

E-plants

Deployment of E-plants In Various Cloud Platforms

Project Report Submitted by

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In Partial fulfillment for the award of the degree

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**AMAL JYOTHI COLLEGE OF ENGINEERING
KANJIRAPPALLY**

[Affiliated to APJ Abdul Kalam Technological University, Kerala. Approved by AICTE, Accredited by NAAC with 'A' grade. Koovappally, Kanjirappally, Kottayam, Kerala - 686518]

2017-2019

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DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS



CERTIFICATE

This is to certify that the project entitled "**E-plants**" is a bonafide record of the work done by **Anitta Antony AJC17MCA-D007**, during the academic year **2017-2019** carried out under our supervision. It is certified that all corrections/suggestions indicated for assessment have been incorporated in the report. The work report has been approved as it satisfies the academic requirements in respect of the project work prescribed by the university for the Master of Computer Applications Degree. Certified further, that to the best of our knowledge the exact work reported here in does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this to any other candidate.

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DECLARATION

I hereby declare that the project report “**E-plants**” is a bonafide work done at Amal Jyothi College of Engineering, towards the partial fulfillment of the requirements for the award of the Degree of Master of Computer Applications (MCA) from APJ Abdul Kalam Technological University, during the academic year 2017-2019.

Date.....

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Anitta Antony

ABSTRACT

“E-plants” is an online website which helps the customers to buy plants, fertilizer and pesticides through online. Customers will get good quality products and they can improve their productivity. Customers can also apply plots for lease to starting new plant nurseries or their farming needs. The registered customer can order different products and land in lease. Users get an approval message notification and take land in lease. A security amount will be paid to the manager from user at the time of booking. The agreement can be downloaded by the user.

This software will be very helpful for people who are seeking for land in lease and also for buying the farming plants. The system can be helpful to customers it reduce the service delay, and buy the products easily, and also spend less time rather than paper work.

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LIST OF ABBREVIATIONS

IDE	Integrated Development Environment
HTML	Hyper Text Markup Language.
CSS	Cascading Style Sheet
SQL	Structured Query Language
DFD	Data Flow Diagram
GCP	Google Cloud Platform
AWS	Amazon Web Services
EC2	Elastic Compute Cloud
S3	Simple Storage Systems

INTRODUCTION

“E-plants” is an online website which helps the customers to buy plants, fertilizer and pesticides through online. Customers will get good quality products and they can improve their productivity. Customers can also apply plots for lease to starting new plant nurseries or their farming needs. The registered customer can order different products and land in lease. Users get an approval message notification and take land in lease. The system can be helpful to customers it reduce the service delay, and buy the products easily, and also spend less time rather than paper work.

The project after development was hosted in various cloud platforms like Google, Amazon and Azure. Google Cloud Platform, offered by Google, is a suite of cloud computing services that runs on the same infrastructure that Google uses internally for its user products. Amazon Web Services offers reliable, scalable, and inexpensive cloud computing services which is free to join, pay only for what you use. Microsoft Azure is an open, flexible, enterprise-grade cloud computing platform.

Google Cloud Platform (GCP)

Google Cloud Platform is a suite of public cloud computing services offered by Google. The platform includes a range of hosted services for compute, storage and application development that run on Google hardware. Google Cloud Platform services can be accessed by software developers, cloud administrators and other enterprise IT professionals over the public internet or through a dedicated network connection.

Introduction to GitHub

GitHub is a web-based hosting service for version control using Git. It is mostly used for computer code. It offers all of the distributed version control and source code management (SCM) functionality of Git as well as adding its own features.

MongoDB

MongoDB is a free and open-source cross-platform document-oriented database program. Classified as a NoSQL database program, MongoDB uses JSON-like documents with schema.

Bigtable in GCP

Cloud Bigtable is Google's NoSQL BigData database service. It's the same database that powers many core Google services, including Search, Analytics, Maps, and Gmail.

Google AdWords

AdWords (Google AdWords) is an advertising service by Google for businesses wanting to display ads on Google and its advertising network. The AdWords program enables businesses to set a budget for advertising and only pay when people click the ads. The ad service is largely focused on keywords.

SiteLock Security

SiteLock is a service that performs daily scans of a website to identify vulnerabilities and protect against threats like viruses, cross-site scripting, and SQL injection and even email blacklisting.

Data Security

Data security means protecting digital data, such as those in a database, from destructive forces and from the unwanted actions of unauthorized users, such as a cyber attack or a data breach.

PART 1

DEPLOYMENT OF THE APPLICATION IN VARIOUS CLOUD PLATFORMS

P1.1 Google Cloud Platform

P1.1.1 Introduction To Google Cloud Platform

With Google Cloud Platform (GCP), you can build, test, and deploy applications on Google's highly-scalable and reliable infrastructure for your web, mobile, and backend solutions.

Overview

This overview is designed to help you understand the overall landscape of Google Cloud Platform (GCP). Here, you'll take a brief look at some of the commonly used features and get pointers to documentation that can help you go deeper. Knowing what's available and how the parts work together can help you make decisions about how to proceed. You'll also get pointers to some tutorials that you can use to try out GCP in various scenarios. And GCE allows administrators to select the region and zone where certain data resources will be stored and used. Currently, GCE has three regions: United States, Europe and Asia. Each region has two availability zones and each zone supports either Ivy Bridge or Sandy Bridge processors. GCE also offers a suite of tools for administrators to create advanced networks on the regional level.

GCP resources

GCP consists of a set of physical assets, such as computers and hard disk drives, and virtual resources, such as virtual machines (VMs), that are contained in Google's data centers around the globe. Each data center location is in a global *region*. Regions include Central US, Western Europe, and East Asia. Each region is a collection of *zones*, which are isolated from each other within the region. Each zone is identified by a name that combines a letter identifier with the name of the region. For example, zone a in the East Asia region is namedAsia-east1-a.

Accessing resources through services

In cloud computing, what you might be used to thinking of as software and hardware products, become *services*. These services provide access to the underlying resources. The list of available GCP services is long, and it keeps growing. When you develop your website or application on GCP, you mix and match these services into combinations that provide the infrastructure you need, and then add your code to enable the scenarios you want to build.

Global, regional, and zonal resources

Some resources can be accessed by any other resource, across regions and zones. These global resources include preconfigured disk images, disk snapshots, and networks. Some resources can be accessed only by resources that are located in the same region.

Every Google Compute Engine instance starts with a disk resource called persistent disk. Persistent disk provides the disk space for instances and contains the root file system from which the instance boots. Persistent disks can be used as raw block devices. By default, Google Compute Engine uses SCSI for attaching persistent disks. Persistent Disks provide straightforward, consistent and reliable storage at a consistent and reliable price, removing the need for a separate local ephemeral disk. Persistent disks need to be created before launching an instance.

Projects

Any GCP resources that you allocate and use must belong to a project. You can think of a project as the organizing entity for what you're building. A project is made up of the settings, permissions, and other metadata that describe your applications. Resources within a single project can work together easily, for example by communicating through an internal network, subject to the regions-and-zones rules. The resources that each project contains remain separate across project boundaries; you can only interconnect them through an external network connection.

Each GCP project has:

- A project name, which you provide.
- A project ID, which you can provide or GCP can provide for you.
- A project number, which GCP provides.

P1.1.2 Compute Engine for the implementation of Application

Step 1- Log on to google cloud platform account

The screenshot shows the Google Cloud Platform homepage. At the top, there's a navigation bar with links for Why Google, Products, Solutions, Launcher, Pricing, Customers, Documentation, Support, and Partners. On the right side of the header, there are 'Search' and 'CONSOLE' buttons, along with a user profile icon and a 'CONTACT SALES' button. Below the header, a large blue banner with the text 'Build What's Next' and 'Better software. Faster.' is displayed. Underneath the banner, there's a list of three checked items: 'Use Google's core infrastructure, data analytics and machine learning.', 'Secure and fully featured for all enterprises.', and 'Committed to open source and industry leading price-performance.'. Two buttons are visible below this list: a dark blue 'GO TO CONSOLE' button and a white 'CONTACT SALES' button. Further down the page, there are three sections: 'Forrester Research' (mentioning Google Cloud as the Insight PaaS Leader by Forrester), 'GCP Region Expansion' (mentioning run workloads in even more locations around the world, including Montréal and Netherlands), and 'Response to CPU Vulnerabilities' (information and steps to protect from Spectre and Meltdown).

Step 2: Go to the Compute Engine Section by selecting it from the Menu appear in the left side of the platform

The screenshot shows the Google Cloud Platform Compute Engine VM instances page. The left sidebar has a tree view with 'Compute Engine' selected, which further branches into 'VM instances', 'Instance groups', 'Instance templates', 'Sole tenant nodes', 'Disks', 'Snapshots', 'Images', 'TPUs', 'Committed use discounts', 'Metadata', 'Health checks', 'Zones', 'Network endpoint groups', 'Operations', and 'Marketplace'. The main content area is titled 'Compute Engine VM Instances' and contains a brief description of what Compute Engine is and how to get started. It features three buttons: 'Create', 'Import', and 'Take the quickstart'. To the right of the main content, there's a 'Cloud Console Tour' sidebar with a timer indicating 5 minutes remaining. The tour includes an 'Introduction' section with a description of the tutorial's purpose and a list of concepts learned, such as GCP projects and resources, high-level resource overview and activity logs, console navigation and search, user and permissions management, technical support, and GCP's browser-based command line. A 'Next' button is at the bottom of the tour sidebar.

Step 3: Create a New Instance (Give the Name You Like)

To create a VM instance, select one of the options:

- New VM instance** Create a single VM instance from scratch
- New VM instance from template** Create a single VM instance from an existing template
- Marketplace** Deploy a ready-to-go solution onto a VM instance

Name

Region **Zone**

Machine type Customize to select cores, memory and GPUs.

1 vCPU	3.75 GB memory	Customize
--------	----------------	-----------

Container Deploy a container image to this VM instance. [Learn more](#)

Boot disk
Image **Change**

Identity and API access

Service account

Access scopes

- Allow default access
- Allow full access to all Cloud APIs
- Set access for each API

Firewall Add tags and firewall rules to allow specific network traffic from the Internet

- Allow HTTP traffic
- Allow HTTPS traffic

Step 4: Choose Cent OS 7 as your OS

You have ₹18,809.63 in credit and 361 days left in your free trial. **DISMISS** **UPGRADE**

Compute Engine

Boot disk Select an image or snapshot to create a boot disk, or attach an existing disk

