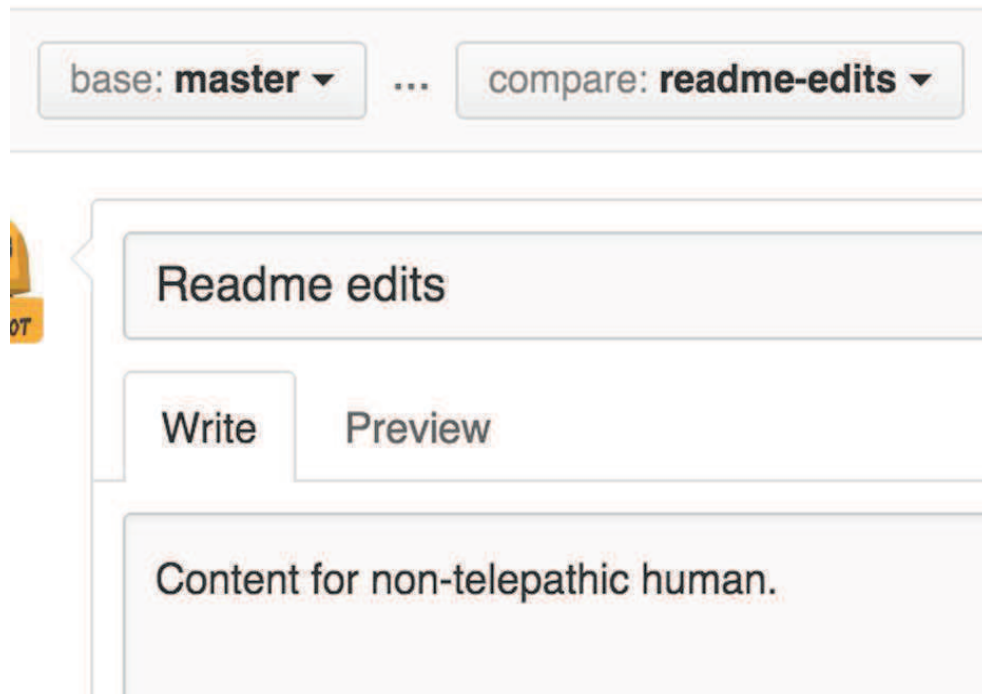
Step 4: When you're satisfied that these are the changes you want to submit, click the big green Create Pull Request button.



base: master ... compare: readme-ed

Create pull request Discuss and review the

Step 5: Give your pull request a title and write a brief description of your changes



When you're done with your message, click **Create pull request!**

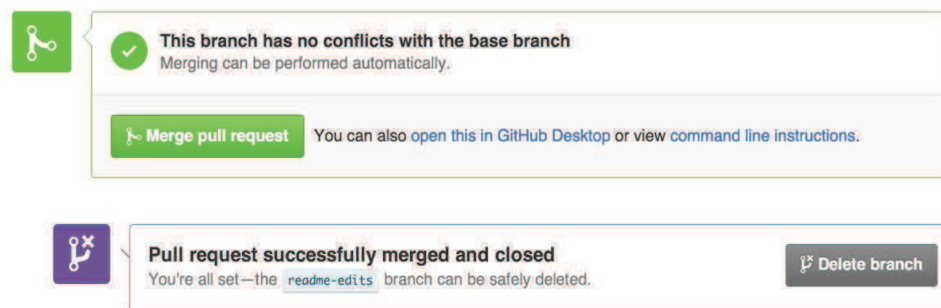
Tip: You can use [emoji](#) and [drag and drop images and gifs](#) onto comments and Pull Requests.

Step 6: Merge your Pull Request

In this final step, it's time to bring your changes together – merging your readme-edits branch into the master branch.

1. Click the green **Merge pull request** button to merge the changes into master.
2. Click **Confirm merge**.

Go ahead and delete the branch, since its changes have been incorporated, with the **Delete branch** button in the purple box.



2.5 POINTS TO REMEMBER

- Apache web server software is Developed and maintained by Apache Software Foundation
- Apache is open source software available for free.
- Apache HTTP Server is configured by placing directives in plain text configuration files.
- The main configuration file is usually called httpd.conf.
- The location of this file is set at compile-time.
- Some other configuration files may be added using the Include directive, and wildcards can be used to include many configuration files.
- Any directive may be placed in any of these configuration files. Changes to the main configuration files are only recognized by httpd when it is started or restarted.
- SEO stands for “search engine optimization.” It is the process of getting traffic from the “free,” “organic,” and “natural” search results on search engines.
- There are major groups covered by Search Engine as such SEO Success Factors are: On-the-page SEO, Off-the-page SEO and Violations.
- Content research or keyword research is the most important SEO factor after creating good content is good keyword research.
- Every Web developer needs to be armed with a set of tools that aid and assist in building better and more complex web applications. From the wide range of Web development tools available, we are here to present some of them as per the developers opinion/usefulness-

[#] Node.js- Node is an open source, multi-platform, JavaScript runtime built around a Chrome Version 8 engine for developing a variety of Web applications. Node has an event-driven, non-blocking I/O model, which makes it lightweight and efficient. Node.js was initially written by Ryan Dahl in 2009.

[#] Bootstrap- Bootstrap is an open source framework based on HTML, CSS and JavaScript. It is the most popular and widely used framework for developing responsive Web applications. Bootstrap was first designed by Mark Otto and Jacob Thornton in 2011.

[#] **AngularJS-** AngularJS is an open source, structural framework for designing dynamic Web applications and provides JavaScript based framework. AngularJS was designed by a Google employee, Misko Hevery, in June 2012.

[#] **Brackets-** Brackets is an open source, lightweight and modern text editor. It is a platform-independent editor with a focus on Web development. It was designed by Adobe Systems, and is licensed under the MIT licence. It is written in HTML, CSS and JavaScript.

[#] **MongoDB-** MongoDB is a free and open source database written in C++. It is a document-oriented database that stores documents in a collection. It is one of the leading NoSQL database and uses JSON-like documents. It is an open format and schema less database, ideal for object-oriented programming. MongoDB was designed by a company called 10gen in 2007.

[#] **ReactJS-** ReactJS is an open source, declarative and efficient JavaScript library for designing user interfaces. React has a data binding feature that makes it one of the most popular JavaScript library. ReactJS was developed by Facebook and written by software engineer, Jordan Walke. It is maintained by Facebook's product infrastructure and Instagram's user interface teams.

[#] **LESS-** LESS is a CSS pre-processor, so it has a syntax that is similar to CSS. LESS supports lots of features that can speed your Web development. It provides features that allow variables, mixins, functions and many other techniques that allow you to make CSS more maintainable, themeable and extendable. It is developed by Alexis Sellier.

[#] **Atom-** Atom is one of the popular text editors currently. Atom is open source and supports cross-platform editing. It has the support of a built-in package manager, smart auto-completion, AngularJS support, Atom TypeScript, Jshint, and turbo-JavaScript, which can be very helpful for rapid Web development.

[#] There are too many open source tools to assist web developers; you can find them from internet free of cost.

2.6 GLOSSARY

- **Blog-** (weB LOG) Basically a journal that is available online and is updated by the owner daily via software that maintains the blog with no technical background knowledge needed by the owner. You can get a free blog from Google at 'Blogger.com'.
- **Cookie-** A message from a website that is stored on your computer and used to customize pages that you view.
- **Cyberspace-** A term used to describe the Internet.
- **Domain Name-** A Domain name is a textual mark used as a form of identification on the Internet. When used in conjunction with online services, domain names are easy to remember, easy to type alternatives to the real address of computers on the Internet which consists of a string of numbers (called IP address).
- **Firewall-** Software that helps protects your computer from viruses and intruders. It creates a "wall" between your computer and the Internet.
- **FTP** (File Transfer Protocol) - The protocol with which you manage files and web pages on our web server.
- **IANA** (Internet Assigned Numbers Authority)- The function that oversees registration for Internet Protocol parameters, such as port numbers, protocol and enterprise numbers and etc.
- **ICANN** (The Internet Corporation for Assigned Names and Numbers)- The non-profit corporation that was formed to assume responsibility for the IP address space allocation, protocol parameter assignment, domain name system management, and root server system management functions.

2.7 CHECK YOUR PROGRESS

Q1 What is a Web Server?

Answer- It supports HTTP protocol. When a Web server receives an HTTP request, it responds with an HTTP response, such as sending back an HTML page (static content) or delegates the dynamic response generation to some other program such as CGI scripts or Servlets or JSPs in an application server.

Q2 What is an Application Server?

Answer- It exposes business logic and dynamic content to a client through various protocols such as HTTP, TCP/IP, IIOP, JRMP etc. It Uses various scalability and fault-tolerance techniques. In addition provides resource pooling, component life cycle management, transaction management, messaging, security etc.

Q3 What is a Portal?

Answer- A portal is a Web site or service that offers broad range of resources and services like e-mail, forums, search engines, on-line shopping, news, weather

information, stock quotes, etc. Portal is a term generally synonymous with the terms gateway or grand entrance into the Internet for many users.

(Write the answers of following questions by yourself.)

Q4 What is Apache Web Server?

Q5 What do you understand by HTTP and HTTPS?

Q6 How to restart Apache web server?

Q7 What are some important configuration files of Apache HTTP Server?

Q8 How to install Apache web server?

2.8 *BIBLIOGRAPHY/REFERENCES*

- <https://opensourceforu.com/2017/03/top-10-open-source-tools-web-developers/>
- <https://opensourceforu.com/2016/03/ten-open-source-web-development-tools/>

2.9 *SUGGESTED READINGS*

- <https://www.upwork.com/hiring/development/a-guide-to-server-technology/>
- https://www.tutorialspoint.com/internet_technologies/web_servers.htm

UNIT 3: LAB MANUAL

CWDD 103- Administration and Hosting Configuration

3.1. OBJECTIVES

3.2. BLOGGING

How to start blogging

Blogging by word press

3.3. MANAGING A WEB PROJECT

Web page, website, web server, search engine and a web project

Web project management

3.4. SECURITY ISSUES

Security issues

Web security standards

Internet Security

3.5. POINTS TO REMEMBER

3.6. GLOSSARY

3.7. CHECK YOUR PROGRESS

3.8. BIBLIOGRAPHY/REFERENCES

3.9. SUGGESTED READINGS

3.1 OBJECTIVES

After completing this unit you will be able to-

- Can create blog easily.
- Can understand the significance and implementation of blog.
- Can understand the structure of web application.
- Can manage web project.
- Understand Internet security.
- Implement security and take precautions in web projects from attacks.

3.2 BLOGGING

A type of website that spotlights on written content also known as blog posts. In popular culture we most often hear about “news blogs” or “celebrity blog” sites, but you can start the successful blog on just about any possible subject.

How to start blogging?

Welcome to the world of blogging. Not only it is pleasure of passing time, but with a blog, you can express yourself in an innovative way that might be unique. You can establish yourself and even make money.

One of the false impressions about starting a blog is that you need to be a great writer to be successful. It’s not correct from any angle. People read blog sites to get a personal perspective on things, so most bloggers write in a very informal and conversational style. Above all you need not to be expert of any topic to have a successful blogger.

To be a successful blogger you only need a passion for your subject you need to share with your audience.

Below are the steps to start blogging:

1. **You need to choose a blog name:** Choose name something descriptive that can be understood easily.
2. **Get your blog online:** To get your blog online and running you need two things: *blog hosting* and *blogging software*. The good news is that both come packaged together.
3. **Customise your blog:** Everyone has a dissimilar idea of how they want their blog to appear. One of the great things about a “WordPress” blog is that you can change your entire layout and design with just a few clicks.
4. **Write & publish your first post:** Now that your blog is up and running it’s time to actually do some blogging! click on “Posts” and have a kick start to your blogging.

5. **Promote your blog:** Easiest way to promote your blog is via a social media like facebook, twitter, linkedin etc. And beyond this you can promote by advertisement by email or by the word of mouth also.
6. **Make money:** Once you have put in the attempt of generating great blog content and encouraging your blog, making money from your blog is actually the easy part. There are numerous ways you can formulate money blogging, from selling your own products or services, to getting paid to write reviews of products on your blog. But the easiest way to make money from your blog is to sell advertising space.

Blogging with word press

Before you can even start worrying about how your blog will look like, you'll need to choose your blogging platform. So Wordpress is with you. Why? Actually this platform is free to use and also have some attractive themes to download absolutely free.



Step 1. Open a website “ <https://wordpress.com/>” and click to Get Started button.



Step 2. You will get the below page. Now fill the details as required for to create a blog site

Step 1 of 4

Let's create a site

Please answer these questions so we can help you make the site you need.

What would you like to name your site?

e.g. Mel's Diner, Stevie's Blog, Vail Renovations

What will your site be about?

e.g. Fashion, travel, design, plumber, electrician

What's the primary goal you have for your site?

- ☐ Share ideas, experiences, updates, reviews, stories, videos, or photos
- ☐ Promote your business, skills, organization, or events
- ☐ Offer education, training, or mentoring
- ☐ Sell products or collect payments

Step 3. Entries can be filled like below then click “continue” button.

What would you like to name your site?

myeveningfoodchain

What will your site be about?

Food for evening snacks

What's the primary goal you have for your site?

- ☒ Share ideas, experiences, updates, reviews, stories, videos, or photos
- ☒ Promote your business, skills, organization, or events
- ☐ Offer education, training, or mentoring
- ☐ Sell products or collect payments
- ☐ Showcase your portfolio

How comfortable are you with creating a website?

Beginner **1** 2 3 4 5 Expert

Continue

Step 4. You will get the below page and type domain name you want to register

Step 2 of 4

Let's give your site an address.

Enter your site's name, or some key words that describe it - we'll use this to create your new site's address.

myeveningfoodchain

myeveningfoodchain.wordpress.com	Free	Select	>
myeveningfoodchain.com	Recommended	Included in WordPress.com Premium	Select >
myeveningfoodchain.blog	Best Alternative	Included in WordPress.com Premium	Select >
myeveningfoodchain.life		Included in WordPress.com Premium	Select >
myeveningfoodchain.club		Included in WordPress.com Premium	Select >
myeveningfoodchain.online		Included in WordPress.com Premium	Select >

Step 5. Above page showing available domain after writing your domain name. The select the free one if it is available otherwise write different domain address.

Step 6. You will get the following proceeding step

Step 3 of 4

Pick a plan that's right for you.

Personal Best for hobbyists	Premium Best for entrepreneurs	Business Best for small businesses
₹200.00 per month, billed yearly	₹350.00 per month, billed yearly	₹800.00 per month, billed yearly
Start with Personal	Start with Premium	Start with Business
Email and live chat support	Advanced customization	Upload themes and plugins
Free custom domain	Unlimited premium themes	Google Analytics
All free features	All Personal features	All Premium features

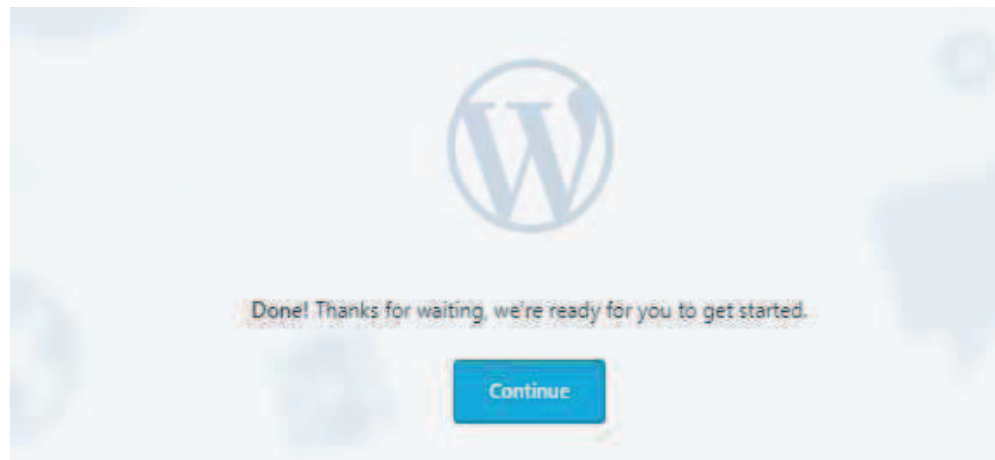
Secure payment using:

Start with Free

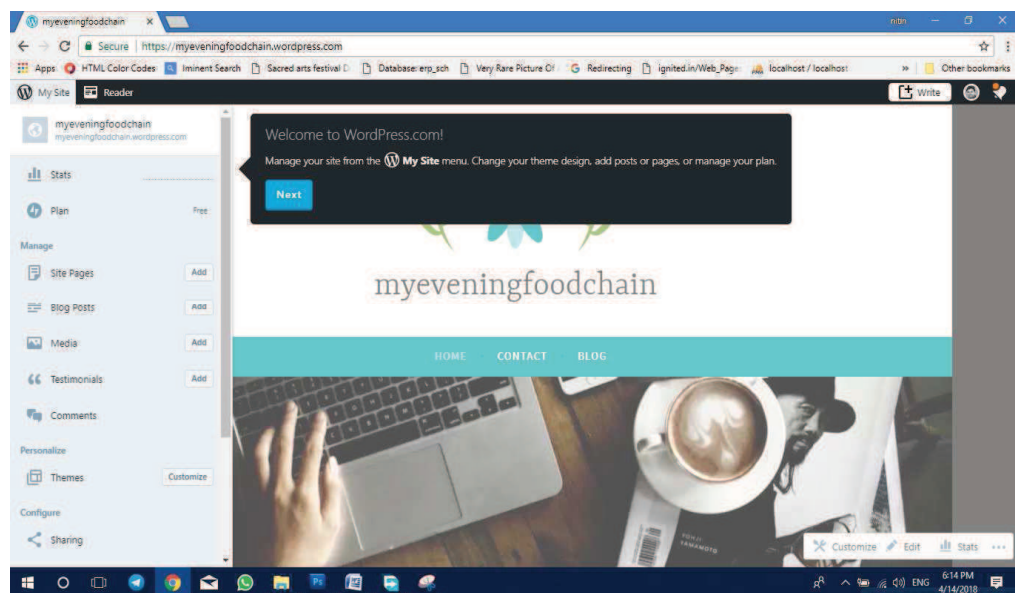
Step 7. Click “Start with free” button.