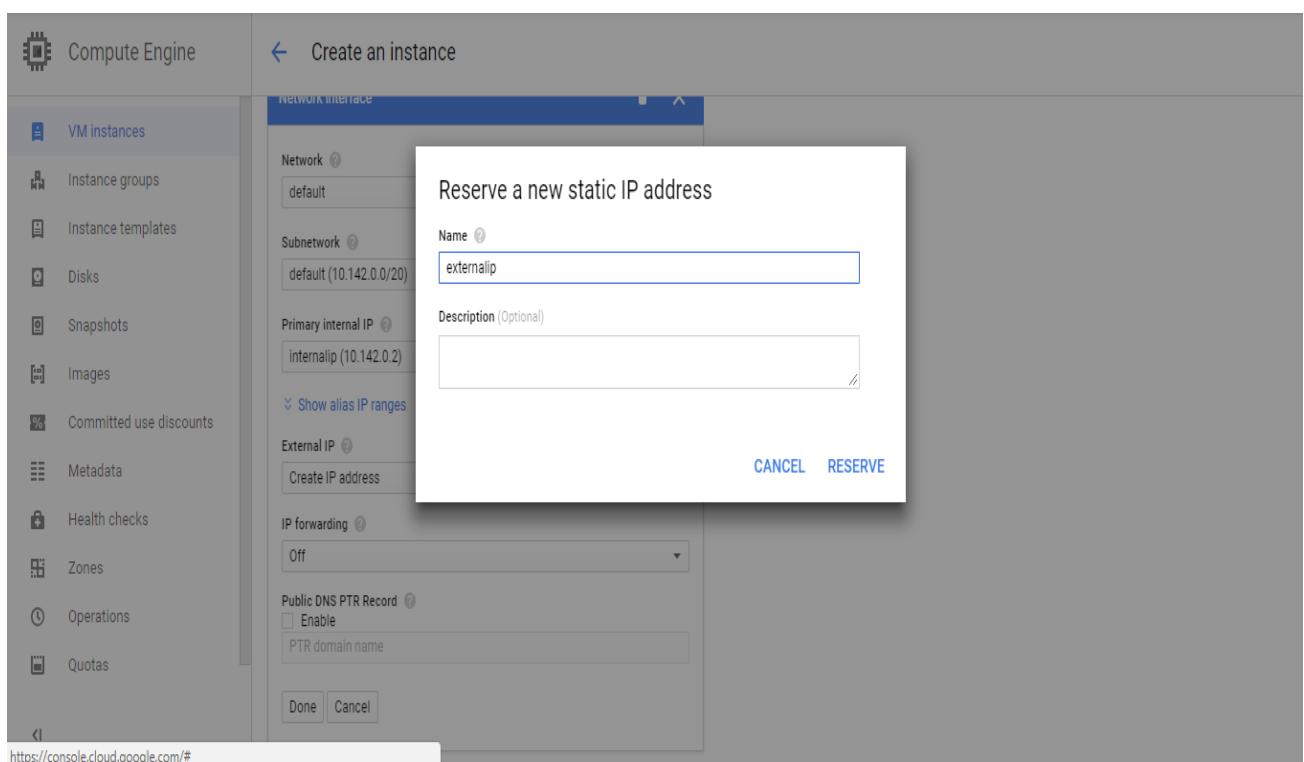
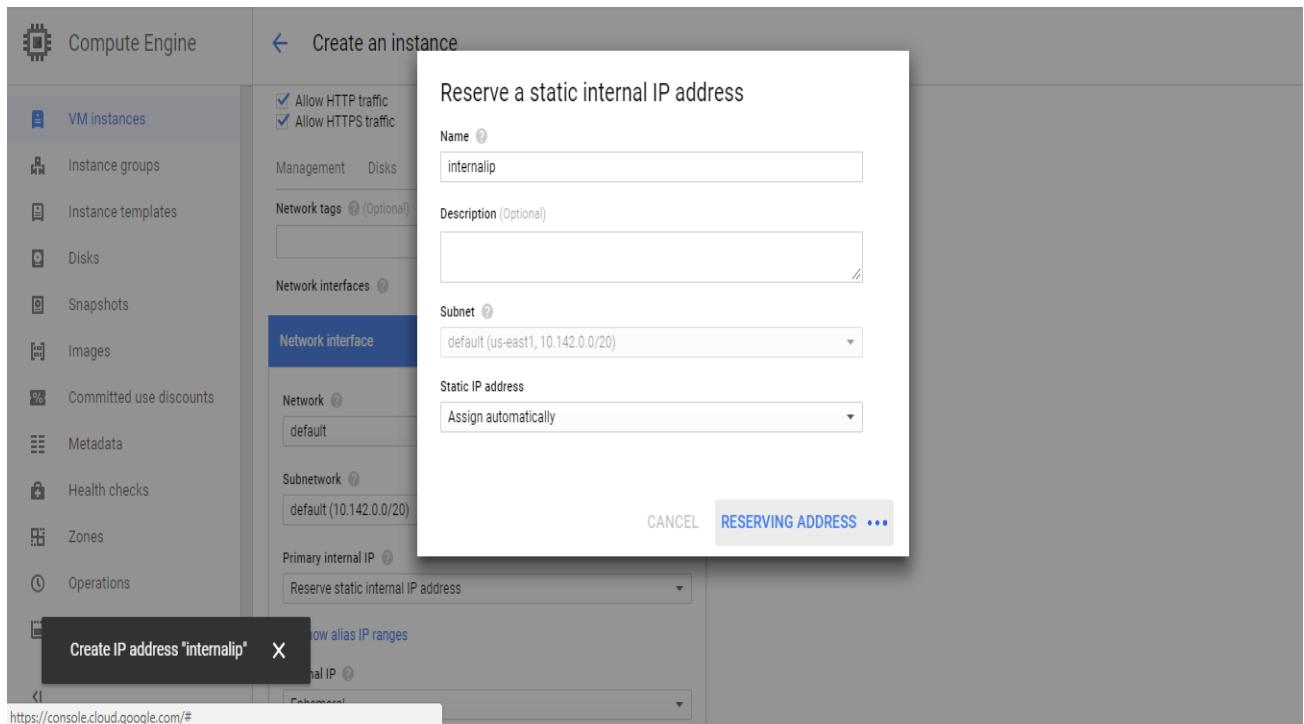
OS images Application images Custom images Snapshots Existing disks

- Debian GNU/Linux 8 (jessie) amd64 built on v20180129
- Debian GNU/Linux 9 (stretch) amd64 built on v20180129
- CentOS 6 x86_64 built on v20180129
- CentOS 7** x86_64 built on v20180129
- CoreOS alpha 1675.0.1 amd64-user published on 2018-02-02
- CoreOS beta 1662.1.0 amd64-user published on 2018-02-02
- CoreOS stable 1632.2.1 amd64-user published on 2018-02-02
- Ubuntu 14.04 LTS amd64 trusty image built on 2018-01-22
- Ubuntu 16.04 LTS amd64 xenial image built on 2018-01-26
- Ubuntu 17.10 amd64 artful image built on 2018-01-26

Can't find what you're looking for? Explore hundreds of VM solutions in [Cloud Launcher](#)

Boot disk type **Size (GB)**

Select **Cancel**

Step 5: From the Network Interface option, Reserve Static Internal and External IP address

Then Our Instance will be created

The screenshot shows the Google Cloud Platform Compute Engine interface. The left sidebar has 'VM instances' selected. The main area displays a table of VM instances with one entry:

Name	Zone	Recommendation	In use by	Internal IP	External IP	Connect
instance-1-spa	asia-south1-c			stticinternelp (10.160.0.2) (nic0)	35.244.13.175	SSH

Step 6: Open the Shell by Clicking the SSH drop down appears on the right side of our Instance.

The screenshot shows the same Google Cloud Platform Compute Engine interface. The 'instance-1-spa' row in the table now has a dropdown menu open next to the 'SSH' button. The menu contains the following options:

- Open in browser window
- Open in browser window on custom port
- Open in browser window using provided private SSH key
- View gcloud command
- Use another SSH client

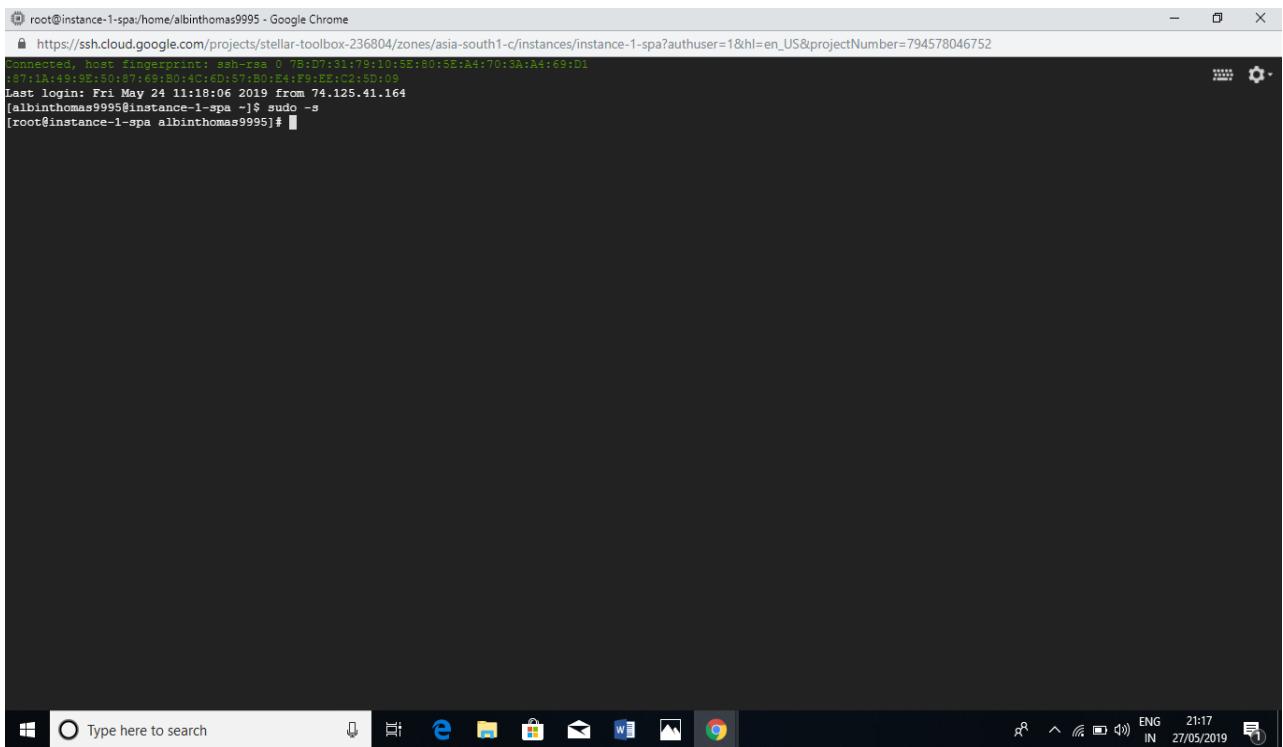
Step 7: In the Shell

Type in the following commands one by one

- a. To get the Admin Privileges type the Command: sudo -s
- b. For updating type: yum update -y
- c. yum install -y perl
- d. yum install -y wget
- e. hostname centos.yourhostname.com
- f. systemctl stop NetworkManager.service
- g. systemctl disable NetworkManager.service
- h. Then type the command for install cPanel and WHM

```
cd /home && curl -o latest -L https://securedownloads.cpanel.net/latest&& sh latest
```

- i. Set password for WHM by typing the command ‘passwd’ on the shell



The screenshot shows a Windows desktop environment. At the top, there is a taskbar with various icons. A terminal window is open, showing a root shell session. The terminal window title is "root@instance-1-spa/home/albinthomas9995 - Google Chrome". The terminal content shows the following text:

```
Connected, host fingerprint: ssh-rsa 07B:D7:31:79:10:5E:80:5E:A4:70:3A:A4:69:D1  
:87:1A:49:9E:50:87:69:B0:4C:6D:57:B0:84:F9:EE:C2:5D:09  
Last login: Fri May 24 11:18:06 2019 from 74.125.41.164  
[albinthomas9995@instance-1-spa ~]$ sudo -s  
[root@instance-1-spa albinthomas9995]#
```

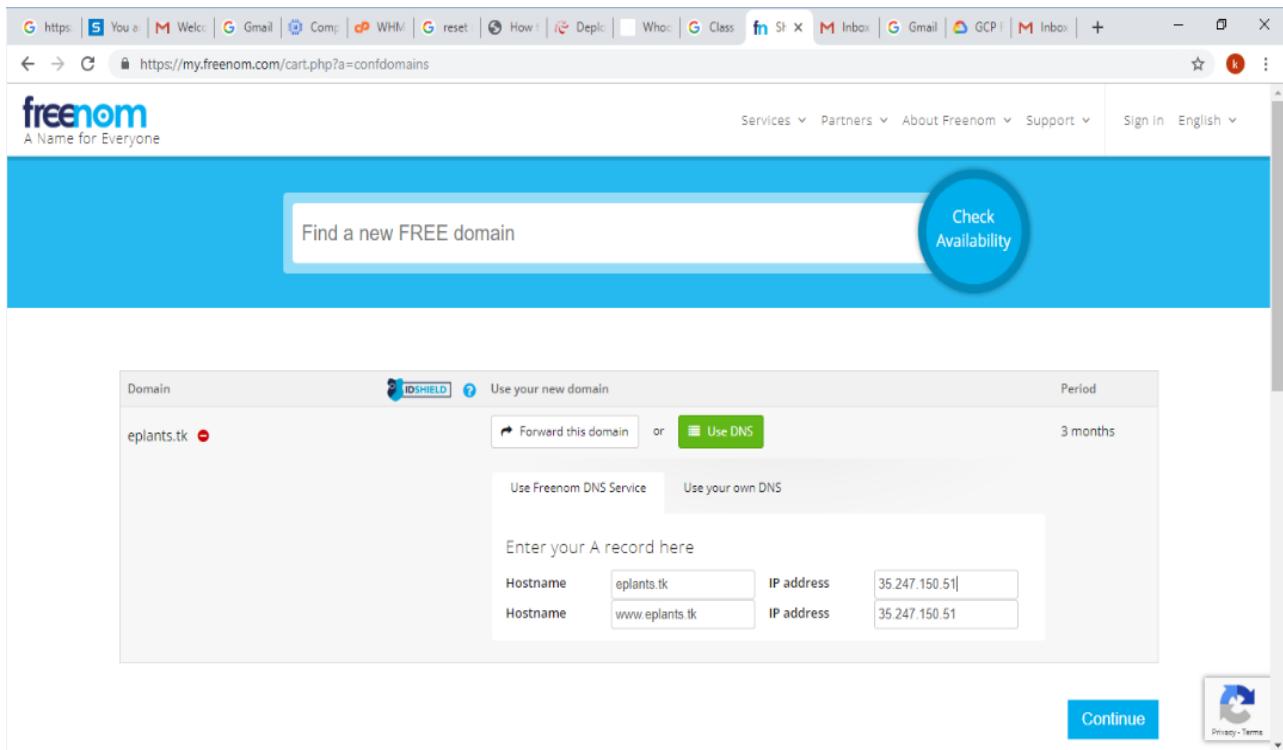
```

root@instance-1-spa:/home/albinthomas9995 - Google Chrome
[https://ssh.cloud.google.com/projects/stellar-toolbox-23680/zones/asia-south1-c/instances/instance-1-spa?authuser=1&hl=en_US&projectNumber=794578046752]
connected, host fingerprint: ssh-rsa 0 7B:D7:51:79:10:5E:80:5E:A6:70:3A:44:69:D1
[albinthomas9995@instance-1-spa ~]$ sudo -s
[rooot@instance-1-spa albinthomas9995]$ yum update -y
Loaded plugins: fastestmirror
Determining fastest mirrors
epel/x86_64/metalink
* base: mirrors.usc.edu
* epel: dlzsk17pfhg30w.cloudfront.net
* extras: mirror.hostduplex.com
* updates: mirror.fileplanet.com
base | 15 kB 00:00:00
epel | 3.6 kB 00:00:00
extras | 4.7 kB 00:00:00
google-cloud-sdk/signature | 3.4 kB 00:00:00
google-cloud-sdk/signature | 454 B 00:00:00
google-compute-engine/signature | 1.4 kB 00:00:00 !!!
google-compute-engine/signature | 454 B 00:00:00
google-compute-engine/signature | 1.4 kB 00:00:00 !!!
google-compute-engine/signature | 5.8 kB 00:00:00
google-compute-engine/signature | 88 kB 00:00:01
google-compute-engine/signature | 166 kB 00:00:02
google-compute-engine/signature | 1.0 MB 00:00:00
google-compute-engine/signature | 3.6 kB 00:00:00
google-compute-engine/signature | 99 kB 00:00:00
google-compute-engine/signature | 6.7 MB 00:00:01
google-compute-engine/signature | 201 kB 00:00:01
google-compute-engine/signature | 5.0 MB 00:00:02
google-compute-engine/signature | 6.0 MB 00:00:08
google-cloud-sdk | 692/692
google-compute-engine | 10/10
Resolving Dependencies
--> Running transaction check
--> Package google-cloud-sdk.noarch 0:246.0.0-1.el7 will be updated
--> Package google-cloud-sdk.noarch 0:247.0.0-1.el7 will be an update
--> Package google-compute-engine.noarch 0:2.8.14-1.el7 will be updated
--> Package google-compute-engine.noarch 0:2.8.15-1.el7 will be an update
--> Package google-compute-engine.noarch 0:2.8.16-1.el7 will be an update
--> Package google-compute-engine-oslogin.x86_64 0:1.5.2-1.el7 will be updated
--> Package google-compute-engine-oslogin.x86_64 0:1.5.3-1.el7 will be an update
--> Package python-google-compute-engine.noarch 0:2.8.14-1.el7 will be updated
--> Package python-google-compute-engine.noarch 0:2.8.16-1.el7 will be an update
--> Finished Dependency Resolution
Dependencies Resolved

Dependencies Resolved

```

Step 8: Purchase a Domain from Freenom (www.freenom.com)



Step 9: Create a Cloud DNS zone (Network Services -> Cloud DNS -> Create Zone).

The screenshot shows the Google Cloud Platform interface. The left sidebar under 'Network services' has 'Cloud DNS' selected. The main pane shows the 'Cloud DNS' tab is active, with 'Zones' selected. A large box titled 'Network Services DNS zones' contains the text: 'DNS zones let you define your namespace. You can create public or private zones.' with a 'Create zone' button below it. Below this box is a link to 'Equivalent REST'.

The screenshot shows the 'Create record set' dialog within the Google Cloud Platform Network services interface. The 'DNS Name' field contains '.papayabeautyandspa.tk.'. The 'Resource Record Type' is set to 'A', 'TTL' is '5', and 'TTL Unit' is 'minutes'. The 'IPv4 Address' field contains '192.0.2.91'. Below the address field is a '+ Add item' button. At the bottom of the dialog are 'Create' and 'Cancel' buttons. Below the dialog is a link to 'Equivalent REST or command line'.

Step 10: In the Newly Created zone, add two record sets A and CNAME provide the External IP address of our virtual machine.

The screenshot shows the Google Cloud Platform Cloud DNS interface. On the left sidebar, under 'Network services', 'Cloud DNS' is selected. The main pane displays two DNS zones: 'mypapaya' and 'papayaspas'. The 'mypapaya' zone has a DNS name of 'papayabeautyandspa.tk.' and is set to 'Off' for DNSSEC. The 'papayaspas' zone has a DNS name of 'http://papayabeautyandspa.tk.' and is also set to 'Off' for DNSSEC. Both are listed as 'public' type zones.

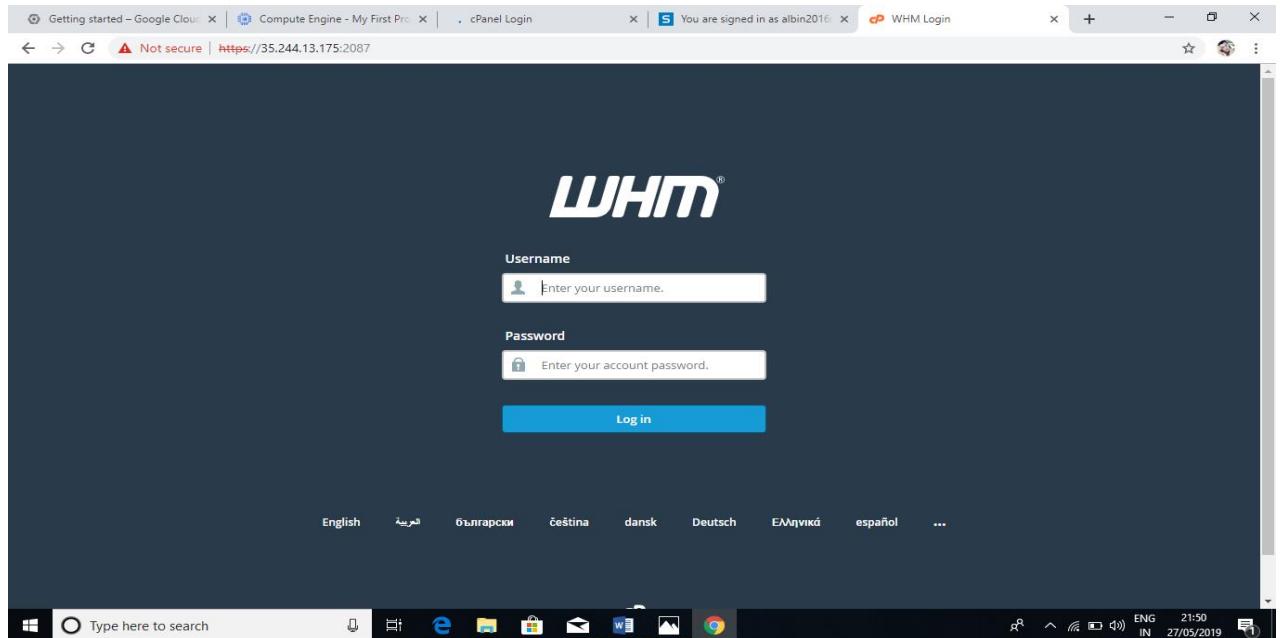
Zone name	DNS name	DNSSEC	Description	Type	In use by	DNS peering (private zones only)
mypapaya	papayabeautyandspa.tk.	Off		public		
papayaspas	http://papayabeautyandspa.tk.	Off		public		

Step 11: Create a Firewall rule. (Network services -> Firewall rules)

The screenshot shows the Google Cloud Platform VPC network Firewall rules interface. On the left sidebar, 'Firewall rules' is selected. The main pane lists several firewall rules: 'default-allow-http', 'default-allow-https', 'default-allow-icmp', 'default-allow-internal', 'default-allow-rdp', and 'default-allow-ssh'. These rules allow traffic from specific IP ranges or targets like 'http-server' and 'https-server' on various ports (e.g., 80, 443, 22) with priority levels ranging from 1000 to 65534.