Step 8. Then register yourself in wordpress with your email id (which is mandatory).

Step 9. Then you will get a confirmation page notifying that to confirm your email id you need to check your email to verify your email id. Press “continue” button to proceed.



Step 10. You will get your wordpress blog site ready like below



Step 11. Now proceed with the given menus and start blogging. This panel helps you at every step to post your posts.

Step 12. Finally you can promote your blog with your provided url by wordpress in social media like *facebook, twitter, linkedin etc.*



3.3 *MANAGING A WEB PROJECT*

A site or website is a central location of several web pages that are related and can access by visiting the home page using a browser. For example, the Uttarakhand Open university website address (URL) is “http://uou.ac.in”. The image below the Uttarakhand Open University looked in 2018.



Web-Page, Website, Web Server, Search Engine and a web project-

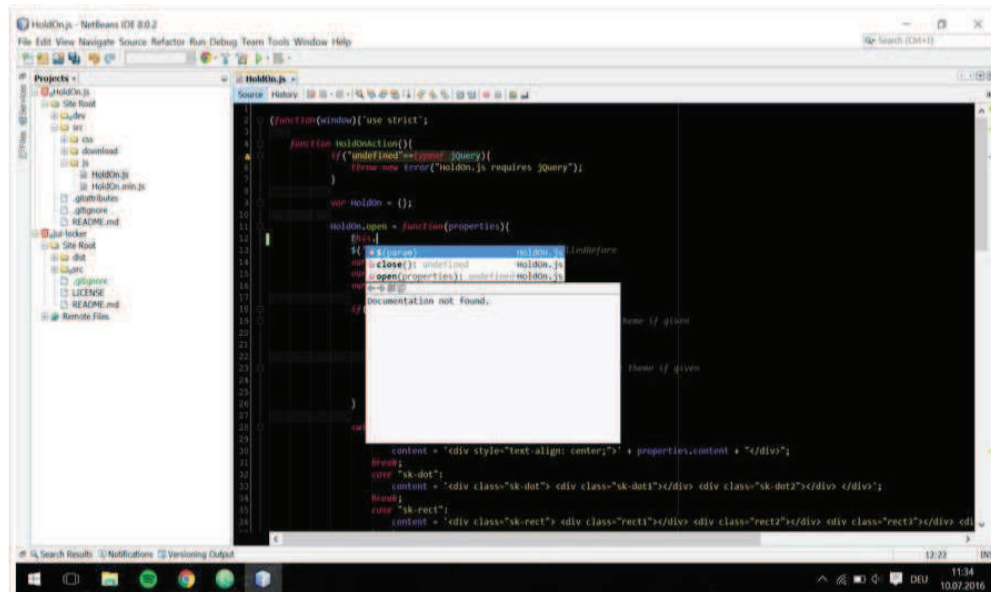
A document that can be viewed in a web browser such as Google Chrome, Opera, Firefox, Microsoft Internet Explorer or Edge, or Apple's Safari. These are also often called just "pages" or “web pages”.

A collection of web pages which are grouped together and usually connected together in various ways often called a "web site".

A computer that hosts a website on the Internet is termed as web server. Search engine is a special kind of website that helps you find other web pages, such as Google, Bing, or Yahoo. Web project is a web based development task needs to complete on specific deadlines needs the dedicated and positive team.

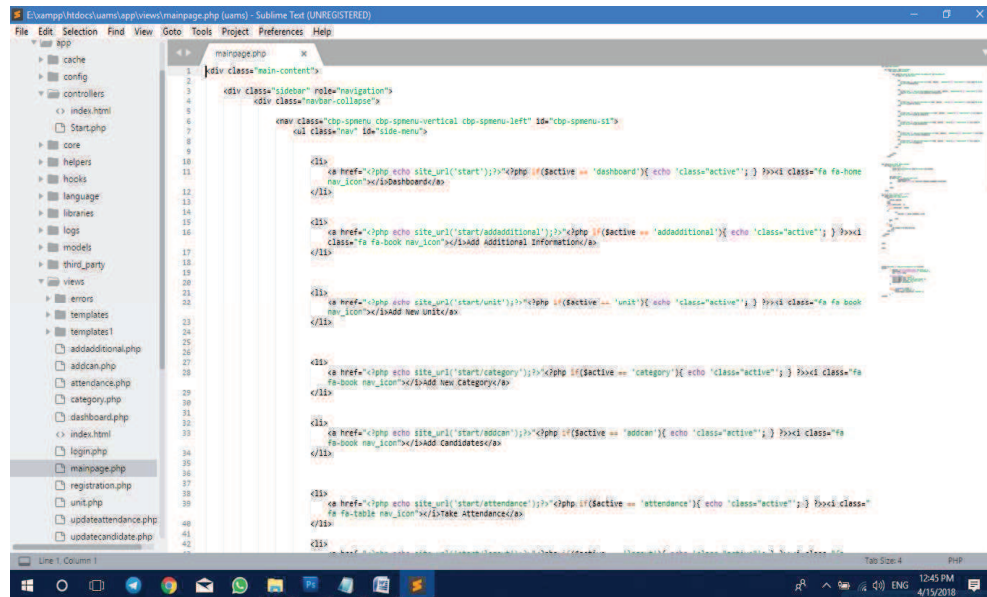
Web project management-

Before you start worrying about how you can manage web project you need to learn some web tools which actually acts as life-line in managing of web project viz. "GitHub", any IDE ("NetBeans, sublime, Dreamweaver, Eclipse") and also some simple editors like "notepad++" etc for developers and "Asana, Basecamp, Trello, etc" for project managers.



Sample figure IDE {Netbeans}

Let's take an example of sublime here.



To manage web project you need to:

- 1. Firstly No need to use email to discuss project**

Using email to discuss the project is the worst strategy ever. You may lose your own statements going back and forth while communicating with emails. Instead, you may use communicating tools like *Asana*, *Basecamp*, *Trello* etc. can take care of all of these problems really come to rescue. *Asna* like tools are designed to track project status, set milestones and meet deadlines very effectively.

- 2. Create proper sub-tasks in your project management system**

Always be clear in your mind that buying and downloading a project management tool is not a sufficient. The solution is to managing your projects well using these tools is by breaking down your bigger tasks into smaller and in more controllable chunks. Significantly, listing out the subtasks briefly and being specific with your instructions.

Specifying the responsibilities regarding the sub-tasks is key to success of the project management

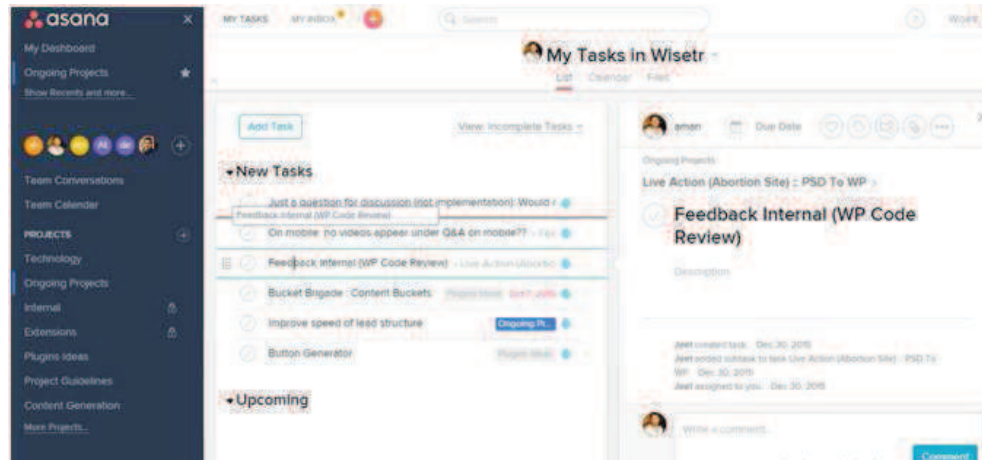
- 3. Always assign a due date for each task**

For every task or sub-task always assign a due-date so that isolated team knows well the expected date of completion of the particular task. It also concludes that if the assigned task is not completed by the due-date, you can find out the different solution and ensure the progress where lacking.

Furthermore, you can evaluate the impact of each interruption on the whole release of the project.

- 4. Assign task in logical sequence**

Always set and consider all tasks priority wise in which they are needed. Setting priorities ensures that you are getting the urgent or more important task done first. Prioritise your tasks not only the urgent task done first but also helps in making a clear vision about the execution of the project to the whole team. Here's how you can merely drag-drop tasks to align them in proper sequence in Asana:



5. Add deadlines

After setting priorities create deadlines to every task.

Deadlines notify completion of a group tasks. They are lined-up with the final deadline and ensure everyone is motivated right up to the very end of the project.

6. Close the open conversation

Most significant rule of the project management is *“the one who opens the task must close it”*.

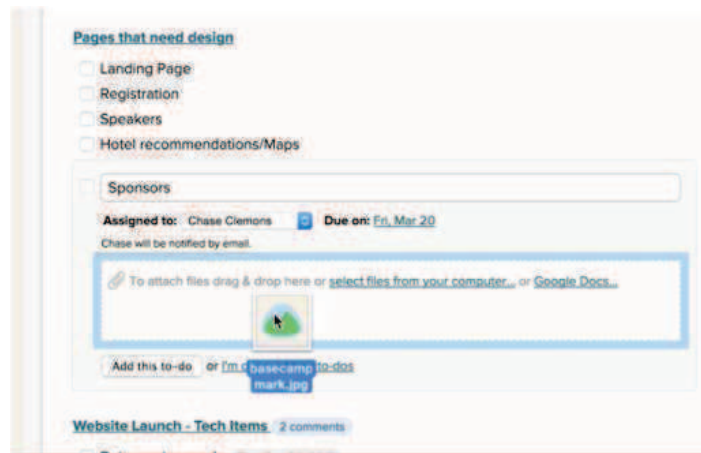
Finally as the assigner of the task, you need to give feedback and assign it back to the team member or close it, if satisfied.

7. Keep all the resources related to project at one place

The resource section keeps all your project related files readily accessible to everyone. These files could be “Word Docs, PDFs, Wireframes, Images, PSDs, etc.”

This is valuable because the team will not have to switch back and forth between “DropBox”, e-mails and other file sharing avenues just to locate or upload a file.

Here's how “Basecamp” lets you drag and drop all your project related files with ease.



8. **Keep all the conversation at one place:**

In spite of the project management systems already in place, e-mail can still be used to communicate within the team. When clients send you emails for a project forward those emails into your project management system. This is particularly helpful when you are not at your desk and aren't able to read emails and pick out instructions/feedback.

All the project management tools that we recommended allow for easy integration with e-mail. They create a new task out of the e-mail subject line and turn the e-mail body into the task notes.

9. **Be active project leader or manager or appoint someone from the team:**

Though the developers and/or creative professionals are busy doing what they are good at, a Project Manager or key Account Manager ensures it's all done according to schedule. Generally agencies chip away at the role of a Project Manager, but they can be influential in pulling off projects successfully and on time.

Always remember that the project manager is not the person to up-sell or cross-sell your offers to clients. He is just the person who ensures to get the task or tasks done.




Project manager keeps the track of the project and do all the stitches wherever needed to avoid project delays.

Managing web projects from the distance is the skill that you can learn. Be clear with your thoughts and follow the guidelines given above to help you out to manage web projects with ease.

Sample of the architecture to deal the project technically

Project Folder:

- Main files folder
 - File 1

- File 2
- ...
- Image folder 
 - Image 1
 - Image 2
 - ...
- Scripts folder 
 - Script 1
 - Script 2
 - ...
- Templates Folder (if any external file or common modules for your project) 
 - Any external files
 - Any common files
 -
- Main index file

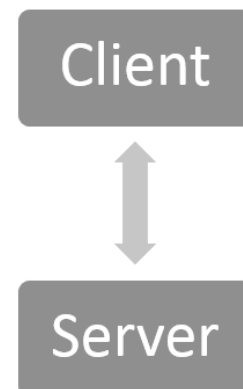
3.4 SECURITY ISSUES

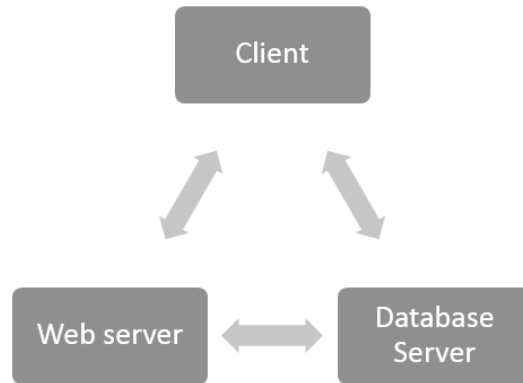
WS (Web Services) Security is a standard that addresses security when data is exchanged as part of a Web service. This is a key feature in SOAP (Simple Object Access protocol message) that makes it very popular for creating web services.

Security is an important feature in any web application. Since almost all web applications are exposed to the internet, there is always a chance of a security threat to web applications.

One of the security measures available for the “HTTP” is the “HTTPS” protocol. HTTPS is the secure way of communication between the client and the server over the web. HTTPS makes use of the “Secure Sockets layer or SSL” for secure communication.

But the above type of security will not work in all situations. There can be the probability when the client can talk to multiple servers. An example given below shows a client talking to both a database and a web server at a time. In such cases, not all information can pass through the https protocol.





Security Issues-

When implementing a Web service, you must think about how you will secure the same. Of course, even if you decide to open up the service to everyone and anyone, you still have to think about security — For example, protecting yourself against people seeking to deny access to your service. Security includes the following:

Equipment implementation

To secure the corporate data you need to use the hardware intelligently. Various things you will have to do:

- Use firewall in your “database machines”.
- Depends on routers instead of software firewalls. Hardware is usually faster at routing and is easier to lockdown. The software firewall may have unknown interactions.
- That means, only put the machine serving the Web service on the public Internet.

Authentication of users

You need to authenticate the user when user needs to use your web for his/ her use. Several ways to authenticate the user:

- User can present identity by providing his/ her credentials supplied in the SOAP (Simple Object Access protocol message).
- Username & password can be sent as clear text via HTTP based method, which is not useful for secure applications, but it can be useful in blending with other identification techniques.
- Using a “certificate” provided by a certificate authority, the client can prove its identity during “SSL” authentication.
- All the way through HTTP basic/digest authentication or client certificates, “IIS” can plot a user identity to a real Windows user.

Protecting data so that users only see what they are entitled to see

You can use Access Control Lists to defend files and “SQL-based security” to safeguard data in your database. As part of your security for the Web service, consider using a combination of user identity and other security mechanisms as a way to protect your data.

“NTFS” limits what files a particular user can access.

Active Directory can be used to limit the network resources the user can access. An effective security plan uses a combination of methods to keep things safe.

By validating the user using Windows Integrated Authentication and denying anonymous access to the Web service, the Web method will imitate the caller when it executes. Any rights given to that caller will be imposed. This includes access to files, network resources and database objects.

Monitoring the activities of users

Provision by “google” analytical report you can monitor various activities of user by his/ her location, “IP addresses” etc.

Keep in mind that a lot of this information will be used only when something odd happens.

Web security standards-

Web security is a set of “procedures”, “practices”, and “technologies” for protecting web servers, web users, and their surrounding organizations. Security protects you against unexpected behaviour.

Previously discussed in earlier section, the “Web Service-Security” standard revolves around having the security definition included in the SOAP Header.

The testimonials in the SOAP header are managed in two ways:

1. *Username token*: It is a special element used to pass the username and password to web service.
2. *Binary security token*: It is used in whenever needed encryption techniques such as “Kerberos or X.509” are used.



Following are the steps which take place for the above figure:

- A demand can be sent from the Web service client to Security Token Service. This service can be an intermediary web service which is exclusively built to supply usernames/passwords or certificates to the actual SOAP web service.

- The security token is then passed to the Web service client.
- The Web service client then called the web service, but, this time, ensuring that the security token is embedded in the SOAP message.
- The Web service then understands the SOAP message with the authentication token and can then contact the Security Token service to see if the security token is authentic or not.

Internet Security-

It means securing communication over the internet. It includes specific security protocols such as:

- “IPSec” – Internet Security Protocol

Set of protocols designed by Internet Engineering Task Force “IETF”. It provides security at network level and helps to create authenticated and confidential packets for IP layer.

- “SSL” – Secure Socket Layer

It is a security protocol developed by Netscape Communications Corporation. It provides security at transport layer. It addresses the following security issues:

- Privacy
- Integrity
- Authentication

Threats

- Mobile worms
- Malware
- PC and Mobile ransomware
- Large scale attacks like Stuxnet that attempts to destroy infrastructure.
- Hacking as a Service
- Spam
- Phishing

Email Phishing

It is an activity of sending emails to a user claiming to be a legitimate enterprise. Its main purpose is to steal sensitive information such as usernames, passwords, and credit card details.

Such emails have links to websites that are polluted with malware and direct the user to enter details at a fake website whose look and feels are same to genuine one.

Phishing email may contain:

- *Spelling & bad grammar*: Often such emails contain grammatically incorrect text. Ignore such emails, since it can be a spam.
- *Beware of links in email*: Never reacts on any links in suspicious emails means never clicks such emails if showing some doubt in your mind.
- *Threats*: Such emails contain threat like “your account will be closed if you didn’t respond to an email message”.
- *Spoofing popular websites or companies*: These emails contain graphical objects that appear to be connected to genuine website but they actually are connected to fake websites.
- *Application vulnerabilities & cross-site scripting*: “SQL injection” occurs when attackers take advantage of sites that generate SQL queries using user-supplied data without first checking to make sure it is valid. This permits an attacker to submit malicious SQL queries and pass instructions straight to a database.
- “Cross-site scripting (XSS) attacks” target an application's users by injecting code, usually a client-side scripting such as JS script, into a Web application's output. Whenever the affected page is viewed, the browser executes the code, allowing an attacker to hijack user sessions, redirect the user to a malicious site or simply deface the page.

3.5 POINTS TO REMEMBER

Things to Remember for Writing the Perfect Blog Post

- The headline of a blog post should to be creative and magnetic. It’s what draws the reader’s attention at the first sight.
- The blogs sub header should start, finish, or explain (in short) what the content is about. The sub-header is about to generate interest of viewers.
- The blog post should be more easily understandable by using numbered lists or bullet points.
- Use full stops, commas, colons and dashes to divide the mass of words into smaller chunks of information that make sense.
- Font size and font style is important.

- Use images and graphs as required.

Some of the Common misconception about Website security-

- Hackers aren't interested in me-
- My website was built a year ago and it was secure-
- I updated my website, so I'm all set
- If they break in, I will just have my website fixed
- I don't store customer data, so it won't affect my customers
- SSL keeps me secure

Some tricks to Improve Website Security

- Keep your Software Up-to-Date
- Enforce a Strong Password Policy
- Encrypt your Login Pages
- Keep your Website Clean
- Backup your Data
- Scan your Website for Vulnerabilities.
- You can hire a Security Expert

3.6 GLOSSARY

3.7 CHECK YOUR PROGRESS

Q1 What is Security Testing?

Answer- Security testing is a process intended to reveal flaws in the security mechanisms of an information system that protect data and maintain functionality of the system as intended. Security testing is the most important type of testing for any application.

Q2 What is “Vulnerability”?

Answer- The Vulnerability can be defined as weakness of any system through which intruders or bugs can attack on the system.

Q3 What is “SQL injection”?

Answer- SQL Injection is one of the common attacking techniques used by hackers to get the critical data. Hackers check for any loophole in the system through

which they can pass SQL queries which by passed the security checks and return back the critical data. This is known as SQL injection. It can allow hackers to steal the critical data or even crash a system. Periodic security testing can prevent these kind of attacks.

Q4 List the attributes of Security Testing?

Answer- There are the following attributes of Security Testing-

- a) Authentication
- b) Authorization
- c) Confidentiality
- d) Availability
- e) Integrity
- f) Non-repudiation
- g) Resilience

Q5 What is XSS or Cross Site Scripting?

Answer- XSS or cross site scripting is type of vulnerability that hackers used to attack web applications. It allows hackers to inject HTML or JAVASCRIPT code into a web page which can steal the confidential information from the cookies and returns to the hackers.

Q6 What is SSL connection and an SSL session?

Answer- SSL or (Secured Socket Layer) connection is a transient peer-to-peer communications link where each connection is associated with one SSL Session. SSL session can be defined as association between client and server and generally created by handshake protocol.

Q7 List the full names of abbreviations related to Software security.

Answer-

IPsec– Internet Protocol Security is a suite of protocols for securing Internet

OSI– Open Systems Interconnection

ISDN Integrated Services Digital Network

GOSIP- Government Open Systems Interconnection Profile

FTP– File Transfer Protocol

DBA– Dynamic Bandwidth Allocation

DDS– Digital Data System

DES– Data -Encryption Standard

CHAP– Challenge Handshake Authentication Protocol

BONDING– Bandwidth On Demand Interoperability Group

SSH– The Secure Shell

COPS- Common Open Policy Service

ISAKMP– Internet Security Association and Key Management Protocol

USM– User-based Security Model

TLS– The Transport Layer Security

Q8 What is a Cookie?

Answer- Cookie is a piece of information received from web server and stored in a web browser which can be read anytime later.

Q9 What is a honeypot?

Answer- Honeypot is fake computer system which behaves like a real system and attracts hackers to attack on it.

Q10 What is CSRF?

Answer- CSRF (Cross Site Request Forgery) is a web application vulnerability in which the server does not check whether the request came from a trusted client or not. The request is just processed directly.

3.8 *BIBLIOGRAPHY/REFERENCES*

- <https://www.theblogstarter.com>
- <http://websitesetup.com/planmanage>
- <https://www.guru99.com/mis-ethical-social-issue.html>
- <https://startbloggingonline.com>
- <https://netbeans.org/kb/docs/web/mysql-webapp.html>
- <https://websitesetup.org/start-a-blog>
- https://www.tutorialspoint.com/internet_technologies/internet_security_overview.htm
- <https://searchsecurity.techtarget.com/tutorials>

3.9 *SUGGESTED READINGS*

- Stallings William, Cryptography and Network Security Principles and Practices, 4E Prentice Hall, 2005

UNIT 4: LAB MANUAL

CWDD 103- Administration and Hosting Configuration

4.1 GOOGLE ANALYTICS

4.1.1 INTRODUCTION

4.1.2 SETTING GOOGLE ANALYTICS ACCOUNT

4.1.3 USING GOOGLE ANALYTICS

4.2 AJAX

4.2.1 SAMPLE WEB-PAGE USING AJAX

4.3 CMS (WORDPRESS)

4.3.1 INTRODUCTION

4.3.2 INSTALLING WORDPRESS

4.3.3 WORKING WITH WORDPRESS

4.4 SUMMARY

4.5 GLOSSARY

4.6 ANSWER TO CHECK YOUR PROGRESS

4.7 REFERENCES/BIBLIOGRAPHY

4.8 SUGGESTED READINGS

4.9 TERMINAL QUESTIONS

4.1. Google Analytics

4.1.1. Introduction

- Google analytics gives you the idea of your website visitors (traffic).
- Web developers use this information given by Google Analytics to improve the performance of websites, and hence ensure the high traffic and user conversion.
- Google Analytics is a free web analytics tool developed by Google that helps you determine your website traffic and collect essential information about your website visitors

4.1.2. Setting Google Analytics Account

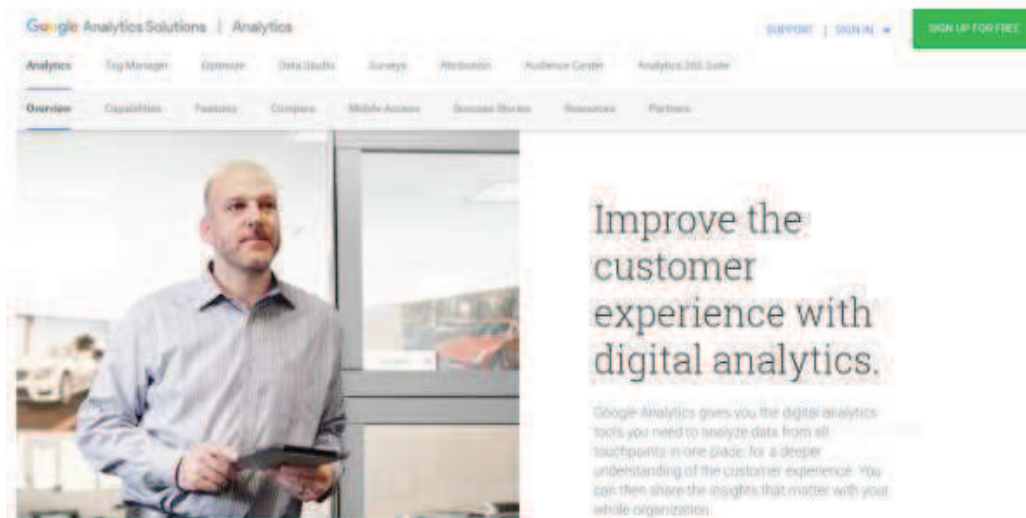
For Setting up Google Analytics Account, follow the following steps:

1. Create a Google Account (*if you do not have one*).
2. With Google Account, you can go to Google Analytics (<https://www.google.com/analytics/>) to set new Account.



3. Click on Analytics Tab, A new page will open.

Press ***“Sign up for free”*** Green Button to start the registration process.



When you click on the green button, you will be provided with the three steps you need to take in order to set up your Google Analytics account. The page you will arrive at will look like this:

4. Now enter our new Account information for your website.

New Account

What would you like to track?

☐ Website ☐ Mobile app

Tracking Method

This property works using Universal Analytics. Click [Get Tracking ID](#) and implement the Universal Analytics tracking code snippet to complete your set up.

Setting up your account:

Account Name required
Accounts are the top-most level of organisation and contain one or more tracking IDs.

Setting up your property

Website Name required

Website URL required

Example: <http://www.mywebsite.com>

Industry Category

Reporting Time Zone

When you enter the required information in above form, you will get the following option.

The screenshot shows the Google Analytics configuration interface. At the top, the 'Reporting Time Zone' is set to 'United Kingdom' with a dropdown arrow, and '(GMT+00:00) GMT (no daylight saving)' is selected. Below this is the 'Data Sharing Settings' section. It contains a paragraph about data security, a link to 'Learn more' about data sharing options, and four checked options: 'Google products & services' (RECOMMENDED), 'Benchmarking' (RECOMMENDED), 'Technical support' (RECOMMENDED), and 'Account specialists' (RECOMMENDED). Each option has a brief description. At the bottom, it states 'Learn how Google Analytics safeguards your data.' and 'You are using 0 out of 100 accounts.' At the very bottom, there are two buttons: 'Get Tracking ID' (blue) and 'Cancel' (grey).

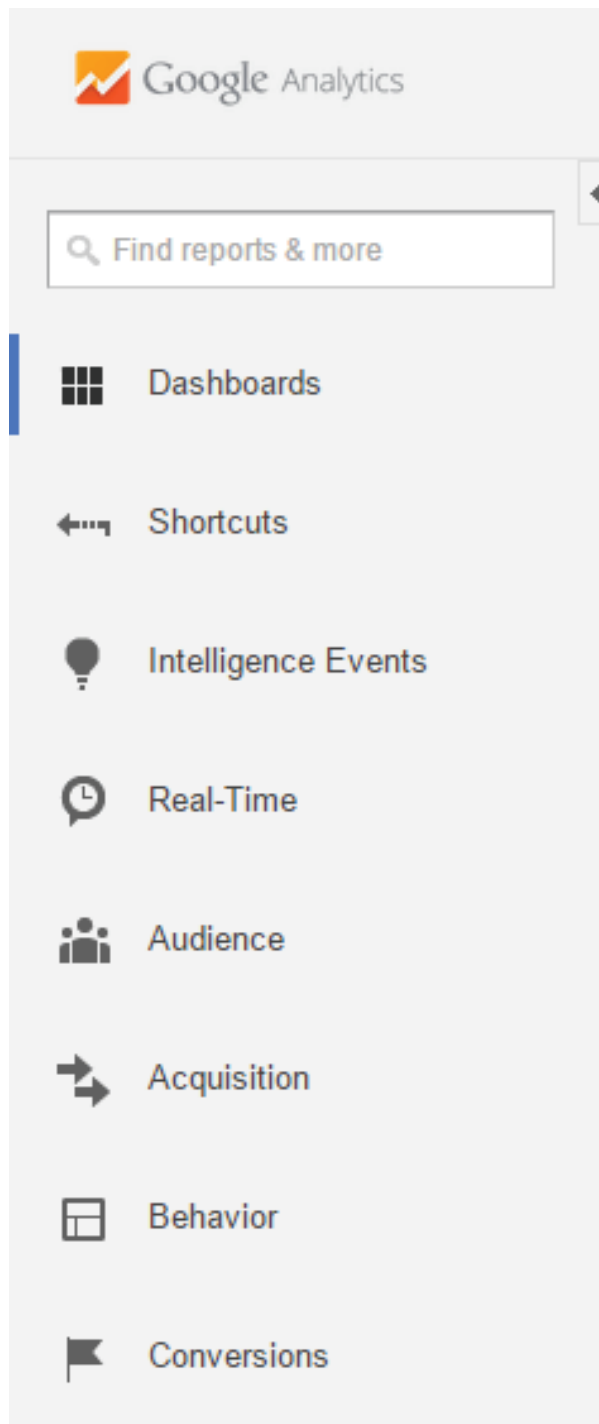
Click on “***Get Tracking ID***” blue button.

5. In next step, you will get a website ***tracking ID & tracking code***. This is a JavaScript code bundled in `<script>` `</script>` tag. Through this code, Google will track your website for visitors. You need to copy this tracking code and paste it in every page of your website before closing `</body>` tag.

4.1.3. Using Google Analytics

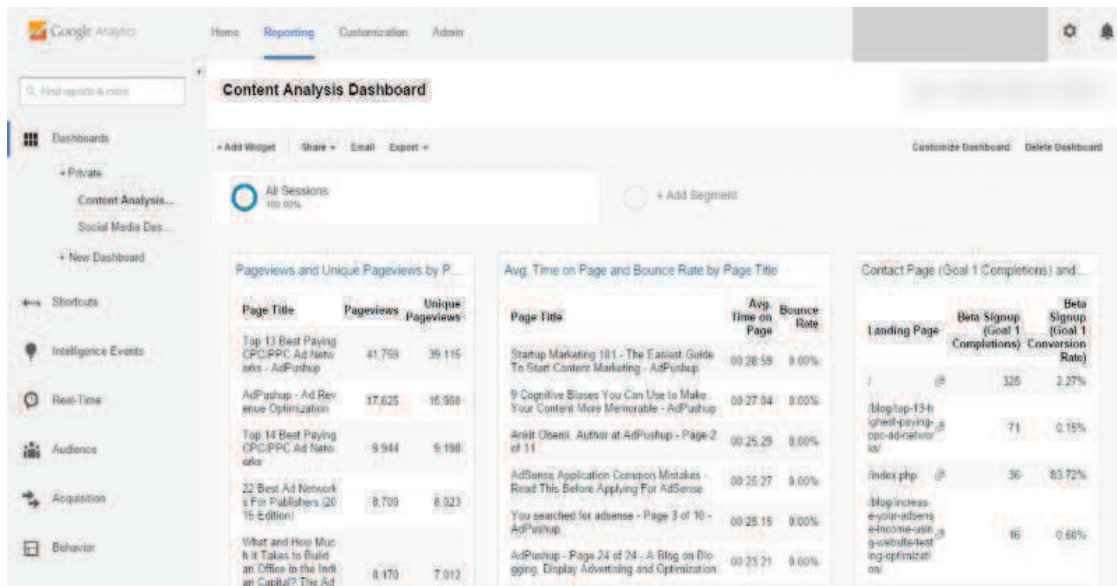
Once you have set your Google Analytics account successfully, within 24 Hrs you will start getting reports based on your website users. Through these reports, you can analyze your website improvement areas. You can see these reports by logging into your Google Analytics Account.