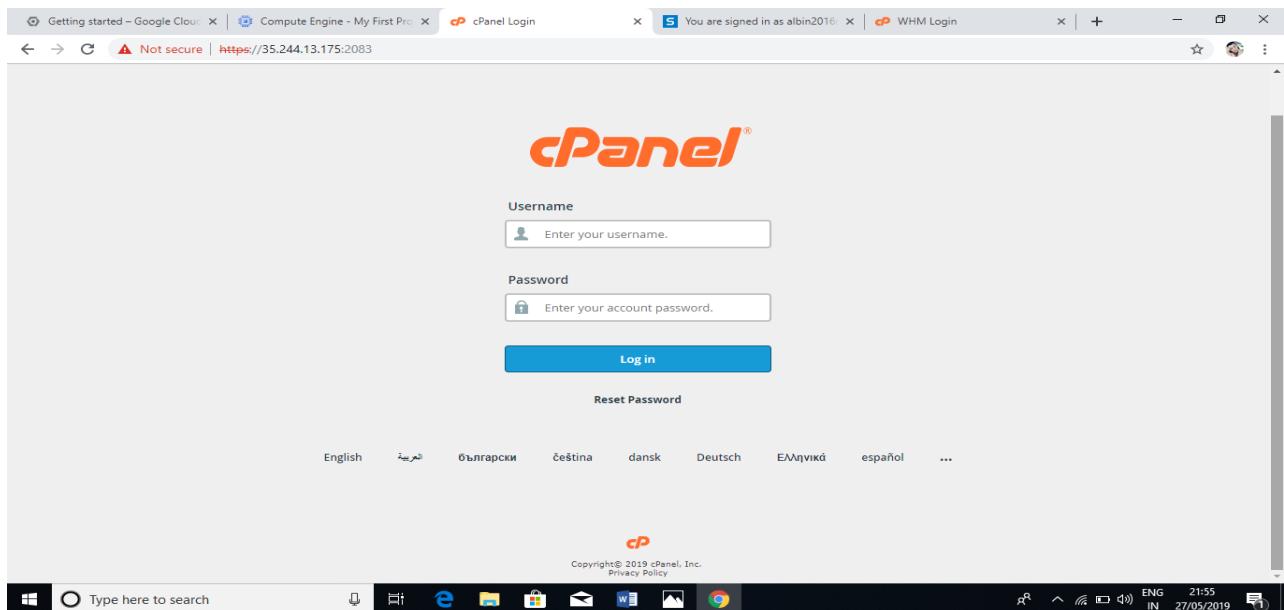
Name	Type	Targets	Filters	Protocols / ports	Action	Priority	Network
default-allow-http	Ingress	http-server	IP ranges: 0.0.0.0/0	tcp:80	Allow	1000	default
default-allow-https	Ingress	https-server	IP ranges: 0.0.0.0/0	tcp:443	Allow	1000	default
default-allow-icmp	Ingress	Apply to all	IP ranges: 0.0.0.0/0	icmp	Allow	65534	default
default-allow-internal	Ingress	Apply to all	IP ranges: 10.128.0.0/9	tcp:0-65535 udp:0-65535 icmp	Allow	65534	default
default-allow-rdp	Ingress	Apply to all	IP ranges: 0.0.0.0/0	tcp:3389	Allow	65534	default
default-allow-ssh	Ingress	Apply to all	IP ranges: 0.0.0.0/0	tcp:22	Allow	65534	default

Step 12: Set password for WHM by typing the command ‘passwd’ on the shell. Then open the WHM login page by [https:// ipaddress/2087](https://ipaddress/2087)
 Username: root and give the password.



Step 13: To create a new account goes to Account Functions -> create a new account. (Provide username, password and Email).

Step 14: Log into the cPanel (<https://ipaddress/2083>)

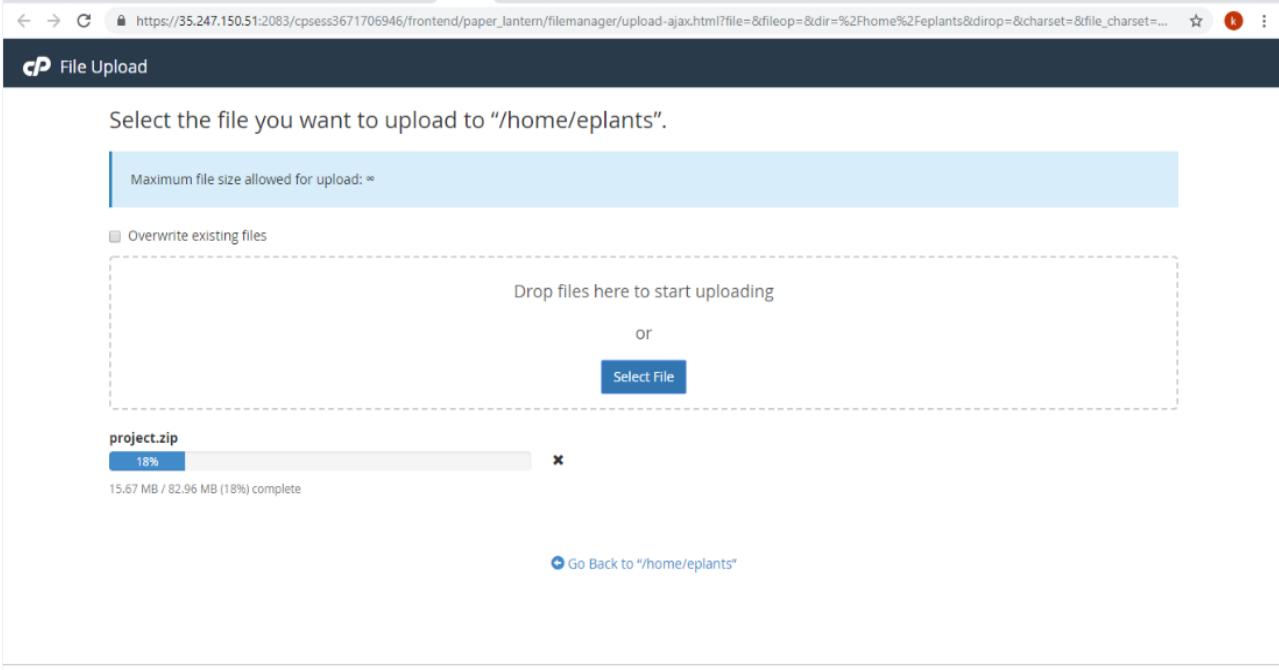


Select File Manager Upload Project in Public HTML

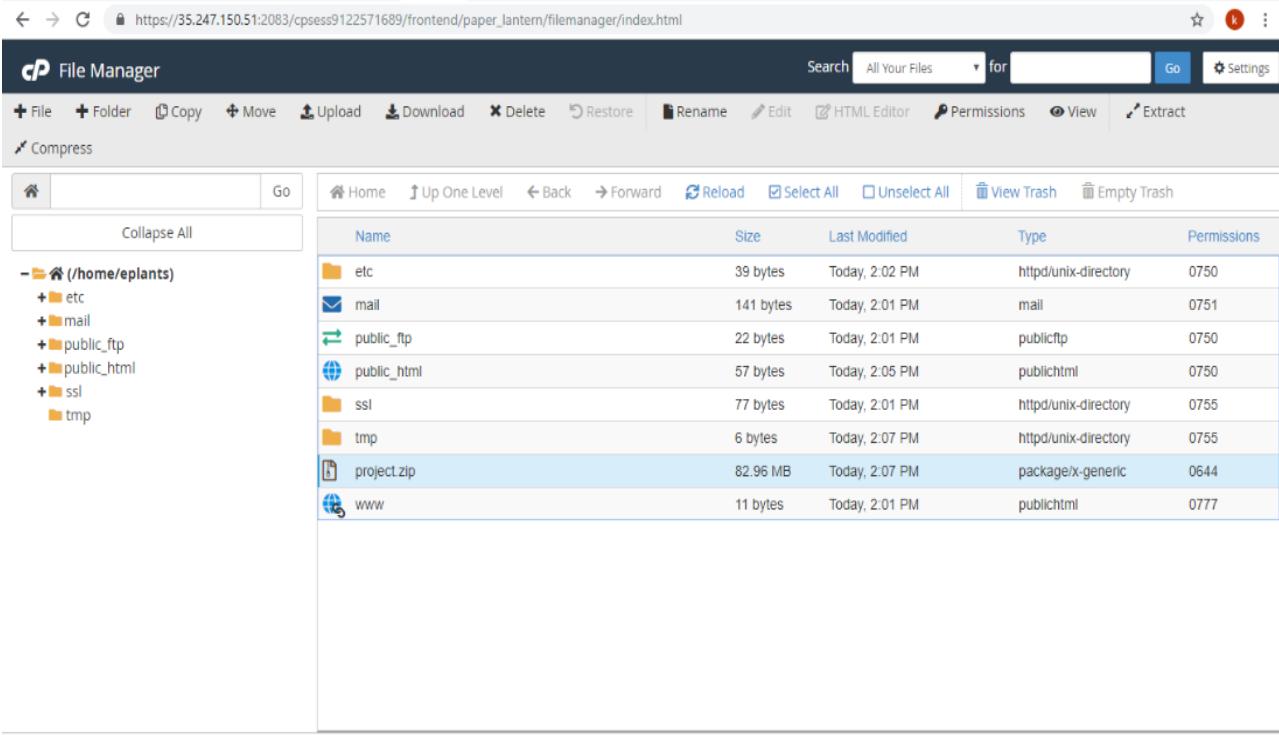
The screenshot shows the cPanel interface with the following details:

- FILES Section:**
 - File Manager
 - Images
 - Directory Privacy
 - Disk Usage
 - Web Disk
 - FTP Accounts
 - Backup
 - Backup Wizard
 - Git™ Version Control
- DATABASES Section:**
 - phpMyAdmin
 - MySQL® Databases
 - MySQL® Database Wizard
 - Remote MySQL
- GENERAL INFORMATION Panel:**
 - Current User: rents
 - Primary Domain: rents.ml
 - Shared IP Address: 35.244.39.46
 - Home Directory: /home/rents
 - Last Login IP Address: 27.97.167.2
 - Theme: light
 - Server Information

Step 15: In the file manager, upload the project to the public_html folder (.zip) format.



The screenshot shows the 'File Upload' page of the cPanel interface. At the top, it says 'Select the file you want to upload to "/home/eplants".' Below this is a message 'Maximum file size allowed for upload: ∞'. There is a checkbox for 'Overwrite existing files'. A dashed box contains the instruction 'Drop files here to start uploading' and a 'Select File' button. Below this, a progress bar shows 'project.zip' at 18%, with the text '15.67 MB / 82.96 MB (18%) complete'. At the bottom right, there is a link 'Go Back to "/home/eplants"'.



The screenshot shows the 'File Manager' page of the cPanel interface. The left sidebar shows a tree view of the directory structure: Home > /home/eplants. The main area displays a table of files and folders in the 'public_html' directory. The table has columns for Name, Size, Last Modified, Type, and Permissions. The 'project.zip' file is listed with a size of 82.96 MB, last modified on Today, 2:07 PM, type package/x-generic, and permissions 0644. Other files listed include etc, mail, public_ftp, ssl, tmp, www, etc, mail, public_ftp, public_html, ssl, tmp, www.

Step 16: Open MySQL Databases icon and create new database and user. Then add the user to the database.