Various Analytic Reports present in Google Analytics are:



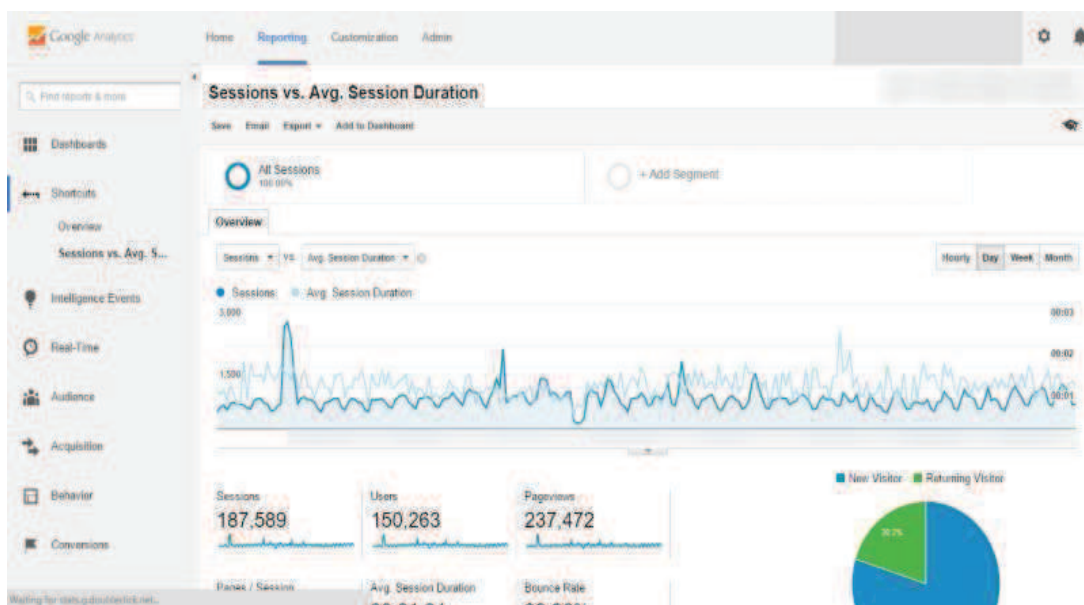
4.1.3.1. Dashboards

In Dashboards, you can see a summary of your important reports. You can create and customize reports in dashboards very easily, and you can add or delete as many reports as you want.



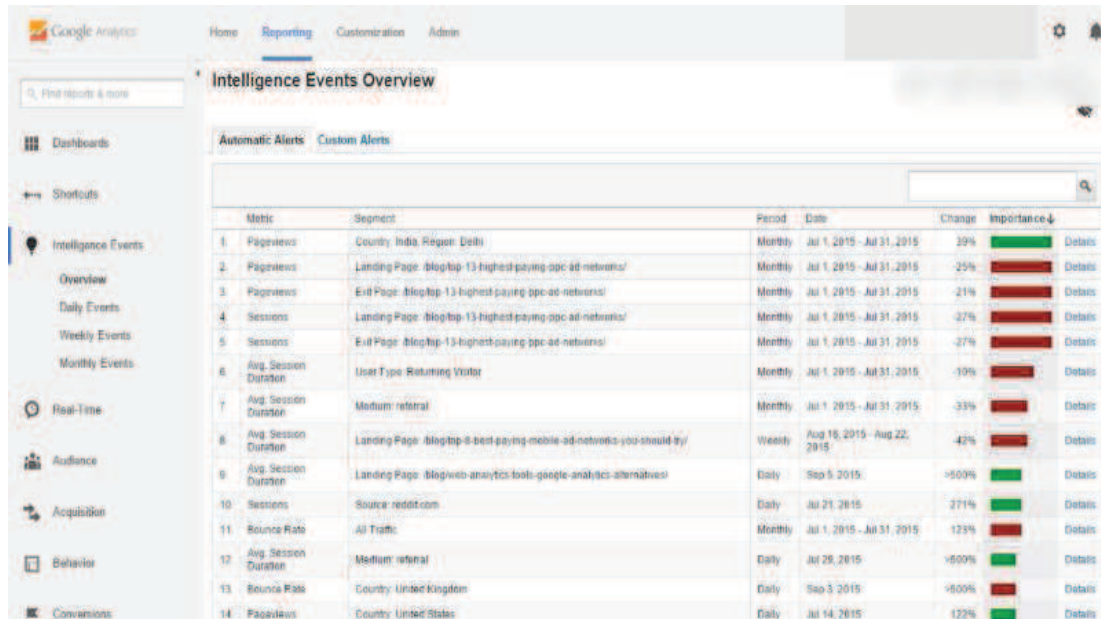
4.1.3.2. Shortcuts

Shortcuts will provide you the opportunity to find the quick access to most used reports.



4.1.3.3. Intelligence events

Intelligence events will show you variation in your website traffic.



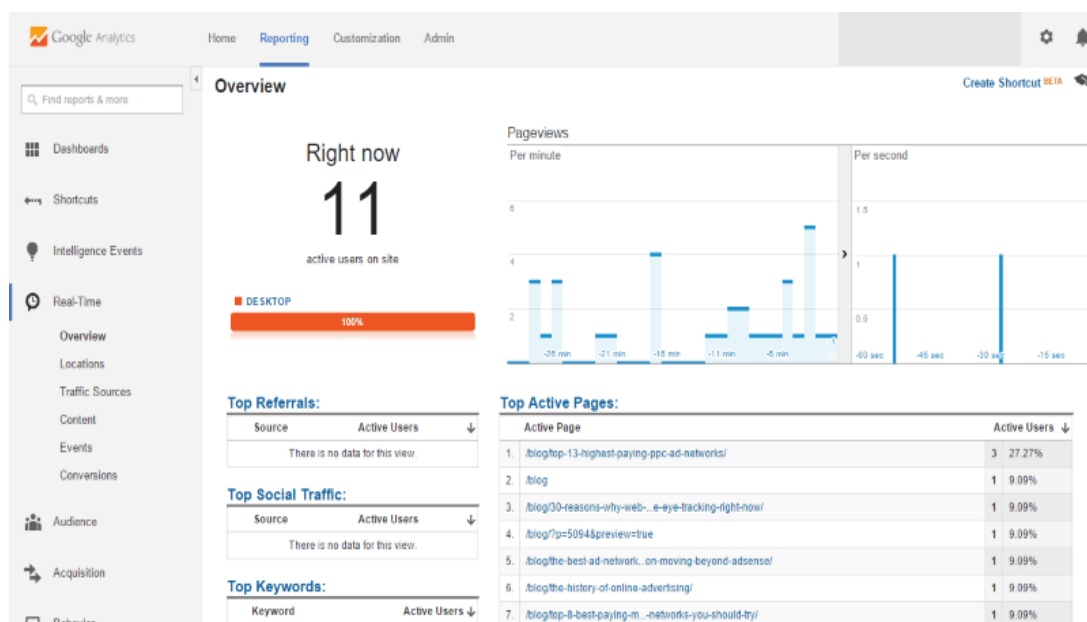
Intelligence Events Overview

Automatic Alerts Custom Alerts

	Metric	Segment	Period	Date	Change	Importance	
1	Pageviews	Country: India, Region: Delhi	Monthly	Jul 1, 2015 - Jul 31, 2015	29%	High	Details
2	Pageviews	Landing Page: /blog/top-13-highest-paying-ppc-ad-networks/	Monthly	Jul 1, 2015 - Jul 31, 2015	-25%	Low	Details
3	Pageviews	Exit Page: /blog/top-13-highest-paying-ppc-ad-networks/	Monthly	Jul 1, 2015 - Jul 31, 2015	-21%	Low	Details
4	Sessions	Landing Page: /blog/top-13-highest-paying-ppc-ad-networks/	Monthly	Jul 1, 2015 - Jul 31, 2015	-27%	Low	Details
5	Sessions	Exit Page: /blog/top-13-highest-paying-ppc-ad-networks/	Monthly	Jul 1, 2015 - Jul 31, 2015	-27%	Low	Details
6	Avg. Session Duration	User Type: Returning Visitor	Monthly	Jul 1, 2015 - Jul 31, 2015	-19%	Low	Details
7	Avg. Session Duration	Medium: referral	Monthly	Jul 1, 2015 - Jul 31, 2015	-33%	Low	Details
8	Avg. Session Duration	Landing Page: /blog/top-8-best-paying-mobile-ad-networks-you-should-try/	Weekly	Aug 16, 2015 - Aug 22, 2015	-42%	Low	Details
9	Avg. Session Duration	Landing Page: /blog/web-analytics-tools-google-analytics-alternatives/	Daily	Sep 5, 2015	+500%	High	Details
10	Sessions	Source: reddit.com	Daily	Jul 21, 2015	271%	High	Details
11	Bounce Rate	All Traffic	Monthly	Jul 1, 2015 - Jul 31, 2015	-123%	Low	Details
12	Avg. Session Duration	Medium: referral	Daily	Jul 28, 2015	+600%	High	Details
13	Bounce Rate	Country: United Kingdom	Daily	Sep 3, 2015	+500%	High	Details
14	Pageviews	Country: United States	Daily	Jul 14, 2015	122%	High	Details

4.1.3.4. Real-time reports

Real-time reports will provide you the information of those users who are currently on your website.



4.1.3.5. Audience reports

Audience report will give you every detail of your website user like their browser, device, location, session etc.

You can see various reports under sections like:

Demographics: This will give analysis about age and gender of your audience.

Interest: This will show you the market segmentation.

Geo: This shows you language and location.

Technology: This will give your reports about Browsers, Operating systems, and network of your audience.

Mobile: Under this section, Mobile device information can be seen.

Custom: In this section, you can set the custom report that you want to see from the entire available one.

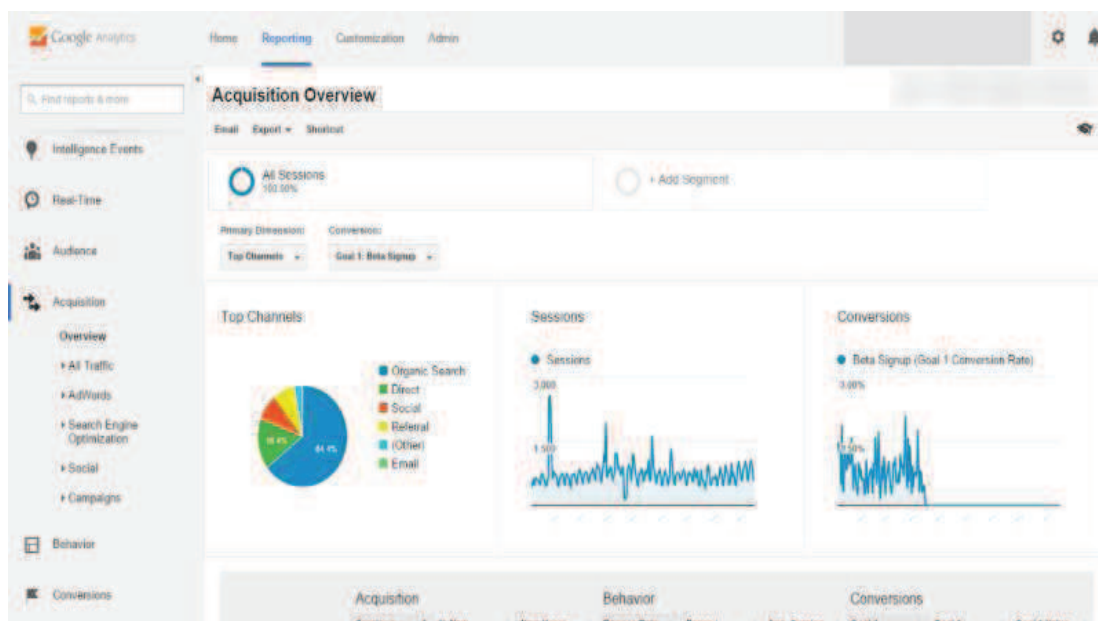


4.1.3.6. Acquisition reports

Acquisition report will give you information about how traffic came to your website. It will provide you with a summary of your direct, organic, referral and social (coming from social media) traffic, as well as traffic coming from email.

Using Acquisition Report, you can:

1. Check all the traffic coming from different sources in your website.
2. You can also trace traffic coming from Google Ad-words.
3. You can also track social media (like Facebook, Google+, and LinkedIn) traffic.

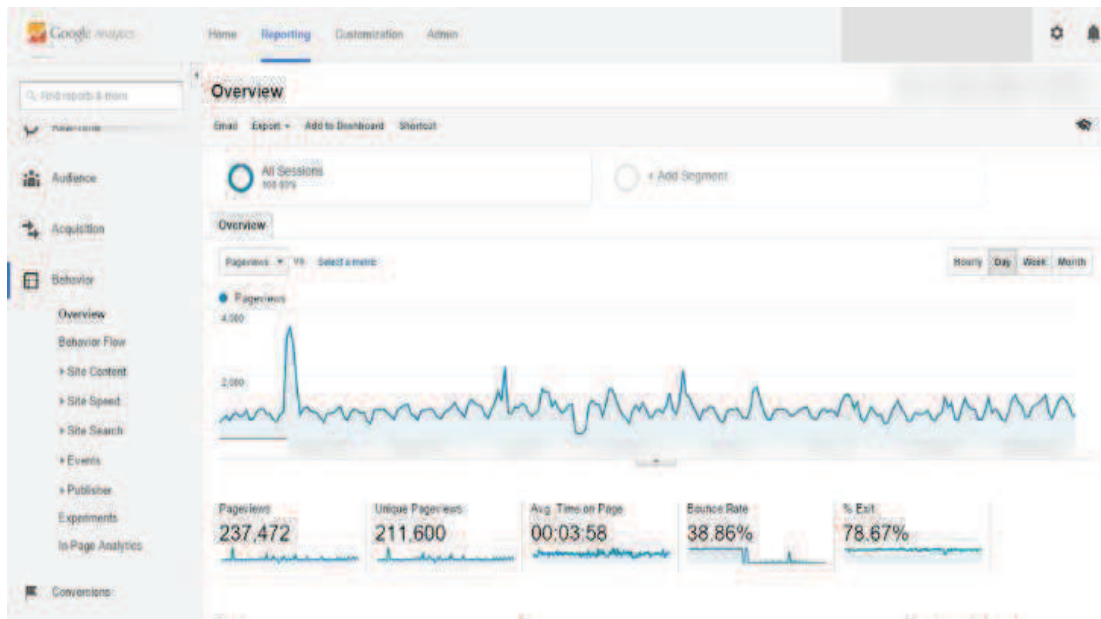


4.1.3.7. Behavior reports

The Behavior reports will give you analysis how your website visitors are interacting with your website, so that you can know how your content is truly performing. Like, which page they are interacting most etc.

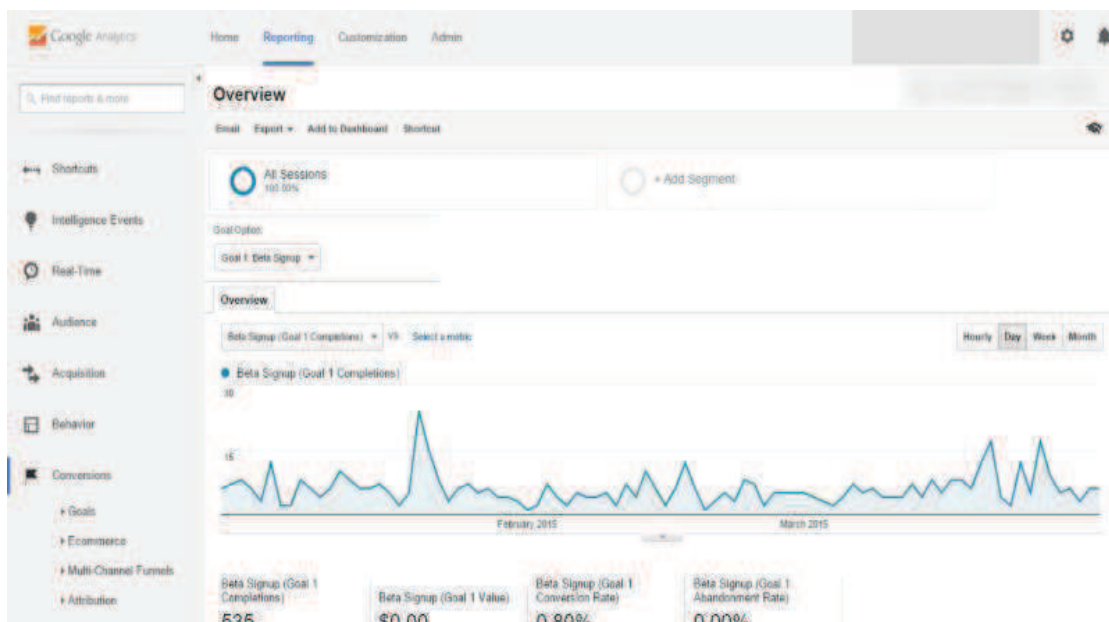
1. **Site Content:** Here you can see that how many pages of your website the visitors view. You can also check landing pages, exit pages in this section.
2. **Site Speed:** Here, you can check page load time, execution speed, and performance data.

3. **Site Search:** It gives you a view of how the audience searches across your site, what they usually look for, and how they arrive at a particular page.
4. **Events:** Events are users' actions with content (like downloads, sign up, etc.). You can see these events under this section.



4.1.3.8. Conversion reports

The Conversions reports will show you the procedures your website visitors have taken before they actually converted to your website.



4.2 *AJAX*

AJAX stands for *Asynchronous JavaScript and XML*, is a set of techniques for creating highly interactive websites and web applications. Ajax is all about updating content of webpage without reloading it.

XMLHttpRequest object plays an important role in sending and receiving data to and from server.

Following are the steps carried out when a request is sent to server using XMLHttpRequest object:

1. User sends a request from the browser and a call goes to XMLHttpRequest object.
2. HTTP Request is sent to the server by XMLHttpRequest object.
3. Server interacts with the database using server side language like PHP etc.
4. Data is retrieved.
5. Server sends XML data to the XMLHttpRequest callback function.
6. HTML and CSS data is displayed on the browser.

4.2.1 Sample Web-Page using Ajax

In this sample, we will use two files one is HTML & other is TEXT file written in notepad.

First, create a text file named as ***data.txt*** and write some text data in that file. Below is the sample text you can use for your reference.

Asynchronous JavaScript and XML

AJAX stands for Asynchronous JavaScript and XML.

XMLHttpRequest Object can be used to call data from text files, databases, XML file etc. in the background unknown to the user.

Now, create an **HTML** file and name it as ***ajaxPractice.html***. We will code for HTML, JavaScript, & XML in this file. We will send request for ***data.txt*** file with the help of ***XMLHttpRequest*** object and then use the data for display in this HTML file.

Below is the Code for handling TEXT file with the help of AJAX:

```
<!DOCTYPE html>

<html>

<body>

    <div id="demo">

        <button type="button" onclick="loadTxt()">Change
        Content</button>

    </div>

<script>

    function loadTxt () {

        var objXMLHTTP = new XMLHttpRequest();

        objXMLHTTP.onreadystatechange = function () {

            if (this.readyState == 4 && this.status == 200)
            {

                document.getElementById("demo").innerHTML =
                this.responseText;

            }

        };

        objXMLHTTP.open("GET", "data.txt", true);

        objXMLHTTP.send();

    }

</script>

</body>

</html>
```

After the above code has been written we have two files in our hand

- 1) ***ajaxPractice.html*** – It has all the source code for HTML, JAVASCRIPT, AJAX
- 2) ***data.txt*** – It has the data, which we used to call in HTML (***ajaxPractice.html***) page, with the help of AJAX. This text data is displayed in HTML file.

Now, we have to place these files in a **server** and then call html file from browser. However, we cannot do this at this time, as we are unaware of a **Server**. We will get the information about server in next chapter.

According to above code, data in text file will be displayed in the div block that has *id*="demo". Fuction loadTxt() will be called when button is clicked.

The following operation will be performed inside the function

1. A new XMLHttpRequest object XMLHttpRequest will be created.
2. Onreadystatechange event will be fired automatically when the state of XMLHttpRequest object changed.
3. When XMLHttpRequest object will change its state to 4 and status to 200, the txt file data will be displayed on the div tag specified.

4.3 CMS (WordPress)

4.3.1. Introduction

WordPress is a free and open-source **C**ontent **M**anagement **S**ystem (CMS). It is an online blogging site based on PHP and MySQL. You can create simple blog to fully customizable website in WordPress.

4.3.2. Installing WordPress

WordPress installation is very easy and takes few minutes to complete. All hosting providers allow WordPress installation in their control panel.

- You can install WordPress by just clicking in its icon present in the hosting server.
- For installing WordPress in local Computer
 - If you want to install WordPress in local server, then you need a XAMPP (Apache, PHP, and MySQL) install in your computer.
 - Download WordPress from **WordPress.org** and install it manually /into the XAMPP control Panel.

4.3.3 Working with WordPress

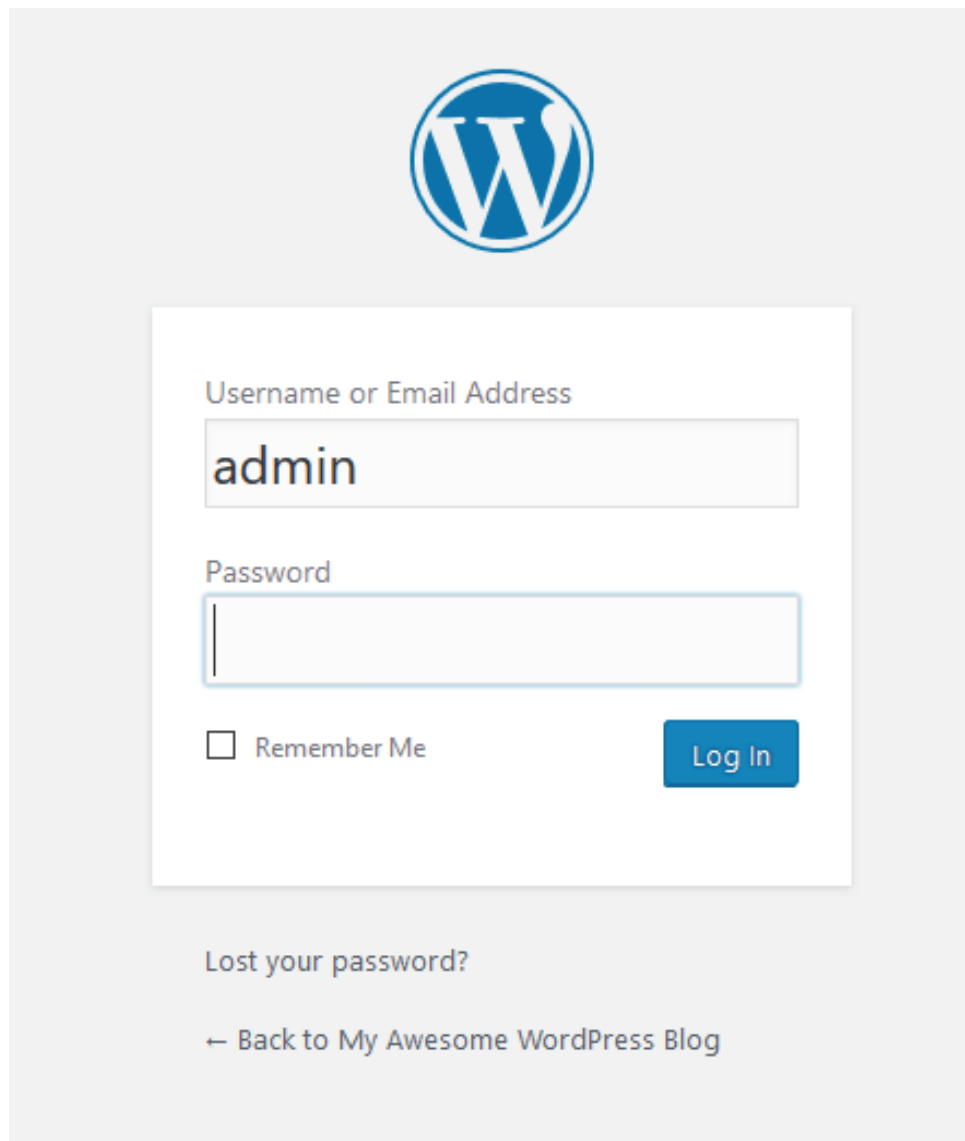
Once you finish installing WordPress, first thing you have to do is to log on to its dashboard for further working.

4.3.3.1. Logging in to the WordPress

For Logging into your WordPress Admin Panel:

http://www.yourdomain.com/wp-admin

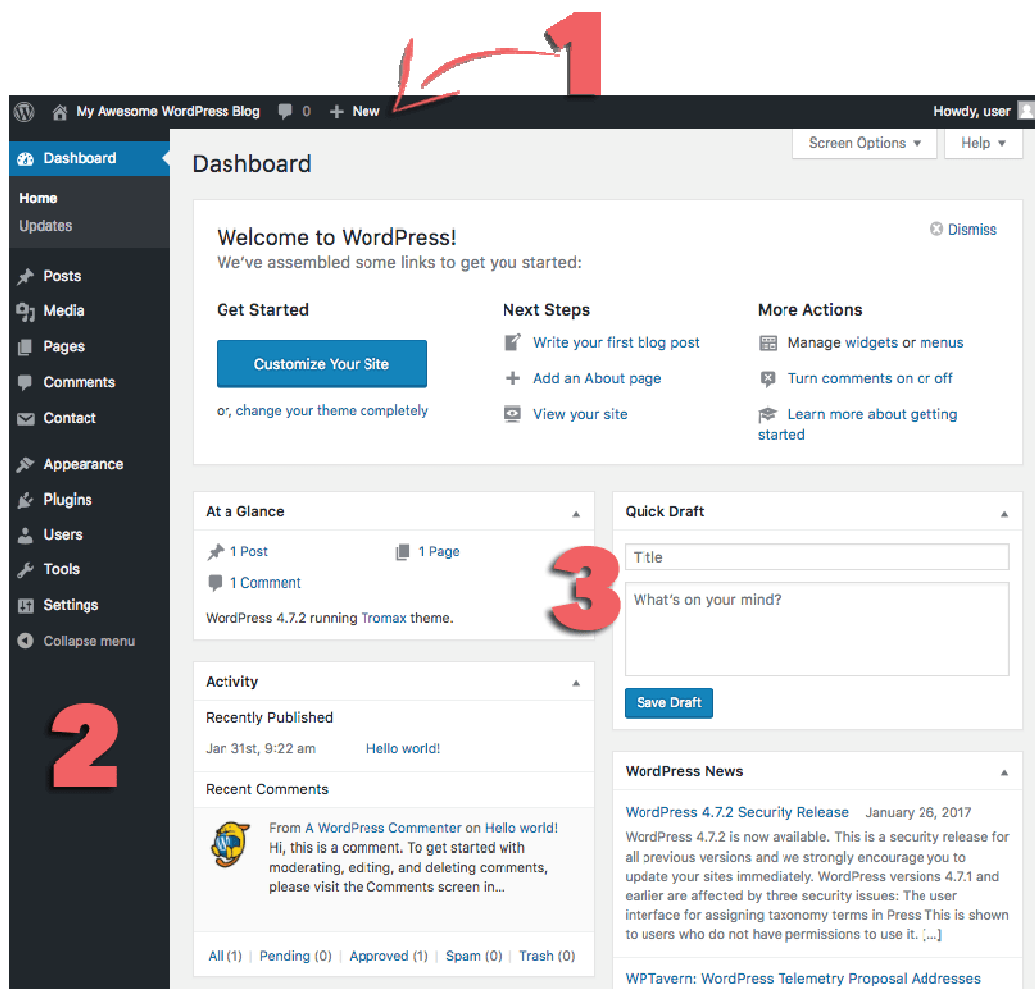
This will redirect you to login screen.

The image shows the WordPress login interface. At the top center is the WordPress logo, a blue 'W' inside a circle. Below it is a white rectangular login box. Inside the box, the text 'Username or Email Address' is above a text input field containing 'admin'. Below that, the text 'Password' is above an empty password input field. Under the password field is a checkbox labeled 'Remember Me'. To the right of the checkbox is a blue button with the text 'Log In'. Below the login box, the text 'Lost your password?' is displayed. At the bottom, there is a link that says '← Back to My Awesome WordPress Blog'.

The username and password is the same you have entered at the time of installing WordPress.

After you entered the correct username and password, you will redirect to the WordPress Administrator Dashboard.

It has three main sections:

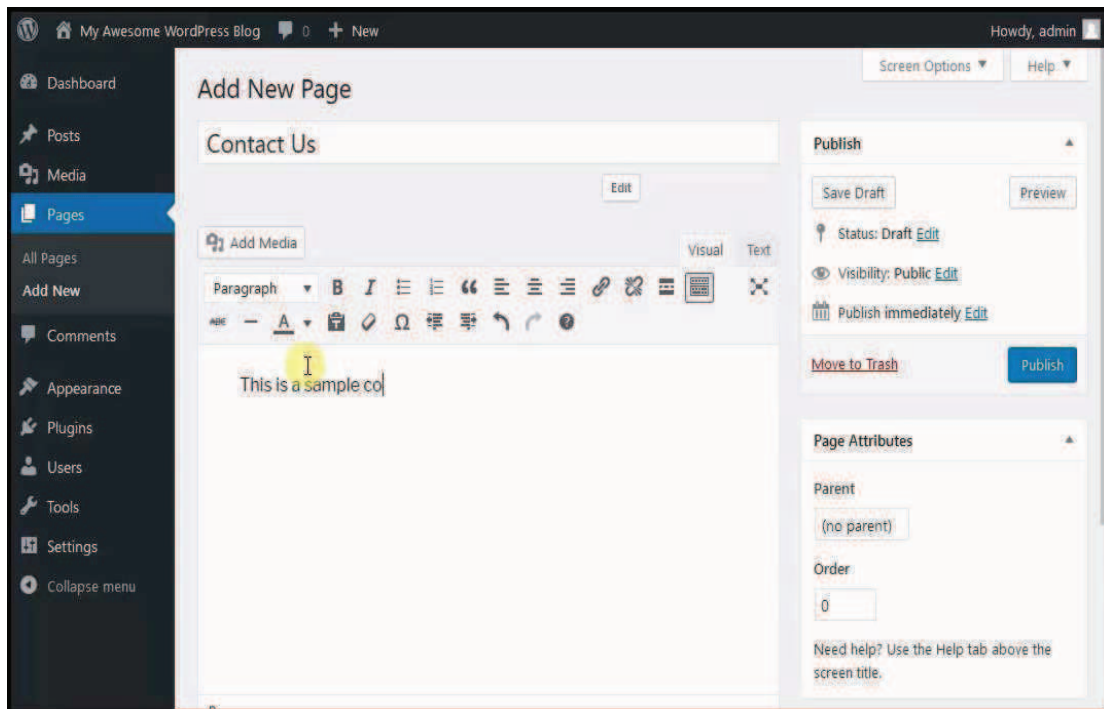


1. Toolbar is at the top of the page. It contains navigation to the commonly used functions.
2. Main navigation menu is on the left-hand side.
3. Main working area where we will find all the content for working.

4.3.3.2. Publishing Content to WordPress

Step 1 - Creating a New Page

For creating a new page in WordPress, open the **Add New** section under **Pages** menu or click **New** -> **Page** button at the top toolbar.



Step 2 - Creating a New Post

For creating a new post in WordPress open the **Add New** section under **Posts** or choose **New -> Post** option from the top toolbar.

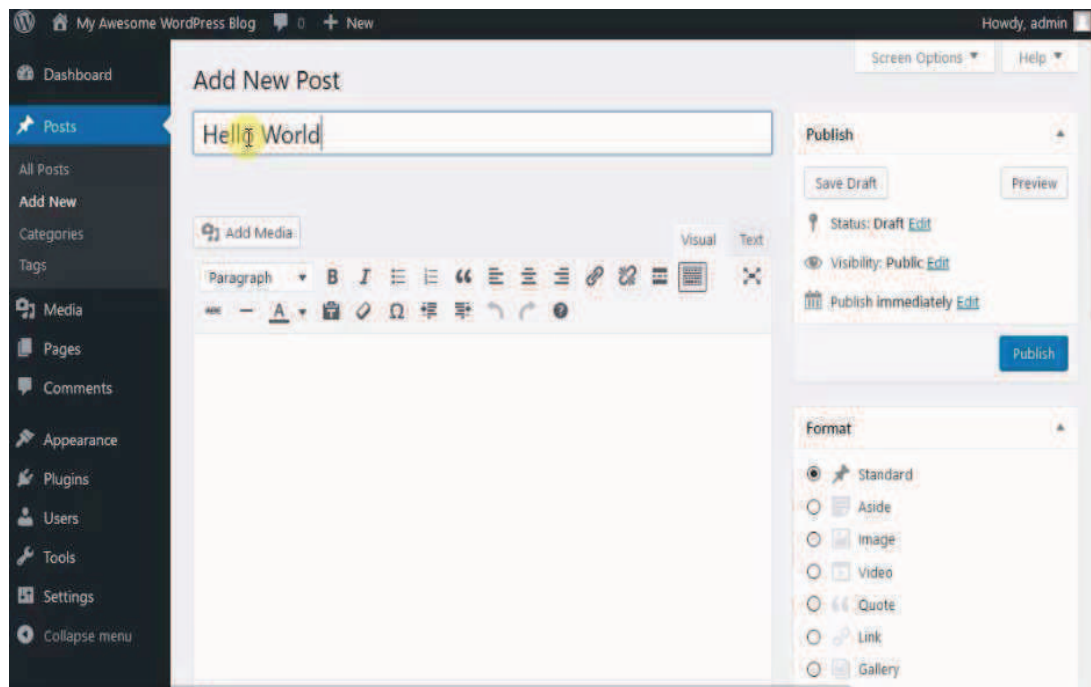
At the right-hand side of the screen, we have certain features.

Publish: By clicking the Publish button your post will go live. If you decide to delete the post, press the Move to Trash button.

Categories: On this box, you can assign your post to a specific category. You can even create a new one by pressing the **+Add New Category** button.

Tags: box allows to quickly adding new tags.