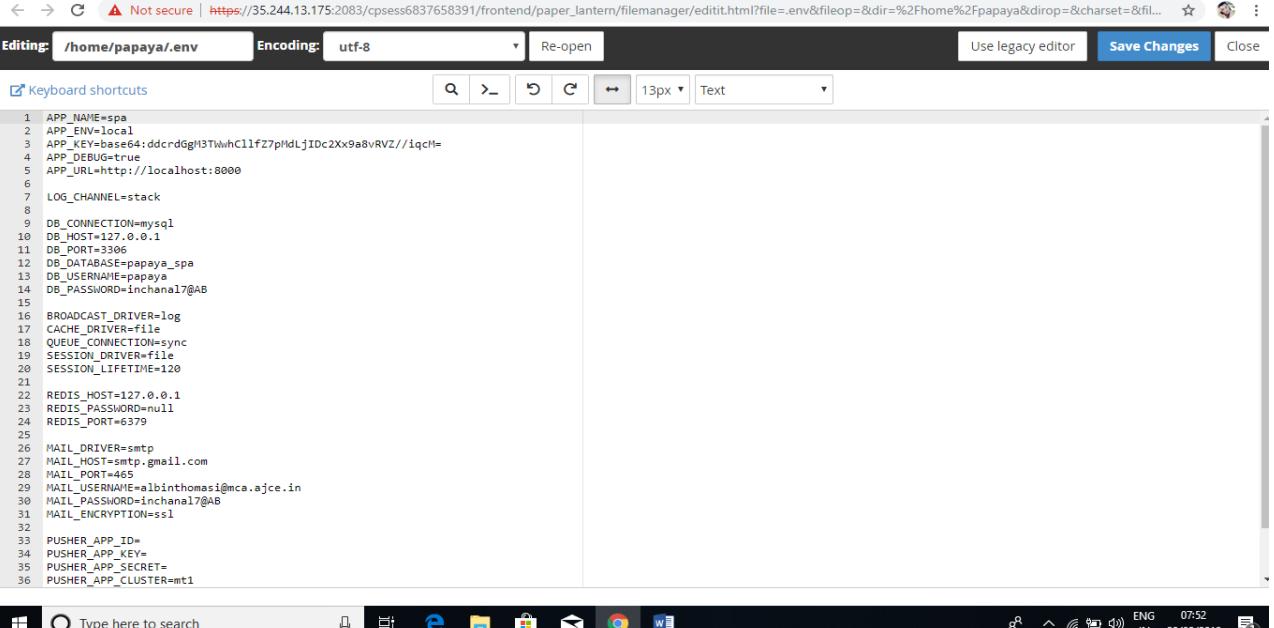
The screenshot shows the 'MySQL® Databases' section of the cPanel interface. At the top, there is a trial license notice: 'TRIAL LICENSE: This copy is a trial version and will expire at the end of the trial term. You will need to upgrade to a paid copy to continue using the software after that term.' Below this, the heading 'MySQL® Databases' is displayed. Underneath, a sub-section titled 'Create New Database' is shown with a form field containing 'papaya_'. A blue 'Create Database' button is located below the input field. To the right, a link 'Jump to MySQL Users' is visible. Further down, another section titled 'Modify Databases' contains a 'Check Database' dropdown set to 'papaya_spaa' and a 'Repair Database' dropdown set to 'papaya_spaa'. A system tray at the bottom shows various icons and the date/time '22:16 27/05/2019'.

Step 17: Open phpMyAdmin and import our database. (You can also create a new database).

The screenshot shows the 'MySQL® Databases' section of the cPanel interface. A green success message box at the top states 'Added the database "eplants_edb".' Below this, the 'MySQL® Databases' heading is visible. A 'Go Back' button is located at the bottom left. At the very bottom, the cPanel footer includes the text 'Waiting for 35.247.150.51...', 'Home', 'Trademarks', 'Privacy Policy', and 'Documentation'.

Step 18: Then edit the .env page.

Give the username, password and the database name

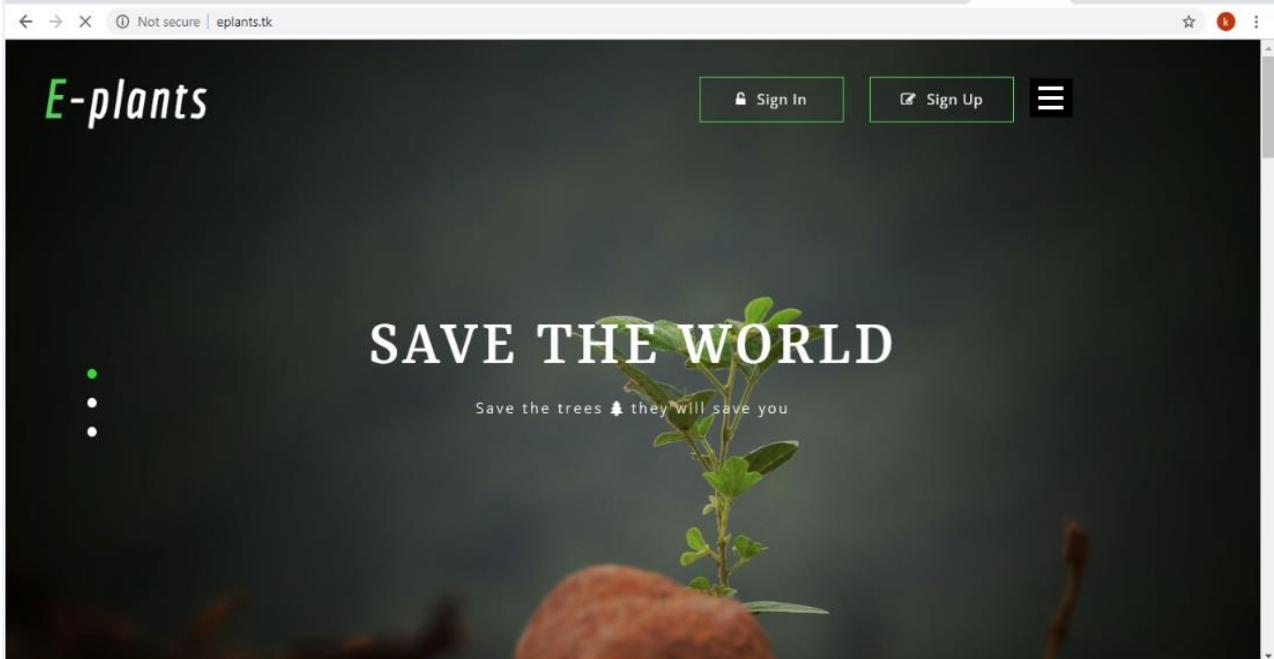


```

1 APP_NAME=spa
2 APP_ENV=local
3 APP_KEY=base64:ddcrdGgM3TwWhC1lfZ7pMdLjIDc2Xx9a8vRVZ//iqcM=
4 APP_DEBUG=true
5 APP_URL=http://localhost:8000
6
7 LOG_CHANNEL=stack
8
9 DB_CONNECTION=mysql
10 DB_HOST=127.0.0.1
11 DB_PORT=3306
12 DB_DATABASE=papaya_spa
13 DB_USERNAME=papaya
14 DB_PASSWORD=inchanal7@AB
15
16 BROADCAST_DRIVER=log
17 CACHE_DRIVER=file
18 QUEUE_CONNECTION=sync
19 SESSION_DRIVER=file
20 SESSION_LIFETIME=120
21
22 REDIS_HOST=127.0.0.1
23 REDIS_PASSWORD=null
24 REDIS_PORT=6379
25
26 MAIL_DRIVER=smtp
27 MAIL_HOST=smtp.gmail.com
28 MAIL_PORT=465
29 MAIL_USERNAME=albinthomasij@mca.ajce.in
30 MAIL_PASSWORD=inchanal7@AB
31 MAIL_ENCRYPTION=ssl
32
33 PUSHER_APP_ID=
34 PUSHER_APP_KEY=
35 PUSHER_APP_SECRET=
36 PUSHER_APP_CLUSTER=mt1

```

Step 19: Our project is hosted in Google Cloud Platform.



P1.1.3 Web Host Management Tools

P1.1.3.1 Web Host Manager (WHM)

Web Host Manager, or WHM, is a powerful program that allows administrative access to the back end of cPanel. There are two versions that Host Gator uses. Reseller accounts get basic WHM. Dedicated Servers and VPS accounts get root WHM (also called rWHM), which has features that require root access to the server enabled. Resellers cannot have rWHM. WHM gives you a lot more control and flexibility when managing either a few very popular and resource intensive sites, or large number of sites. On top of giving you the ability to sell hosting services to other people, WHM also gives you the option to create and manage multiple cPanels. There are lots of really good reasons, if you have business oriented or popular sites, to place them on separate cPanels. Here are a few of the more common reasons we see:

- If one of your sites is hacked or attacked, the odds that the hacker can get into your other sites is dramatically reduced, which increases your security.
- There is no way for someone to tell if accounts on different cPanels are attached to the same WHM account, which increases your privacy.
- If you have multiple sites that need to take credit cards, using WHM saves you a lot of time, stress, and money. To be able to process credit cards you need an SSL certificate.
- You have the ability to monitor and adjust your bandwidth and disk space, which can be key to keeping a quickly growing or popular site from being suspended or going down due to bandwidth overages.
- Managing a large number of domains in one cPanel can be frustrating, especially if you update the files regularly. While we allow unlimited domains on a shared cPanel account, which does not mean it is always pleasant to work on that many domains in one cPanel.
- You need to have several web sites that take credit cards, and each one needs its own cPanel for its own dedicated IP address.

WHM gives you a suite of tools to easily do the following things:

- Create, delete, and suspend your cPanel accounts.
- Manage and monitor your sites (password resets).

- Access to check and change all of your domains' DNS zones.
- The ability to configure your own customers' support requests through cPanel.
- Permission to check the server information and status.
- Ability to create your own default page when you create a new account.
- Access to customize your hosting and control panel with extensive branding.
- Ability to change your client domain names and usernames.
- Hop between every cPanel on your account and access/change anything that does not require SQL access.

P1.1.3.2 Control Panel (cPanel)

cPanel is an online Linux-based web hosting control panel that provides a graphical interface and automation tools designed to simplify the process of hosting a web site. cPanel utilizes a 3-tier structure that provides capabilities for administrators, resellers, and end-user website owners to control the various aspects of website and server administration through a standard web browser. In addition to the GUI, cPanel also has command line and API-based access that allows third party software vendors, web hosting organizations, and developers to automate standard system administration processes.

cPanel is designed to function either as a dedicated server or virtual private server. The latest cPanel version supports installation on CentOS, Red Hat Enterprise Linux (RHEL), and Cloud LinuxOS.cPanel11.30 is the last major version to support FreeBSD. Application-based support includes Apache, PHP, MySQL, PostgreSQL, Perl, and BIND (DNS). Email based support includes POP3, IMAP, and SMTP services. cPanel is accessed via https on port 2083.

Once installed, cPanel cannot be easily removed. cPanel's FAQ states that the best way to uninstall cPanel is by reformatting the server. However, uninstall guides are available online for expert server administrators who do not wish to reformat their server. Similarly, it should only be installed on a freshly installed operating system with minimal prior configuration.

The tools provided are designed to simplify running and controlling a website. It uses a tiered structure that allows different levels of access. Administrators and end users can control the different aspects of the server and the website directly through their browser. cPanel is generally accessed using https on port 2083 or simply by adding “/cpanel” to the end of the host name.

Depending on the hosting provider the cPanel will generally have some sort of auto installer or package dedicated to content management systems like Word Press.

P1.1.3.3 Plesk Panel

Plesk is the leading WebOps hosting platform to run, automate and grow applications, websites and hosting businesses. Being the only OS-agnostic platform, Plesk is running on more than 380,000 servers, automating 11M+ websites and 19M mailboxes. Available in more than 32 languages across 140 countries, 50% of the top 100 service providers worldwide are partnering with Plesk today. Plesk has simplified the life of SysAdmins and SMBs since the early 2000's and continues to add value across multiple cloud services. The Plesk hosting platform effectively enables application developers by providing access to a simple and more secure web infrastructure managed by web pros and hosting companies.

The worldwide developer market consists of over 20M cloud developers who are looking for access to faster, more secure and efficient infrastructures. The Plesk vision is to constantly elevate customer and partner profitability by providing them with a cloud platform that grants application developers a ready-to-code environment. Besides simplifying complexity, Plesk increases its efforts to enable customers and partners alike to extend and customize Plesk as an open hosting platform. The rich ecosystem of Plesk extensions not only provide access to even more relevant features targeted at specific audiences but also allows service providers of any size to generate unique up sell opportunities.

Plesk Culture

As a team, we thrive on excellence, innovation, collaboration, and efficiency. We enjoy what we do, understand our customers and build a hosting platform that clients love and need. There lent less commitment of our team to accept new business challenges guarantees that we are creative and respectful of time and resources as well as the environment. We keep our actions and goals transparent; cultivate a culture of leadership, inclusion, execution, and respect. As a former member of the Parallels group of companies, our background is global, innovative and diverse. January 2016 was the right time for Plesk to become a separate business, enabling us to accelerate development cycles, drive innovation and focus on the needs of our partners, customers and employees.