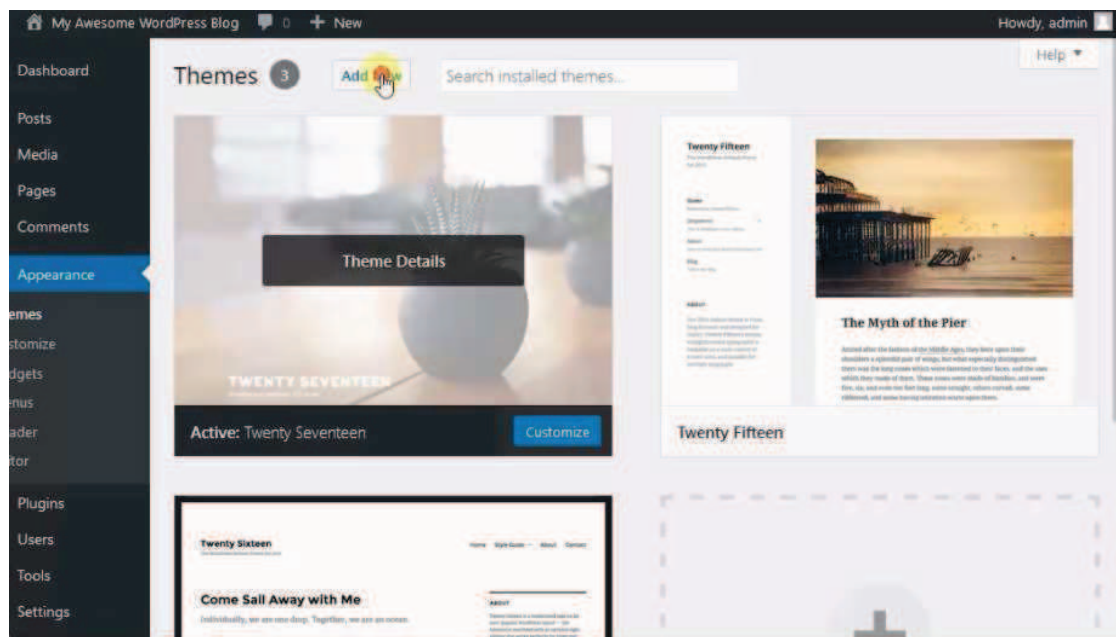
Featured Image: You can assign a featured image to a post. It will be visible at the very top of the post.



Step 3 – Installing WordPress Themes

You can change the look of your WordPress website by installing different themes freely available in your dashboard.

Click on the Appearance section and install the particular theme.



4.3.3.3 WordPress Plugins

Plugins adds special features to an existing WordPress website. They also extend the functionality of WordPress. There are about 48,000 Plugins available in WordPress.org plugin directory. Other third party plugin are also available to use in WordPress.

You can activate or deactivate plugin at any time you want. Once Plugins are installed, they get automatically registered to your WordPress database.

There are WordPress Plugins to create

- E-Commerce
- Image Sliders
- Advance SEO (Search Engine Optimization),
- Enhance performance,
- Add contact forms,
- Social media buttons,
- Build galleries,
- Much more...

Plugins [Add New](#)

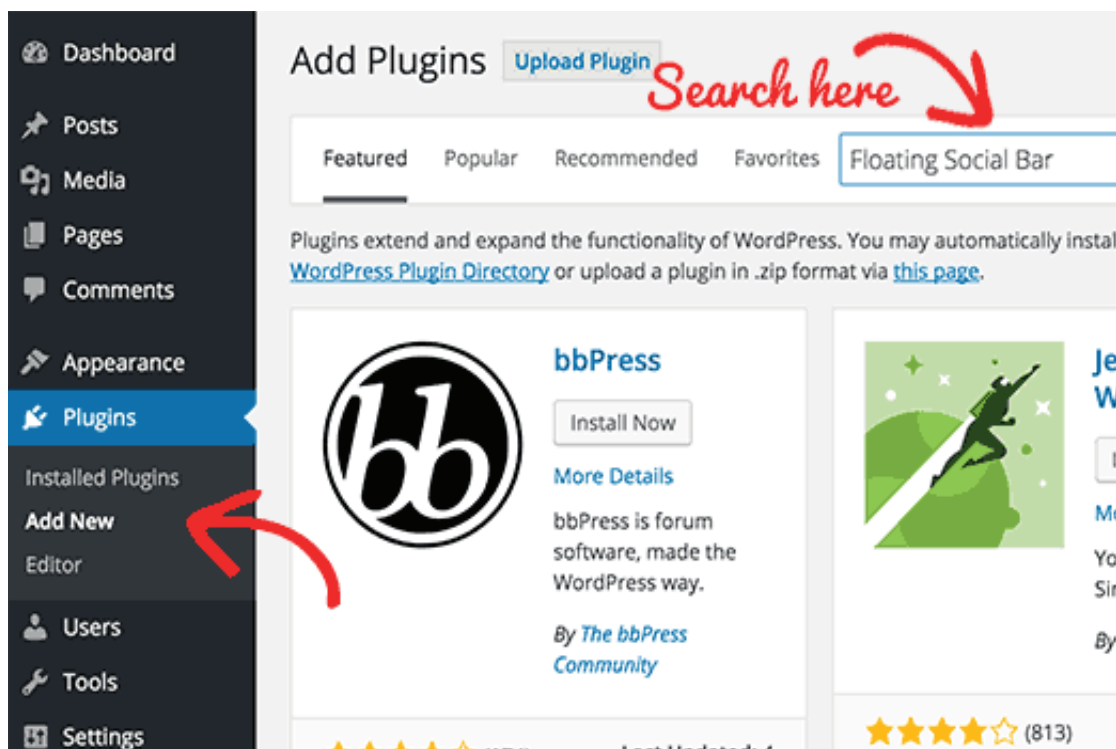
All (4) | [Active \(1\)](#) | [Inactive \(3\)](#) | [Recently Active \(1\)](#)

Bulk Actions [Apply](#)

<input type="checkbox"/> Plugin	Description
<input type="checkbox"/> Akismet Activate Edit Delete	Used by millions, Akismet is quite possibly the best way to protect your blog from spam even while you sleep. To get started: 1) Click here to get an API key, and 3) Go to your Akismet configuration page. Version 3.2 By Automattic View details
<input type="checkbox"/> Easy Testimonials Settings Deactivate Edit	Easy Testimonials - Provides custom post type for testimonials. Version 2.1.2 By Gold Plugins View details
<input type="checkbox"/> Hello Dolly Activate Edit Delete	This is not just a plugin, it symbolizes the hope of WordPress. Hello, Dolly. When activated, it displays the name of the author of the post on every page. Version 1.2.2 By Miklós Balogh View details

How to find WordPress Plugins:

Simply go to **Plugins >> Add New** page. Then search by typing plugin name or functionality you want to add.

**4.3.3.4 WordPress Users**

Various types of users can be created in WordPress. Every user can be set with different permissions to access WordPress Website. Only Website Administrator can set these roles.

Some of the predefined roles are:

- **Administrator** – An Administrator can do anything and everything on the WordPress site as it has all the rights, such as creating more users, inviting more users and also removing them.
- **Editor** – The Editor has right to access all the posts, links, pages, categories, comments, and tags. They can create, publish, edit or delete any posts or pages.
- **Author** – The Author can only write posts, upload pictures, edit, and publish their own posts.

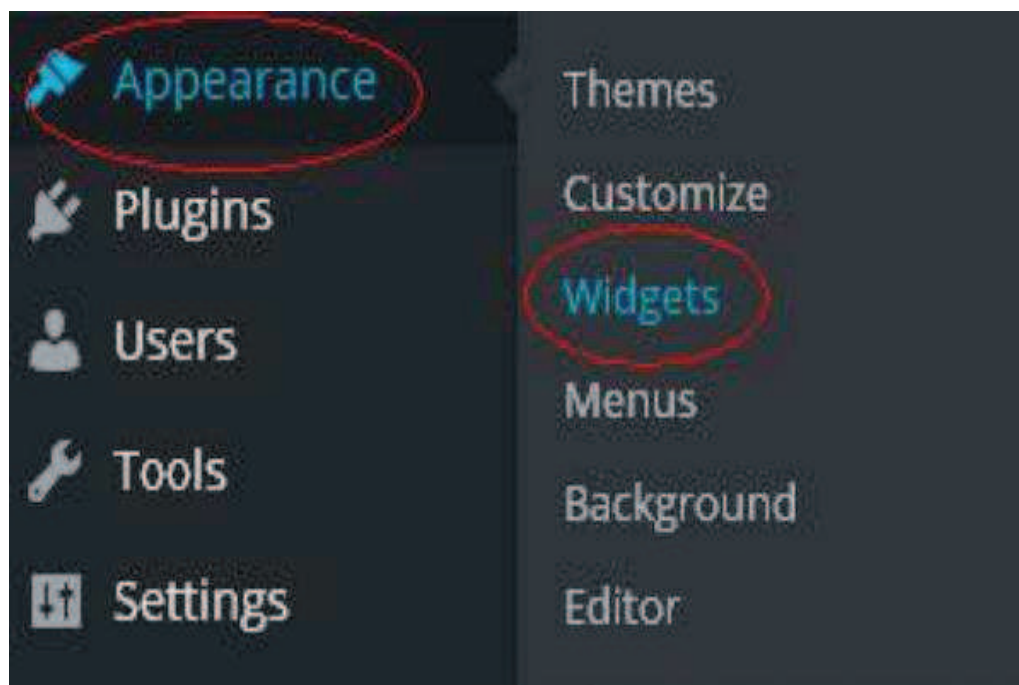
- **Contributor** – The Contributor can only write and edit their posts until published. They can build their own posts and pages but cannot publish them. They cannot upload images or files but can see your site's status. When they want to publish any post, it must be first notified individually to the administrator for review. When the post is approved, the contributor cannot make any changes once published.
- **Follower** – The Follower can only read and comment on the posts.
- **Viewer** – Viewers can only view your posts.

4.3.3.5. WordPress Widgets

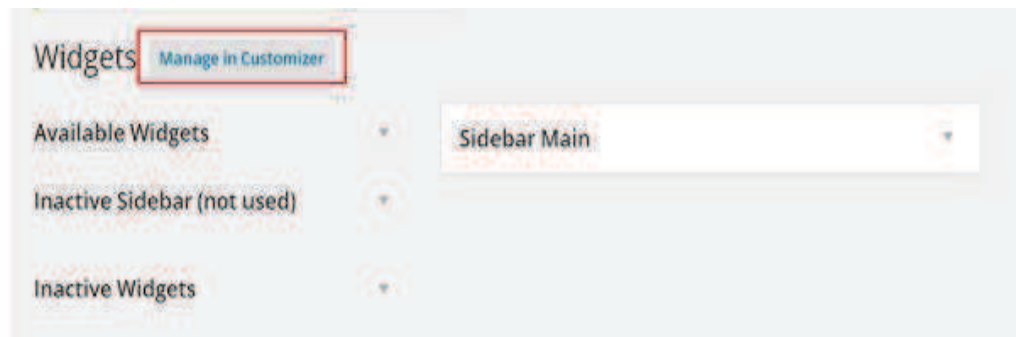
Widgets are the blocks in WordPress websites used to perform specific function. These are the design areas (blocks) of websites. These widgets vary from theme to theme.

For working on WordPress, widgets perform the following action:

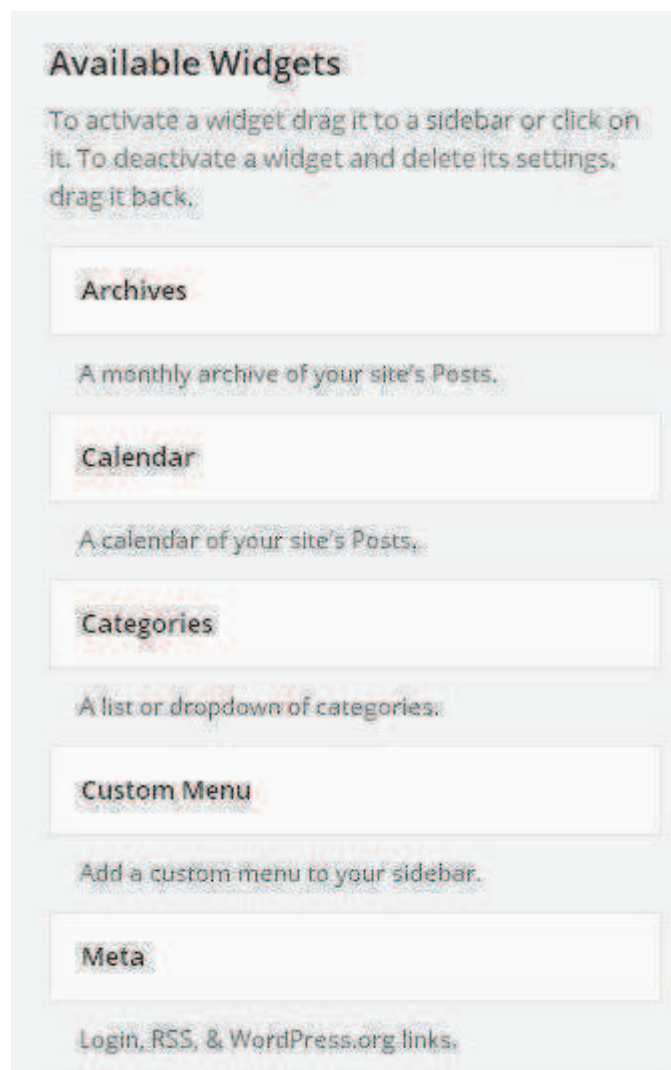
Step 1) Click on **Appearance** → **Widgets**.

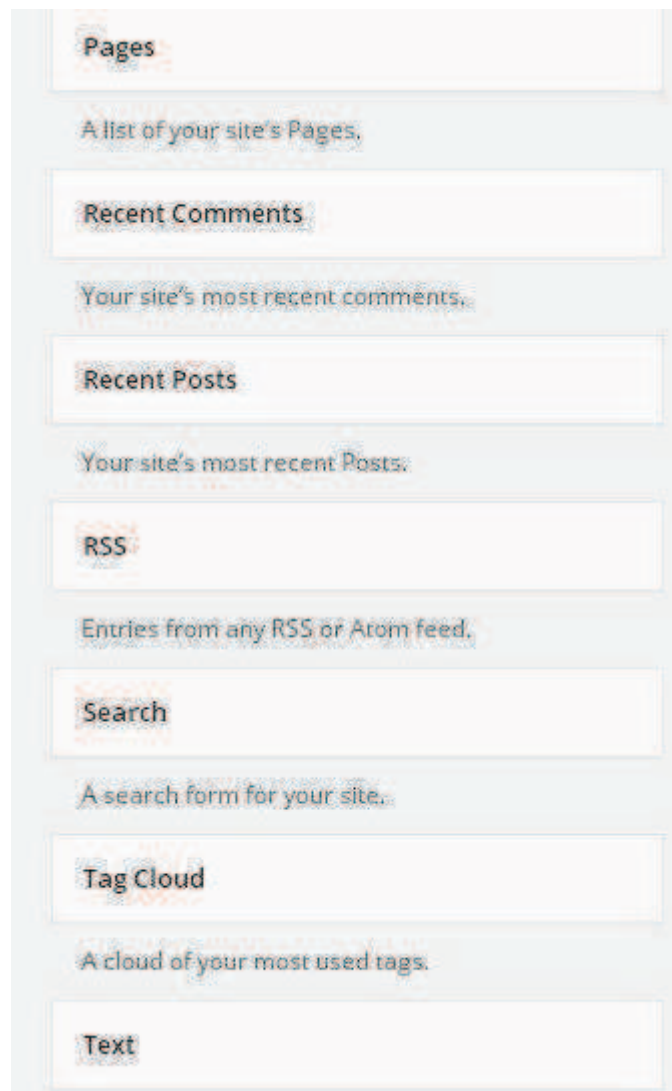


Step 2) The following screen will appear showing available widgets in the website.



Step 3) Click on *Manage in Customizer*, you will get the following widgets





Select the available *widgets* from above options to get them in your website.

4.4 Summary

In this Manual, we practice how to create work on Google analytics, AJAX and WordPress.

We saw that Google Analytics gives you a free feature to get your website ready for different users. AJAX is all about updating content of webpage without reloading it. In addition, you can create simple blog to fully customizable website in WordPress.

4.5 Glossary

1. **XAMPP:** *XAMPP* is a completely free, easy to install Apache distribution containing Apache, MySQL, PHP, and Perl.

2. **Apache:** *The Apache* HTTP Server, colloquially called Apache, is free and open-source cross-platform web server software.
3. **Web Server:** *A web server* is a computer system that processes requests via HTTP, the basic network protocol used to distribute information on the World Wide Web.
4. **AJAX:** *AJAX* stands for *Asynchronous JavaScript and XML*, is a set of techniques for creating highly interactive websites and web applications.

4.6 Answer to check your progress

- Q1. Define Google Analytics.
- Q2. Why AJAX is used?
- Q3. Explain CMS?
- Q4. What do you understand by XMLHttpRequest object?
- Q5. Why WordPress is most popular CMS used? Explain.
- Q6. How do you install Plugins in WordPress?
- Q7 Explain the difference between Posts and Pages in WordPress
- Q8. What is WordPress Taxonomy?
- Q9. What are advantages and disadvantages of WordPress?
- Q10. Explain Theme in WordPress.