Launching Plesk on google cloud

- First, purchase or create a new domain from freenom for hosting.

The screenshot shows the Freenom client area interface. At the top, there's a navigation bar with links for Apps, download, 192.168.0.1, 127.0.0.1, and an inbox. On the right, it says "Hello Anita" and "English". Below the header, the main title is "My Domains" with the sub-instruction "View & manage all the domains you have registered with us from here...". There's a search bar labeled "Enter Domain to Find" and a blue "Filter" button. A message indicates "1 Records Found, Page 1 of 1". A table lists the single domain entry:

Domain	Registration Date	Expiry date	Status	Type
plants.ga	28/05/2019	28/05/2020	ACTIVE	Free

Below the table, there's a "Results Per Page" dropdown set to 10.

My domain name is plants.ga

- Register in glue records

The screenshot shows the Freenom interface for managing glue records. The URL is https://my.freenom.com/managegluerecords.php?action=domainregisters&domainid=1064435379. The page title is "Register glue records" with the subtitle "Domain Name: plants.ga". A note at the top says, "From here you can create and manage custom nameservers for your domain (eg. NS1.yourdomain.com, NS2.yourdomain.com...)". Below this, there's a table with two columns: "hostname" and "IP Address". In the "hostname" column, there's a row with ".PLANTS.GA". To the right of the table is a blue plus sign button. At the bottom left, there's a "Back" button.

3. Manage freenom DNS

The screenshot shows a web browser window for the Freenom client area at <https://my.freenom.com/clientarea.php?action=domaindetails&id=1064435379>. The page title is "Managing plants.ga". The navigation bar includes tabs for "Information", "Upgrade", "Management Tools", and "Manage Freenom DNS". The "Information" tab is selected. On the left, there's a sidebar with "Information" and a note about managing the domain using the tabs above. On the right, domain details are listed: Domain: plants.ga (ACTIVE), Registration Date: 28/05/2019, and Expiry date: 28/05/2020. A blue button at the bottom left says "< Back to Domains List". A status bar at the bottom of the browser window says "Waiting for my.freenom.com...".

4. Use the Login credentials provided by the Deployment Manager to access the Admin panel. Use the Admin URL to log in, with Admin user and Admin password(temporary)

The screenshot shows a browser window with a warning message "Not secure" and the URL https://192.168.6.253:8443/login_up.php?success_redirect_url=https%3A%2F%2F192.168.6.253%3A8443%2F. The main content is a Plesk login form. It has fields for "Username" (mca2019@gmail.com) and "Password" (redacted). Below these are dropdowns for "Interface language" (Default) and a link to "Forgot your password?". At the bottom is a "Log in" button. Below the login form, there's a section titled "Or log in with:" featuring icons for Google, OpenID, and Facebook.

5. Open the plesk dashboard and add new domain name

Adding New Domain Name

You can register a new domain name at [Services portal](#).

Domain name * The website's internet address, such as example.com.

Location of the website's files *

Webspace settings

IP address IP address on which the website is hosted is a network address of the website's virtual host.

Username * System user account associated with the webspace, used to access hosted files over FTP and SSH.

Password * Strong [\(?\)](#)

Repeat password *

Secure with an SSL/TLS Certificate

Secure the domain with Let's Encrypt
Let's Encrypt is a certificate authority (CA) that allows you to create a free SSL/TLS certificate for your domain. The certificate will be renewed automatically every month. By clicking the "OK" button you acknowledge that you have read and agree to the [Let's Encrypt Terms of Service](#).

Websites & Domains

This is where you set up and manage websites. Note that you can host a number of websites under a single webspace.

aesaptitude.tk

Website at <http://docs> IP address: 192.168.6.253 System user: administrator1

[Hosting Settings](#) [Open](#) [Preview](#) [Suspend](#) [Disable](#) [Description](#)

Start creating your website in one of the following ways:

- WordPress** Create your website using WordPress. [Install WordPress](#)
- Install an Application** Create your site by installing a web app, such as Joomla or Drupal. [Install Apps](#)
- Create a Custom Website** Upload your web content and add databases. [Files](#) [Databases](#)

SEO Toolkit [Scan](#) [Add keywords](#)
Scan is not performed yet. Click 'Scan' to crawl your site.

[SHOW LESS](#)

Web Hosting Access **FTP Access** **Hosting Settings**

Let's Encrypt **Git** **Node.js**

6. Select http docs from home directory

The screenshot shows the Plesk web host edition interface. On the left, there's a sidebar with various icons: Websites & Domains, Mail, Files (which is selected), Databases, File Sharing, Statistics, My Profile, WordPress, and SEO Toolkit. The main area is titled "File Manager for plants.ga". It shows a tree view of the directory structure under "Home directory": .plesk, cgi-bin, error_docs, httpdocs (which is selected and highlighted in blue), and logs. To the right of the tree view is a toolbar with "Upload", "New", "Copy", "Move", "Remove", "Extract Files", "Add to Archive", "More", and "Settings". Below the toolbar is a breadcrumb navigation bar showing "Home directory > httpdocs". A table lists the files in the httpdocs directory:

Name	Modified	Size
..	May 28, 2019 03:21 PM	
App_Data	May 28, 2019 03:21 PM	
css	May 28, 2019 03:20 PM	
img	May 28, 2019 03:20 PM	
test	May 28, 2019 03:20 PM	
.user.ini	May 28, 2019 03:20 PM	173 B
favicon.ico	May 28, 2019 03:20 PM	110.8 KB
index.html	May 28, 2019 03:20 PM	5.2 KB
web.config	May 28, 2019 03:21 PM	2.6 KB

7. Upload your project as a zip file to the httpdocs

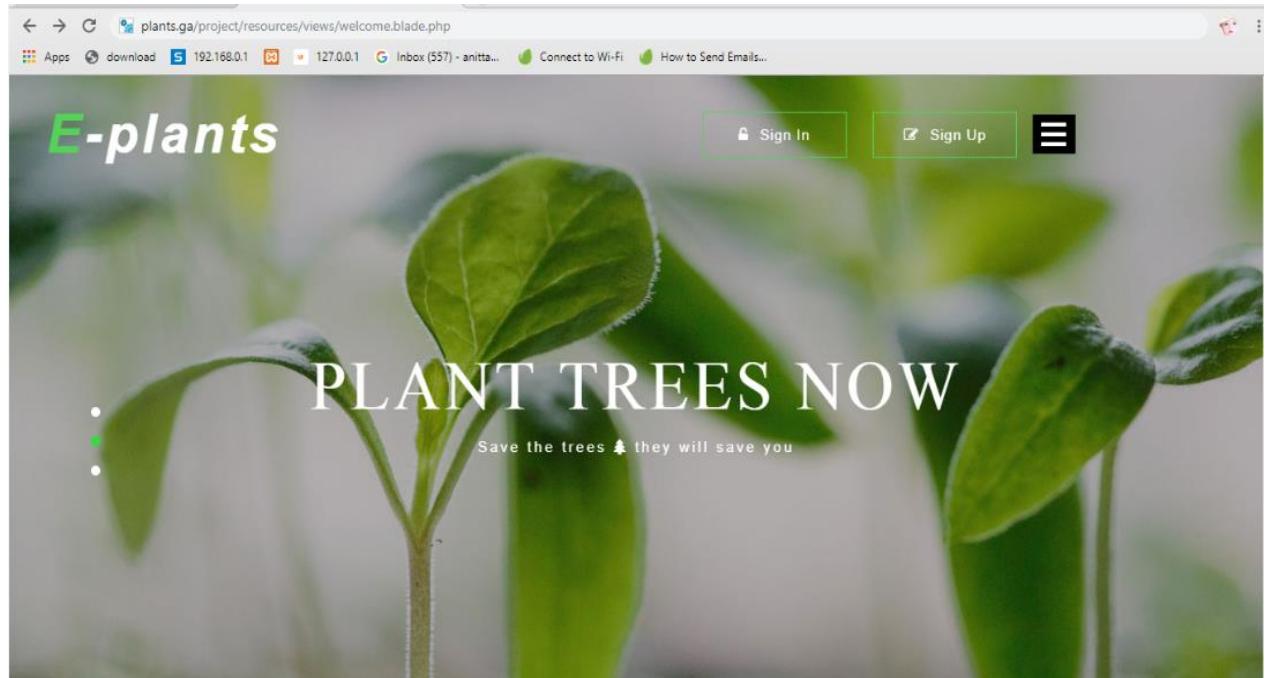
The screenshot shows the Plesk File Manager interface with the "Files" tab selected. The left sidebar shows the directory structure: Home directory, .plesk, cgi-bin, error_docs, httpdocs (selected), and logs. The main area displays the contents of the httpdocs directory, identical to the previous screenshot. A modal dialog box is centered over the interface, titled "Uploading Files...". The dialog contains the message "Please wait until the selected files are uploaded to the server." and shows a progress bar indicating "0 of 1 files were uploaded" and "95% completed". The file being uploaded is "project.zip" with a size of "78.8 MB of 83.0 MB". A "Cancel" button is visible at the bottom of the dialog. The background of the interface is dimmed to indicate it is non-functional while the upload process is active.

8. Extract these zip file and delete the zip file if necessary.

The screenshot shows the Plesk File Manager interface for the domain `plants.ga`. The left sidebar has a 'Files' tab selected. The main area shows the contents of the `httpdocs` directory. The files listed are:

File	Last Modified	Size
mail.blade.php	April 29, 2019 08:16 PM	227 B
pesticides.blade.php	Mar 21, 2019 11:53 AM	13.7 KB
product-details.html	May 10, 2018 08:35 PM	15.8 KB
productdetails.blade.php	April 2, 2019 02:46 PM	15.8 KB
shop.blade.php	April 5, 2019 11:16 PM	29.9 KB
shop.html	May 10, 2018 08:37 PM	29.9 KB
single-product.blade.php	April 6, 2019 08:48 PM	30.4 KB
viewfertilizer.blade.php	Mar 21, 2019 11:44 AM	13.0 KB
viewpesticides.blade.php	Mar 21, 2019 12:13 PM	13.0 KB
viewprofile.blade.php	Mar 15, 2019 09:32 AM	1.8 KB
welcome.blade.php	May 16, 2019 07:13 AM	30.4 KB
welcome1.blade.php	Mar 18, 2019 10:13 AM	26.0 KB

9. Your project is successfully hosted in plesk



P1.2AWS (AMAZON WEB SERVICES)

P1.2.1 Introduction Amazon Web Services Cloud

Amazon Web Services (AWS) is a secure cloud service platform, offering compute power, database storage, content delivery and other functionality to help businesses scale and grow. Amazon Web Services (AWS) is a comprehensive, evolving cloud computing platform provided by Amazon. It provides a mix of infrastructure as a service (IaaS), Platform as a Service (PaaS) and packaged software as a service (SaaS) offerings. Amazon Web Services provides services from dozens of data centers spread across availability zones (AZs) in regions across the world.

P1.2.2 Amazon Elastic Compute Cloud (Amazon EC2)

EC2 is a virtual computing environment, that enables customers to use Web service interface to launch instances with a variety of operating systems, load them with your custom applications, manage your network's access permissions, and run your image using as many or few systems as you need. It provides scalable computing capacity in the Amazon Web Services (AWS) cloud. Using Amazon EC2 eliminates your need to invest in hardware up front, so you can develop and deploy applications faster. You can use Amazon EC2 to launch as many or as few virtual servers as you need, configure security and networking, and manage storage.

P1.2.3 Amazon Simple Storage Service (S3)

Amazon Simple Storage Service is a scalable, high-speed, low-cost, web-based cloud storage service designed for online backup and archiving of data and application programs. Amazon S3 (Simple Storage Service) is a web service offered by Amazon Web Services. S3 provides scalable object storage for data backup, archival and analytics. An IT professional stores data and files as S3 buckets to keep them organized. A bucket is a logical unit of storage in Amazon Web Services (AWS) object storage service, Simple Storage Solutions. Buckets are used to store objects, which consist of data and metadata that describes the data.

Step 1-Create a Amazon web service account

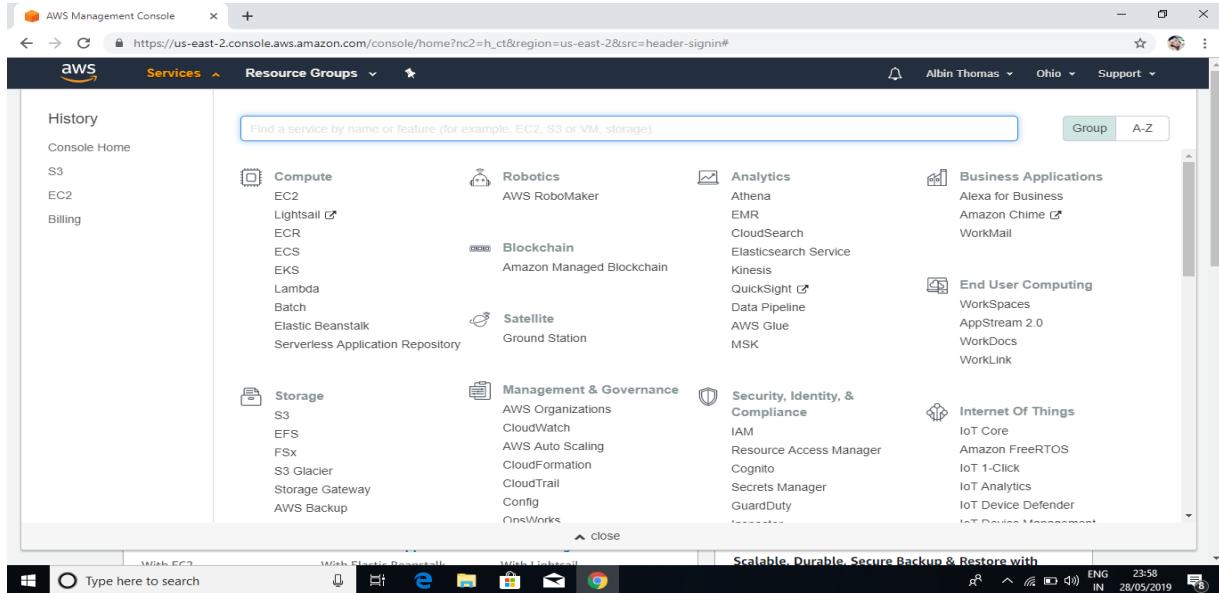
The screenshot shows the AWS homepage with the following elements:

- Header:** AWS logo, Menu, Contact Sales, Products, Solutions, Pricing, Getting Started, More, English, My Account, Create an AWS Account.
- Banner:** "AWS Innovate Special Edition" with "Watch sessions delivered by experts on AWS services 22 February 2018" and a "Sign up now" button.
- Callout:** "Get Started with AWS for Free" with a "Create a Free Account" button.
- Section:** "AWS INNOVATE ONLINE CONFERENCE 2018 SPECIAL EDITION - MACHINE LEARNING" with a "View AWS Free Tier Details" button.
- Service Icons:**
 - MACHINE LEARNING ON AWS: Download the whitepapers and gain insights on using Machine Learning to help personalize customer experiences.
 - INTRODUCING AMAZON TRANSCRIBE: Learn more about the automatic speech recognition service and join the preview.
 - AMAZON AURORA: Get started with Amazon Aurora using these online resources.
 - AWS TECHCHAT: Get on the go updates and insights from AWS experts! Tune into AWS TechChat.

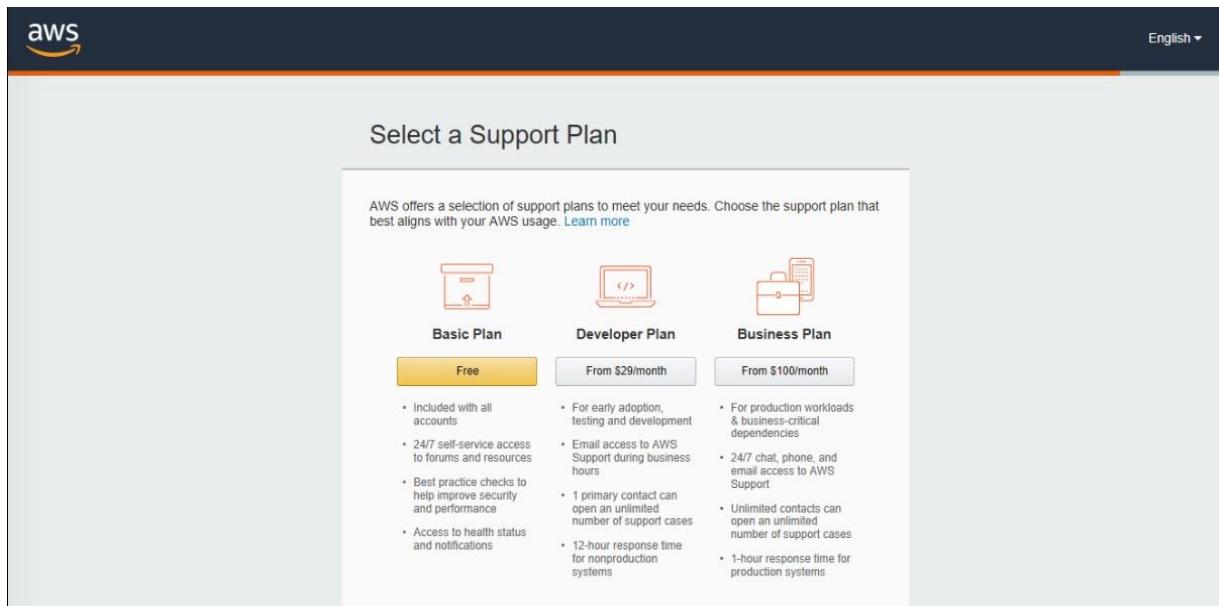
Step 2-Creating an AWS account

The screenshot shows the "Create an AWS account" page with the following structure:

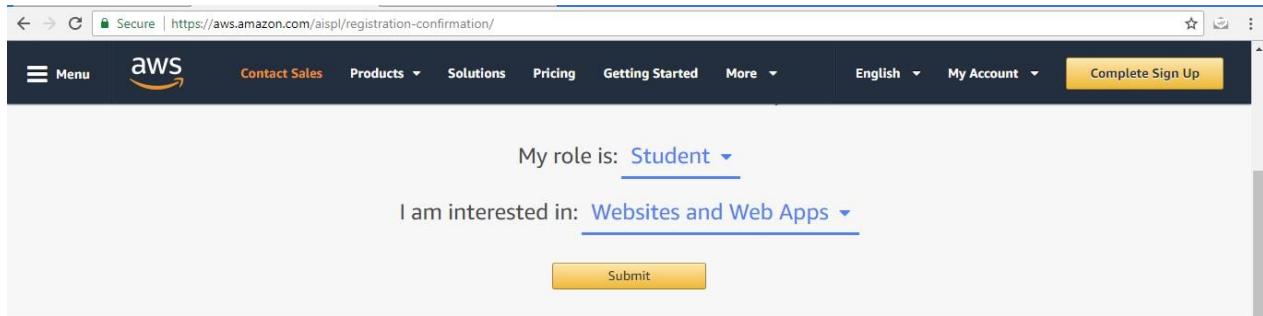
- Header:** AWS logo, English dropdown.
- Section:** "Create an AWS account" with a "Continue" button.
- Form Fields:**
 - Email address: Required field (marked with an asterisk).
 - Password: Input field.
 - Confirm password: Input field.
 - AWS account name: Input field.
- Links:**
 - Sign in to an existing AWS account
 - Privacy Policy | Terms of Use



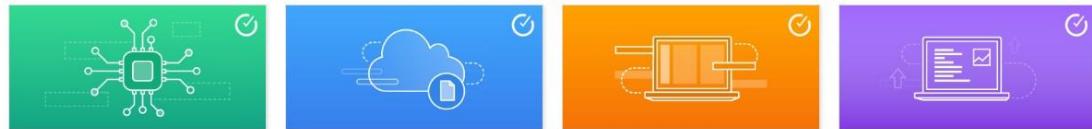
Step 3-Selecting basic plan



Step 4-Log on to the AWS account



Try AWS with a 10-Minute Tutorial



Launch a Linux Virtual Machine

Store Your Files in the Cloud

Launch a WordPress Website

Launch a Web Application

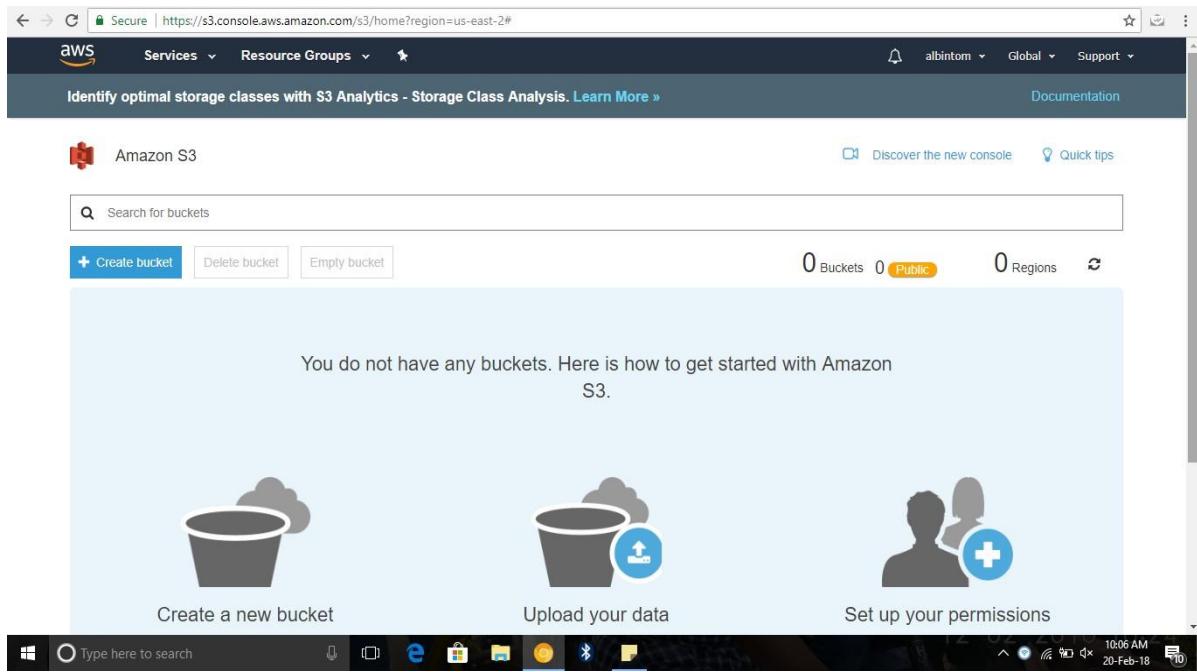
[View all tutorials >>](#)



Step 5-Selecting S3 from storage

The screenshot shows the AWS console home page with the URL <https://us-east-2.console.aws.amazon.com/console/home?region=us-east-2#>. The page has a dark header with the AWS logo and navigation links like 'Services', 'Resource Groups', and 'Support'. Below the header, there are three main sections: 'AWS services' (with a search bar), 'Build a solution' (with options like 'Launch a virtual machine', 'Build a web app', etc.), and 'Learn to build' (with a link to 'See all'). On the right side, there are 'Helpful tips' (like 'Manage your costs' and 'Create an organization') and 'Explore AWS' (like 'Amazon Relational Database Service (RDS)'). A Windows taskbar is visible at the bottom.