4.7 References/Bibliography

1. <https://www.w3schools.com/>
2. <http://www.tutorialspoint.com/>
3. <https://www-s.acm.illinois.edu/>
4. <http://www.springer.com/gp/book/>

4.8 Suggested Readings

1. <https://www.thehostingwebsite.com/website-hosting-process/>
2. https://www.w3schools.com/xml/ajax_intro.asp
3. <http://api.jquerymobile.com/>
4. <https://www.google.com/analytics/>
5. <https://www.tutorialspoint.com/wordpress/index.htm>
6. <https://learn.wordpress.com/>

4.9 Terminal Questions

- Q1. Why Google Analytics is used? Explain in detail.
- Q2. How WordPress is installed on local machine?
- Q3. What do you mean by publishing a CMS? Explain the steps of publishing.
- Q4. Explain AJAX with the help of an example.
- Q5. What is the difference between wordpress.com and wordpress.org? Explain

UNIT 5: LAB MANUAL

CWDD 103- Administration and Hosting Configuration

5.1 COOKIES

5.1.1 INTRODUCTION

5.1.2 WORKING WITH COOKIES

5.2 UI / UX

5.2.1 INTRODUCTION

5.2.2 USER INTERFACE (UI) ELEMENTS

5.2.3 USER INTERFACE (UI) DESIGN PROCESS

5.3 TESTING & MAINTENANCE OF A WEB PROJECTS

5.3.1 WEB APPLICATION TESTING

5.3.2 WEB APPLICATION MAINTENANCE

5.4 SUMMARY

5.5 GLOSSARY

5.6 ANSWER TO CHECK YOUR PROGRESS

5.7 REFERENCES/BIBLIOGRAPHY

5.8 SUGGESTED READINGS

5.9 TERMINAL QUESTIONS

5.1. Cookies

5.1.1. Introduction

- You can think of cookies as text files, which is stored to your computer. Web server, creates such a file on local computer. After the file created, the web server can read and write content from and to this file.
- Cookies are developed to remember information about the user, *as when web server sent a web page to a browser, the connection is lost, and the server forgets everything about the user.*

5.1.2 How Cookies work

A cookie is a small text file that is stored in a browser. It contains some data:

1. A ***name-value pair*** having the actual data
2. An ***expiry date*** after which it is no longer legal
3. The ***domain and path*** of the server it should be sent to

When a page is requested from a server to which a cookie will be sent, the cookie is added to the HTTP header. Server side programs can then read out the information and make a decision that you have the right to view the page you requested or not.

Therefore, every time you visit the site the cookie comes from, information about you is available. This is very nice occasionally, at other times it may somewhat put in danger your privacy. Luckily, more and more browsers give you the opportunity to manage your cookies (deleting the one from the big ad site, for example).

JavaScript can read cookies too. They are mostly used for storing user preferences.

5.1.2.1 Name-value

Each cookie has a name-value pair that has the actual information. The name of the cookie is for your benefit, you will get this name when reading out the cookie information.

If you want to read out the cookie, you search for the name and see what value is attached to it.

5.1.2.2 Expiry date

Each cookie has an expiry date after which it is deleted/ non-validated. If you do not give the expiry date, the cookie will be deleted when you close the browser.

5.1.2.3 Domain and Path

Each cookie also has a domain and a path. The domain tells the browser to which domain the cookie is set. By default, the domain name of the page will be set.

The path gives the directory where the cookie will be stored. Normally the cookie is valid throughout the domain.

5.1.3. Working with Cookies

JavaScript as well as other programming languages like PHP, JSP, and ASP.net can be used to work on cookies. Here we will use JavaScript to create, read and delete cookies.

5.1.3.1 Creating a Cookie

You can create a cookie in JavaScript with ***document.cookie*** method.

```
document.cookie = "username=Uttarakhand Open University";
```

The above code creates a cookie named ***username*** with value ***Uttarakhand Open University***. This cookie will delete automatically when the browser is closed. You can also add an expiry date.

```
document.cookie = "username= Uttarakhand Open University;  
expires=Mon, 31 Dec 2018 12:00:00 UTC";
```

5.1.3.2 Reading a Cookie

For reading a cookie, you can write JavaScript code as:

```
var readCookie = document.cookie;
```

The above code will return all cookies in one string like ***cookie1=value; cookie2=value; cookie3=value;***

5.1.3.3 Deleting a Cookie

To delete a cookie JavaScript use the same method as we used for creating a cookie. Set *expires* parameter to a passed date:

```
document.cookie = "username=; expires=Thu, 01 Jan 1970  
00:00:00 UTC";
```

5.1.3.4 Sample Program to work on Cookie

```
<html>  
  <head>  
    <title>First Cookies Example</title>  
  </head>  
<body>  
  
  <script language="JavaScript">  
    function set_cookie (name, value, expires_year,  
    expires_month, expires_day)  
    {  
      var cookie_string = name + "=" + escape ( value );  
      if ( expires_year )  
      {  
        Var expires =new Date ( expires_year, expires_month,  
expires_day);  
        cookie_string += "; expires=" + expires.toGMTString();  
      }  
      document.cookie = cookie_string;  
    }  
  
    function delete_cookie ( cookie_name )  
    {  
      var cookie_date = new Date ( ); // current date & time  
      cookie_date.setTime ( cookie_date.getTime() - 1 );
```

```
document.cookie    =cookie_name+=    "=";    expires="    " +
cookie_date.toGMTString();
}

function get_cookie ( cookie_name )
{
    var results = document.cookie.match (cookie_name );
    if ( results )
        return ( results[2] ) );
    else
        return null;
}

if ( ! get_cookie ( "username" ) )
{
    var username = prompt ( "Please enter your name", "" );
    if ( username )
    {
        var current_date = new Date;
        var cookie_year = current_date.getFullYear ( ) + 1;
        var cookie_month = current_date.getMonth ( );
        var cookie_day = current_date.getDate ( );
        set_cookie("username",username,cookie_year,
cookie_month, cookie_day );
        document.location.reload();
    }
}
else
{
    var username = get_cookie ( "username" );
    document.write ( "Hi " + username + ", welcome to my
website!" );
}
```

```
document.write(                                     "<br><a  
href=\"javascript:delete_cookie('username');  
document.location.reload( );\">Delete!</a>\" );  
}  
</script>  
</body> </html>
```

The above code creates, retrieves and deletes cookie. Try this code in a browser where cookies and JavaScript is enabled.

5.2. UI / UX

5.2.1. Introduction

An application provides a frontend view to which user interacts. UI/UX provides the platform for the user-computer interaction.

Software is user friendly if its interface is:

- Attractive
- Responsive
- Clear to understand
- Simple to use
- Same pattern in all interface

5.2.2. Separating UI/UX Elements

UX design refers to user experience design (UX designers are primarily worried about how the product feels), at the same time UI design stands for user interface design (UI designers are particular about how the product is laid out). Both of these are vital to a computer application and need to work strongly together.

Although being very integral to each other, the roles themselves are relatively dissimilar, involving different processes. The boundary between UI and UX designers is unclear and it is not unusual for companies to opt to combine these roles.

5.2.3. User Interface (UI) Elements

When you design your interface, try to be consistent and expected in your preference of interface elements.

UI Designer's job includes the following:

Look and Feel:

- Customer Analysis
- Design Research
- Branding and Graphic Development
- User Guides/Storyline

Responsiveness and Interactivity:

- UI Prototyping
- Interactivity and Animation
- Adaptation to All Device Screen Sizes
- Implementation with Developer

A user interface designer creates technology easy and intuitive for users to use. User interface designers work on the areas where users directly work together with the product.

Interface elements include but are not restricted to:

- **Input Controls:**

Checkboxes, radio buttons, dropdown lists, list boxes, buttons, toggles, text fields, date field

- **Navigational Components:**

Breadcrumb, slider, search field, pagination, slider, tags, icons

- **Informational Components:**

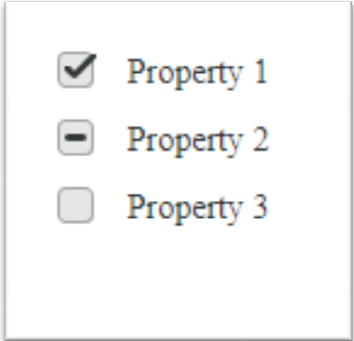
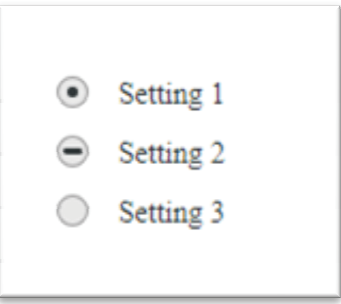

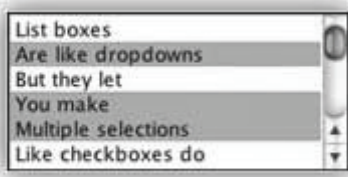
Tooltips, icons, progress bar, notifications, message boxes, modal windows

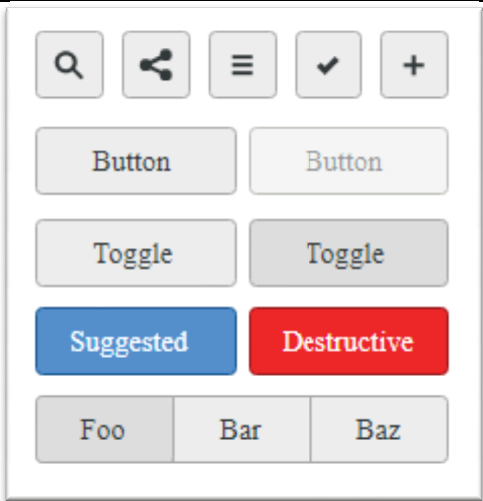
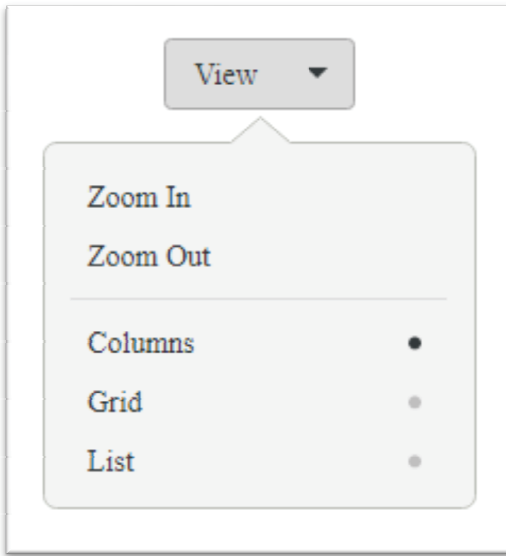

- **Containers:**



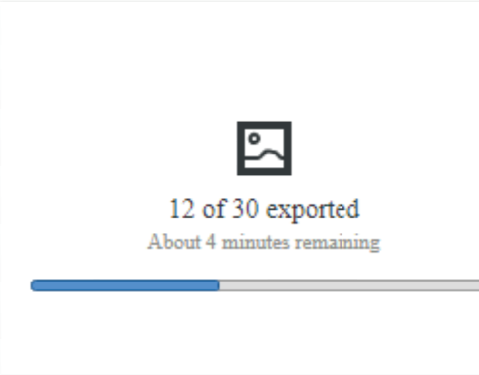
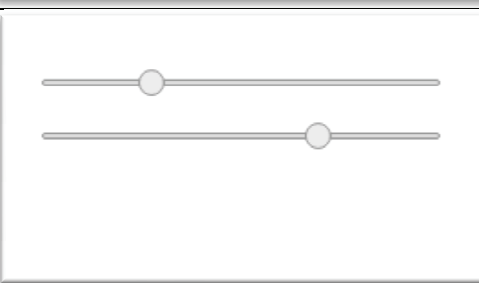
Accordion

Some of the UI/UX Elements used in Softwares are:

<i>Element</i>	<i>Description</i>	<i>Examples</i>
----------------	--------------------	-----------------

Chekboxes	Checkboxes allow the user to select one or more options from a given set. It is typically best to present checkboxes in a vertical list.	
Radio buttons	Radio buttons used to allow users to select one item at a time.	
Dropdown lists	Dropdown lists allow users to select one item at a time, likewise to radio buttons, but are denser allowing you to save space.	
List boxes	List boxes, like checkboxes, allow users to select a multiple items at a time, but are more compact and can hold up a longer list of options if required.	

Buttons	A button indicates an action upon touch and labeled using text, an icon, or both.	
Dropdown Button	The dropdown button consists of a button that when pressed displays a drop-down list of grouped items.	
Toggles/switches buttons	A toggle/switches button allows the user to change a setting between two states. They are most effective when the on/off states are visually distinct.	

Input text fields	Input Text fields allow users to enter text. It can allow either a single line or multiple lines of text.	
Date and time pickers	A date picker allows users to select a date and/or time.	
Progress Bar	A progress bar indicates where a user is as they advance through a series of steps in a process.	
Sliders	A slider, also known as a track bar, allows users to set or adjust a value.	

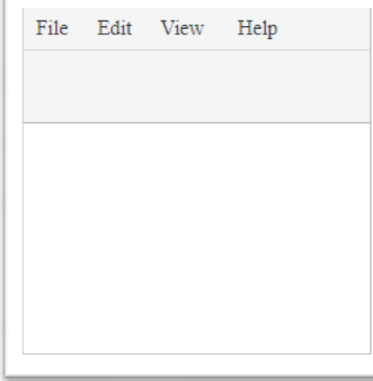
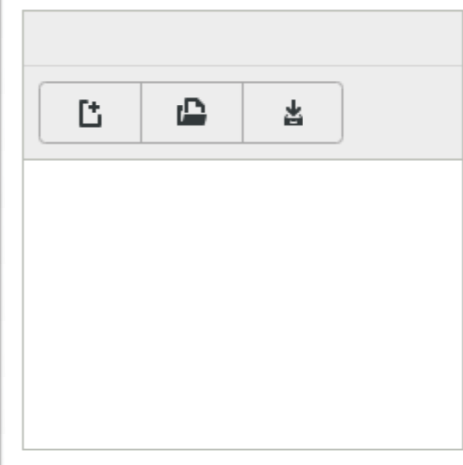




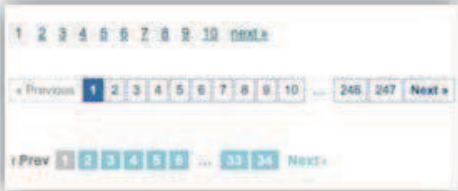
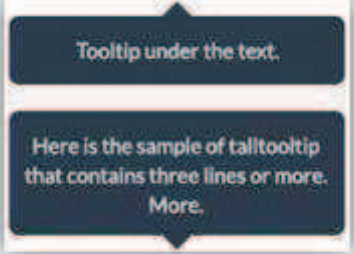
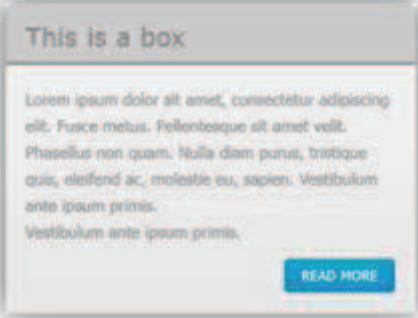
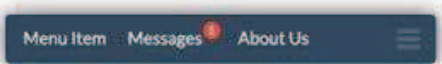
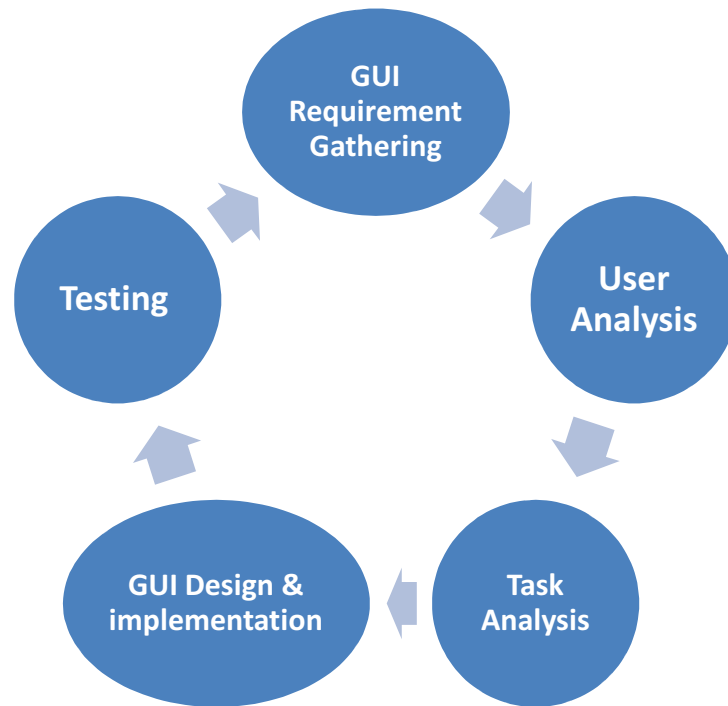
Menu	Menu gives the navigational links, generally situated on top of the application.	
Toolbars	Toolbars provides the important navigation links through icons. They are similar to menu items in functioning.	
Icons	An icon is a simplified image serving as a symbol that is used to help users to navigate the system. Typically, icons are hyperlinked.	
Modal Window (pop-up)	A modal window requires users to interact with it in some way before they can return to the system.	

Image Carousel	Image carousels allow users to scroll through a set of images.	
Breadcrumb	Breadcrumbs allow users to identify their current location within the application by providing a clickable trail of proceeding pages.	
Pagination	Pagination divides content into pages, and allows users to skip between pages or go in order through the content.	
Tool Tips	A tooltip allows a user to see hints when they hover over an item indicating the name or purpose of the item.	
Message Boxes	A message box is a small window that provides information to users and requires them to take an action before they can move forward.	
Notifications	A notification is an update message that announces something new for the user to see.	

5.2.3. User Interface (UI) Design Process

For designing user interface various activities are performed. This process of this design phase is like software development life cycle (SDLC).

Various steps that can be involved in designing process are:



- **GUI Requirement Gathering** – GUI requirement can be taken from user and their existing software solution.
- **User Analysis** – Analysis is done on gathered requirement. The UI designer studies who is going to use the software GUI. According to this analysis, designer sets the UI element in the software.
- **Task Analysis** - Tasks provide goals for GUI appearance. Flow of information among sub-tasks determines the flow of GUI components in the software.
- **GUI Design & implementation** - Designers after having information about requirements, tasks and user environment, design the GUI and implements with working software. It is then tested by the developers.
- **Testing** - GUI testing can be done in various ways. Testing may include usability, compatibility, user acceptance etc.

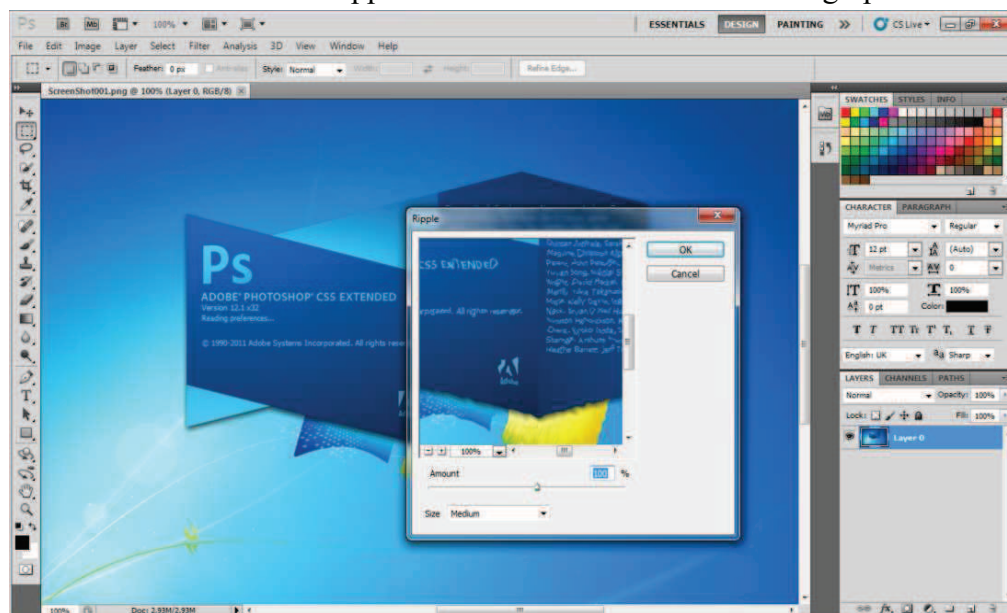
5.2.3. User Interface Design Tools

Designing UI elements is the main concern of any designer. Many software tools enable us to create/develop sophisticated UI elements.

Some of These tools are:

1. *Visual Design Software, Adobe Photoshop*

Adobe Photoshop is the industry standard, and most popular visual design tool available. This software supports raster as well as vector-based graphics.

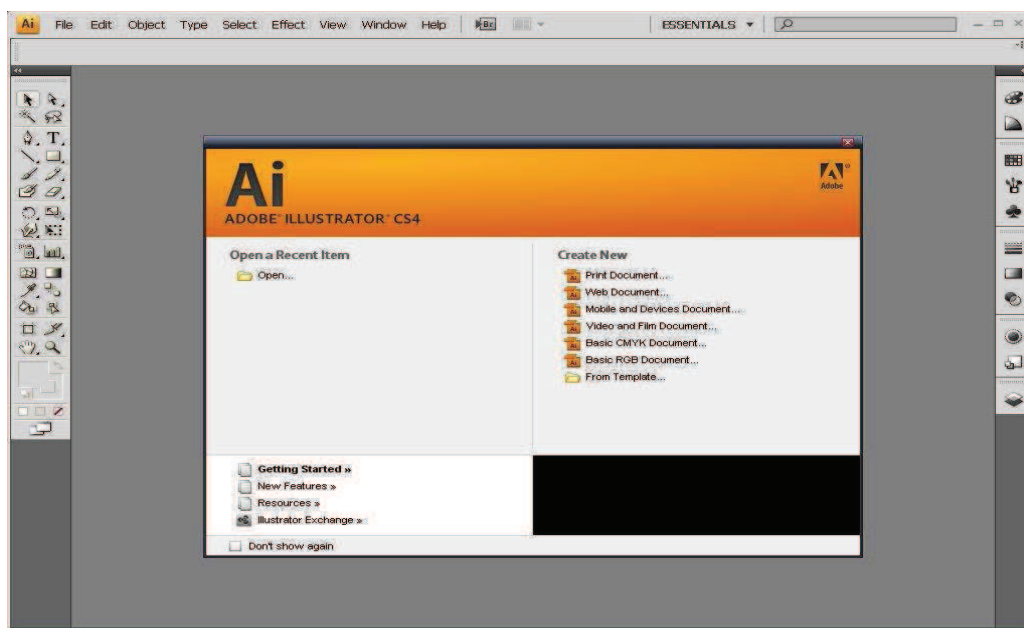


Adobe Photoshop IDE

Some other software available for the same purposes is *CorelDraw*, and *FreeHand*. These software are quality product and requires time and training to get expertise.

2. *Adobe Illustrator*

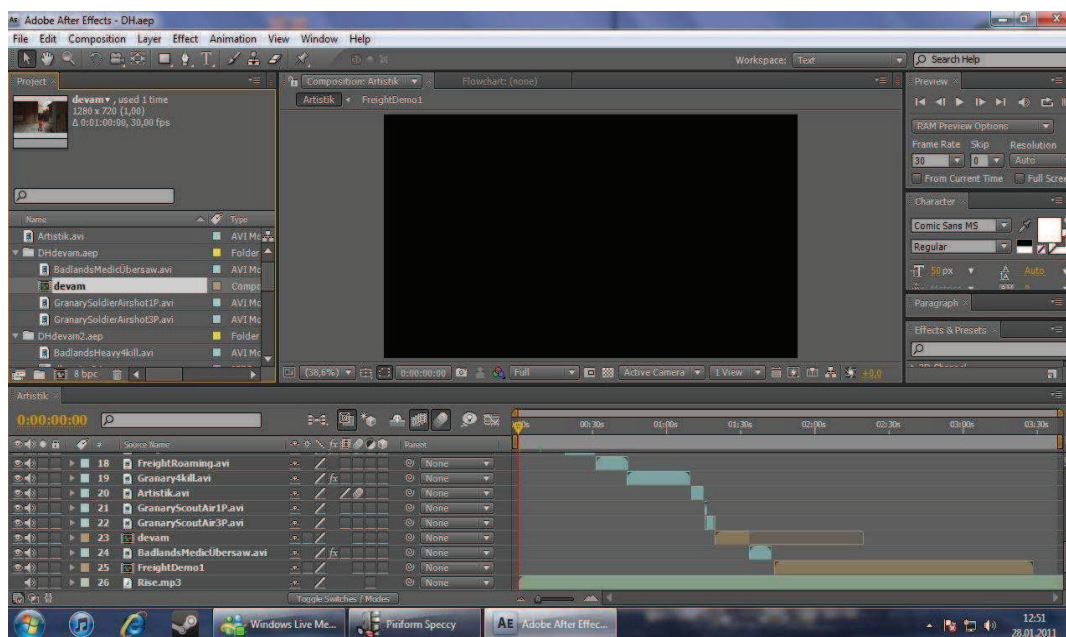
Adobe Illustrator is a vector graphics editor developed and marketed by Adobe Systems. With this drawing tool, you can turn simple shapes and colors into sophisticated logos, icons and graphics.



Adobe Illustrator IDE

3. AE (Adobe After Effects)

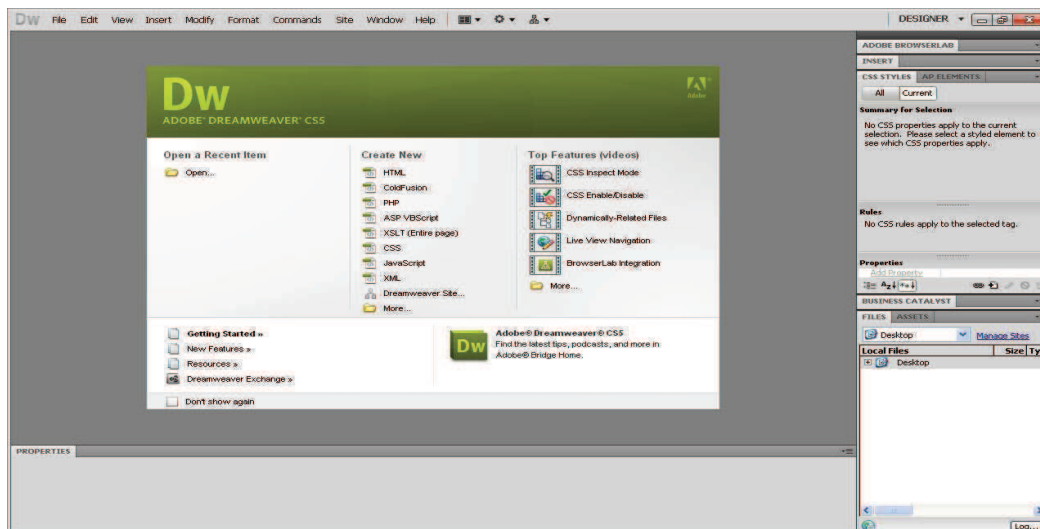
Dynamic design is widely used in UI design. As a UI designer, why should we make the dynamic design? UI designers usually make the dynamic design to express conceptual interaction design. In this way, the development team can have a perceptive of the product. Adobe After Effects is graphic video processing software. UI designers can use it to make the simple UI vibrant effect.



Adobe After Effects IDE

4. *Adobe Dreamweaver*

Adobe Dreamweaver is a web design and development application that combines a visual design surface known as Live View and a code editor. It provides all the UI elements as visual tools that can be included directly into web application.



Adobe Dreamweaver IDE

5.3. *Testing & Maintenance of a web projects*

5.3.1 Web Application Testing

Whenever you develop a web application/project, there will be a great opportunity of having bug in your code or in your application. Testing means to check your application for these bugs and getting it ready for deployment.

Various types of testing used in web application are:

- 1 Functionality Testing
- 2 Usability testing
- 3 Interface testing
- 4 Database Testing
- 5 Compatibility testing
- 6 Performance testing
- 7 Security testing

5.3.1.1 Functionality Testing

This testing is used to check the overall functioning of web application according to the specification provided by user.

This testing includes

- Testing all links in your WebPages (working correctly or not).
 - Links like internal links, outgoing links, anchor tags, mailto links etc.
- Test all forms in your WebPages
 - Check forms for all possible values, default values, data submission and there formats.
- Test Cookies
 - Test Cookies against all sessions.
- Test HTML & CSS
 - This test is done to ensure that search engine can crawl your website easily. This is done by checking syntax errors, schemas, and other web standards provided by W3C etc. This phase sometimes also called as **validating HTML**.

5.3.1.2 Usability Testing

Small group of users similar to final target audience carries out this testing. In this testing generally, site navigation is tested.

- Buttons, menus or Links to other pages should be simply visible and consistent on all WebPages.
- There should be no grammatical or spelling mistakes in the content.
- All image tag should have alt attributes.

5.3.1.3 Interface Testing

Three types of server Application server, Web server & database server are present when we are working on a web project. Working of these servers with each other is tested in this phase.

- Application server with database server
- Web server with Application server

Check that all these servers interact with each other without any error. If errors are there then check those errors are handled correctly or not.

5.3.1.4 Database Testing

Database is the most important part of any web application, so it must be tested thoroughly.

- Check if any errors shown while executing queries.
- Data Integrity is maintained while creating, updating or deleting data in database.
- Test data retrieved from your database is shown precisely in your web application

5.3.1.5 Compatibility Testing

Checking that on which device your application runs smoothly is very necessary now a days as there are number of devices which are used to see web applications by the users.

- **Browser Compatibility:** Website behaves differently in different browsers. So, you need to test your application across different browsers like IE, Chrome, and Mozilla etc.
- **OS Compatibility:** Make sure that your application works fine for various OS like Windows, Linux, and Macintosh etc.
- **Device Compatibility:** Device such as Desktop, TV, mobile can disorient your application look. So check their compaitability.

5.3.1.6 Performance Testing

The website should works proficiently in heavy load. Therefore, it must be tested to:

- Website application response times at different speeds.
- **Load test** your web application to determine its activities under normal and peak loads.
- **Stress test** your web site to resolve its break point when pressed to further than normal loads at peak time.

5.3.1.7 Security Testing

Security Testing is important where sensitive data is stored. It Includes:

- Unauthorized access to secure pages should be restricted.
- Restricted files should not be accessed without appropriate login access.
- Check sessions are automatically end after delayed user inactivity
- SSL should be used in accessing web site pages.

5.3.2 Web Application Maintenance

Web applications constantly grow and evolve according to client's need. Application must be always up-to-date to adjust according to environment (OS, Hardware, and Software) changes. Therefore maintaining web applications after deployment at client's end is very necessary for web application life.

Activities involved in maintaining Web applications:

5.3.2.1 Fixing Bug (Error)

A software bug is an error, failure or fault in a computer program or system that causes it to produce a wrong or unpredicted result. A bug can be in a system because of human error, miscommunication, logical error etc. They can be critical and cause your application to crash. Bugs needed to fix for smooth processing of your application.

5.3.2.2 Third Party updates

When you work on a web application, you know that third-party services like Facebook, JQuery, Google Maps and Twitter etc. are connected to your app. These third party services always update their APIs. Therefore, you need to update your app with these new APIs.

5.3.2.3 Security Patches and updates

There are many softwares on web server which are used for security and providing other important features for your application. They need to update regularly to improve performance, maintain security and stability of the whole system. This also builds trust of customer in your services. Therefore, there must be some sort of provision that these security patches will automatically updated regularly.

5.3.2.4 Implementing new functionality

Normally, new features are updated in the application. These modifications are based on the customer's feedback. New features make your application more demanding in market and provide better competition to your competitors.

5.3.2.5 Upgrading Hardware (Scaling)

If users of your application are increasing every day, you need to transfer your app to high performance server, so that it can handle load. Not upgrading results in an overloaded system, and this can also lead to crashing of the system.

5.3.2.6 Monitoring

Bugs can appear unexpectedly when API updates or changes. Therefore, web application needs constant caring. You can set up a team for regular app monitoring.

Web project maintenance is as important as primary product development. Proper bug fixes, improvements and upgrades are crucial for maintaining customer. Keep in mind that your end users notice even small changes, and these small updates show that you care about their response and that you will carry on to support your application.

5.4 Summary

In this Manual, we study how to work on cookies using JavaScript. We have practice to create retrieves and delete cookies. After that, we study the various UI/UX elements used in application development in software industries. We also checks that how to Test and maintain a web project so that user can gain trust in our product.

5.5 Glossary

1. **Cookies:** *Cookies* are developed to remember information about the user in the browser.
2. **JavaScript:** *JavaScript* is a high-level, interpreted programming language generally used for client side scripting.
3. **Web Server:** *A web server* is a computer system that processes requests via HTTP, the basic network protocol used to distribute information on the World Wide Web.
4. **Application server:** *An application server* is a software framework that provides both services to create web applications and a server environment to run them.
5. **Bug:** A *bug* in software is an error, failure or fault that causes it to produce an incorrect or unpredicted result, or to work in unplanned ways.

5.6 Answer to check your progress

Q1. Define a bug in Web Application.

Q2. Why JavaScript is used?

Q3. Explain Cookies briefly.

Q4. What do you understand by Software testing?

Q5. Why Hardware needs to be upgrade? Explain.

5.7 *References/Bibliography*

1. <https://www.guru99.com/web-application-testing.html>
2. <http://www.tutorialspoint.com/>
3. <https://rubygarage.org/blog/web-application-maintenance>
4. https://www.tutorialspoint.com/javascript/javascript_cookies.htm
5. https://www.w3schools.com/js/js_cookies.asp

5.8 *Suggested Readings*

1. <https://rubygarage.org/blog/web-application-maintenance>
2. https://www.tutorialspoint.com/javascript/javascript_cookies.htm
3. https://www.w3schools.com/js/js_cookies.asp

5.9 *Terminal Questions*

Q1. What are various elements used in UI/UX of an application.

Q2. How HTML/CSS is authenticated in a webpage using W3C standards?

Q3. What are various techniques used in testing a web projects? Explain.

Q4. Explain with example working in cookies with language other than JavaScript.

Q5. What is Software maintenance? Explain.