Step 6-Creating a bucket



P1.2.4 AWS DB Products

P1.2.4.1 Amazon Relational Database Service (RDS)

Amazon Relational Database Service (Amazon RDS) is a web service that makes it easy to set up, operate, and scale a relational database in the cloud. It provides cost-efficient and resizable capacity while managing time-consuming database administration tasks, freeing you up to focus on developing your applications.

Amazon RDS gives you access to the capabilities of a familiar MySQL, PostgreSQL, Oracle or Microsoft SQL Server database engine. This means that the code, applications, and tools you already use today with your existing databases can be used with Amazon RDS. Amazon RDS automatically patches the database software and backs up your database, storing the backups for a user-defined retention period and enabling point-in-time recovery. You benefit from the flexibility of being able to scale the compute resources or storage capacity associated with your Database Instance (DB Instance) via a single API call.

P1.2.4.2 Amazon DynamoDB

DynamoDB is a fast, fully managed NoSQL database service that makes it simple and cost-effective to store and retrieve any amount of data and serve any level of request traffic. All data items are stored on Solid State Drives (SSDs) for high availability and durability.

P1.2.4.3 Amazon ElastiCache

ElastiCache is a web service that makes it easy to deploy, operate, and scale an in-memory cache in the cloud. The service improves the performance of web applications by allowing you to retrieve information from fast, managed, in-memory caches, instead of relying entirely on slower disk-based data bases. ElastiCache supports two widely adopted open-source engines—Memcached and Redis. The service is protocol compliant with both engines, so popular tools that you use today with existing Memcached and Redis environments will work seamlessly with Elasti Cache.

P1.2.5 DevOps in AWS

AWS provides a set of flexible services designed to enable companies to more rapidly and reliably build and deliver products using AWS and DevOps practices. These services simplify provisioning and managing infrastructure, deploying application code, automating software release processes, and monitoring your application and infrastructure performance. And it is the combination of cultural philosophies, practices, and tools that increase an organization's ability to deliver applications and services at high velocity: evolving and improving products at a faster pace than organizations using traditional software development and infrastructure management processes. This speed enables organizations to better serve their customers and compete more effectively in the market.

Under a DevOps model, development and operations teams are no longer “siloed.” Sometimes, these two teams are merged into a single team where the engineers work across the entire application lifecycle, from development and test to deployment to operations, and develop a range of skills not limited to a single function. Quality assurance and security teams may also become more tightly integrated with development and operations and throughout the application lifecycle. These teams use practices to automate processes that historically have been manual and slow. They

use a technology stack and tooling which help them operate and evolve applications quickly and reliably. These tools also help engineers independently accomplish tasks (for example, deploying code or provisioning infrastructure) that normally would have required help from other teams, and this further increases a team's velocity.

P1.3 Microsoft Azure Cloud

P1.3.1 Introduction to Microsoft Azure Cloud

Microsoft Azure (formerly Windows Azure) is a cloud computing service created by Microsoft for building, testing, deploying, and managing applications and services through a global network of Microsoft-managed data centers. It provides software as a service (SaaS), platform as a service (PaaS), and infrastructure as a service (IaaS) and supports many different programming languages, tools, and frameworks, including both Microsoft-specific and third-party software and systems. Windows Azure is designed to make IT management easier. The main purpose of developing Windows Azure was to minimize the overhead and personnel expenses associated with the creation, distribution, and upgrade of the Web applications.

The Windows Azure platform is considered a platform as a service, which is an imperative component of a cloud computing platform. It consists of various on-demand services hosted in Microsoft's data centers and is commoditized through three product brands. The services and applications developed using the Azure platform run on the Windows Azure operating system, which provides a runtime environment for Web applications along with an extensive set of services that facilitate the building, hosting, and management of applications without requiring maintenance too expensive onsite resources. Windows Azure is designed to support both Microsoft and non-Microsoft platforms. The three main components that constitute Windows Azure are:

- Compute layer
- Storage layer
- Fabric layer

Windows Azure also includes an automated service management feature that allows the upgrading of applications without affecting their performance. Windows Azure is designed to support a number of platforms and programming languages. Some of the languages supported are extensible

markup language (XML), representational state transfer (REST), Simple Object Access Protocol (SOAP), Ruby, Eclipse, Python, and PHP.

Login Microsoft Azure

The screenshot shows the Microsoft Azure portal dashboard. The left sidebar includes options like 'Create a resource', 'Home', 'Dashboard', and 'All services'. The main area is titled 'All resources' and shows a message: 'No resources to display. Try changing your filters if you don't see what you're looking for.' Below this is a 'Create resources' button. To the right, there's a promotional banner for 'Azure getting started made easy!' featuring icons for various services like Node.js, Python, and Java, along with a 'Create DevOps Project' button. A sidebar on the right lists 'Quickstarts + tutorials' for 'Windows Virtual Machines', 'Linux Virtual Machines', 'App Service', and 'Functions'.

- Go to Dashboard and create Resource group. Allocate Resource group name, subscription and resource group location.

The screenshot shows the 'All resources' page in the Microsoft Azure portal. The left sidebar is identical to the dashboard. The main area has a header 'All reso... Documentation < > X'. Below it is a table with columns 'NAME', 'TYPE', and 'STATUS'. A 'Filter by name...' input field is at the top of the table. The table body contains the message 'No results.' and a large gray cube icon. At the bottom is a 'Create resources' button.

- Once the resource group is created, create a mobile app. To create Mobile app, specify App name, Subscription of the app, Resource group (Select the resource group which was created earlier).

The screenshot shows the Microsoft Azure Resource groups page. The left sidebar includes links for Home, Dashboard, All services, Favorites (e.g., All resources, Resource groups, App Services, Function App, SQL databases, Azure Cosmos DB, Virtual machines, Load balancers, Storage accounts, Virtual networks, Azure Active Directory, Monitor), and Create a resource. The main content area displays the 'Resource groups' section with a table titled 'Subscriptions: Azure for Students'. The table has columns for NAME, SUBSCRIPTION, and LOCATION. One item is listed: 'eplants' under 'Azure for Students' in 'Southeast Asia'. There are buttons for Add, Edit columns, Refresh, Export to CSV, and Assign tags.

The screenshot shows the Microsoft Azure App Services Web App creation page. The left sidebar is identical to the previous screenshot. The main content area is titled 'Web App' and shows a 'Create' button. It includes fields for 'Resource Group' (set to 'eplants'), 'Name' (set to 'eplantsazurewebsitesnet'), 'Publish' (Code selected), 'Runtime stack' (PHP 7.0), 'Operating System' (Linux selected), and 'Location' (Southeast Asia). A note states: 'No app services to display. Create, build, deploy, and manage powerful web, mobile, and API apps for employees or customers using a single backend. Build standards-based web apps and APIs using .NET, Java, Node.js, PHP, and Python. Learn more about App Service'.

WebApp-8c01a279-b797 - Overview

Your deployment is complete

Deployment name: WebApp-8c01a279-b797
Subscription: Azure for Students
Resource group: annu

DEPLOYMENT DETAILS (Download)

- Start time: 5/28/2019, 10:41:01 AM
- Duration: 1 minute 48 seconds
- Correlation ID: d618f338-654f-4455-a384-191dd6927271

RESOURCE	TYPE	STATUS	OPERATION DETAILS
✓ houserental	Microsoft.Web/sites	OK	Operation details
✓ ASP-annu-b64b	Microsoft.Web/ser...	OK	Operation details

Additional Resources

- Windows Server 2016 VM Quickstart tutorial
- Cosmos DB Quickstart tutorial
- Web App Quickstart tutorial
- SQL Database Quickstart tutorial
- Storage Account Quickstart tutorial

Helpful Links

[Get started with Azure](#)

WebApp-c39dcdb3-94e3 - Overview

... Your deployment is underway

Check the status of your deployment, manage resources, or troubleshoot deployment issues.
Pin this page to your dashboard to easily find it next time.

Deployment name: WebApp-c39dcdb3-94e3
Subscription: Azure for Students
Resource group: eplants

DEPLOYMENT DETAILS (Download)

- Start time: 5/28/2019, 10:42:14 AM
- Duration: 26 seconds
- Correlation ID: de3135f7-f886-40f1-86f1-e710d45183b8

RESOURCE	TYPE	STATUS	OPERATION DETAILS
No results.			

Additional Resources

- Windows Server 2016 VM Quickstart tutorial
- Cosmos DB Quickstart tutorial
- Web App Quickstart tutorial
- SQL Database Quickstart tutorial
- Storage Account Quickstart tutorial

Helpful Links

[Get started with Azure](#)

The screenshot shows the Microsoft Azure portal interface. The left sidebar navigation bar includes options like Home, Dashboard, All services, Favorites (All resources, Resource groups, App Services, Function App, SQL databases, Azure Cosmos DB, Virtual machines, Load balancers, Storage accounts, Virtual networks, Azure Active Directory, Monitor), Create a resource, and a search bar at the top.

The main content area displays the 'eplantsazurewebsitesnet' App Service Overview page. Key details shown include:

- Resource group:** (change)
- Status:** Running
- Location:** (not specified)
- Subscription:** (change)
- Subscription ID:** (not specified)
- Tags:** (change)

Below these details are two callout boxes:

- Diagnose and solve problems:** Our self-service diagnostic and troubleshooting experience helps you identify and resolve issues with your web app.
- App Service Advisor:** App Service Advisor provides insights for improving app experience on the App Service platform. Recommendations are sorted by freshness, priority and impact to your app.

This screenshot shows the 'Deployment Center' section of the Azure portal for the same app service. The left sidebar is identical to the previous screenshot.

The main content area is titled 'eplantsazurewebsitesnet - Deployment Center'. It features a large heading 'Deployment Center' with a gear icon. Below it, a sub-header states: 'App Service Deployment Center enables you to choose the location of your code as well as options for build and deployment to the cloud.' followed by a 'Learn more' link.

A flow diagram illustrates the deployment process with three numbered steps: 1. SOURCE CONTROL, 2. BUILD PROVIDER, and 3. CONFIGURE.

Two configuration options are listed:

- Azure Repos:** Configure continuous integration with an Azure Repo, part of Azure DevOps Services (formerly known as VSTS).
- GitHub:** Configure continuous integration with a GitHub repo. A note indicates 'Not Authorized'.

Code

Organization: anittaantony12

Repository: E-plants

Branch: master

If you can't find an organization or repository, you might need to enable additional permissions on GitHub.

Build

Azure DevOps Organization: Existing

Back Continue

SOURCE CONTROL

Repository: https://github.com/anittaantony12/E-plants

Branch: master

BUILD PROVIDER

Provider: Azure Pipelines (Preview)

New Account: Yes

Account: anitta123

Location: MA

Web Application Framework: PHP

Framework version: 7.0

Back Finish

eplantsazurewebsitesnet - Deployment Center

Build: Build, Azure Pipelines, Account: anitta123, Repository: <https://github.com/anittaantony12/E-plants.git>

Source: GitHub, Project: MyFirstProject, Branch: master, Slot: Production

Tuesday, May 28, 2019

Successfully setup Continuous Delivery and triggered build
Build Pipeline | Release Pipeline | Build Triggered | 11:39:55 AM | GMT+5

Deployment: Quickstart, Deployment slots, Deployment Center (selected), Settings, Configuration, Application settings (Classic), Authentication / Authorization (...

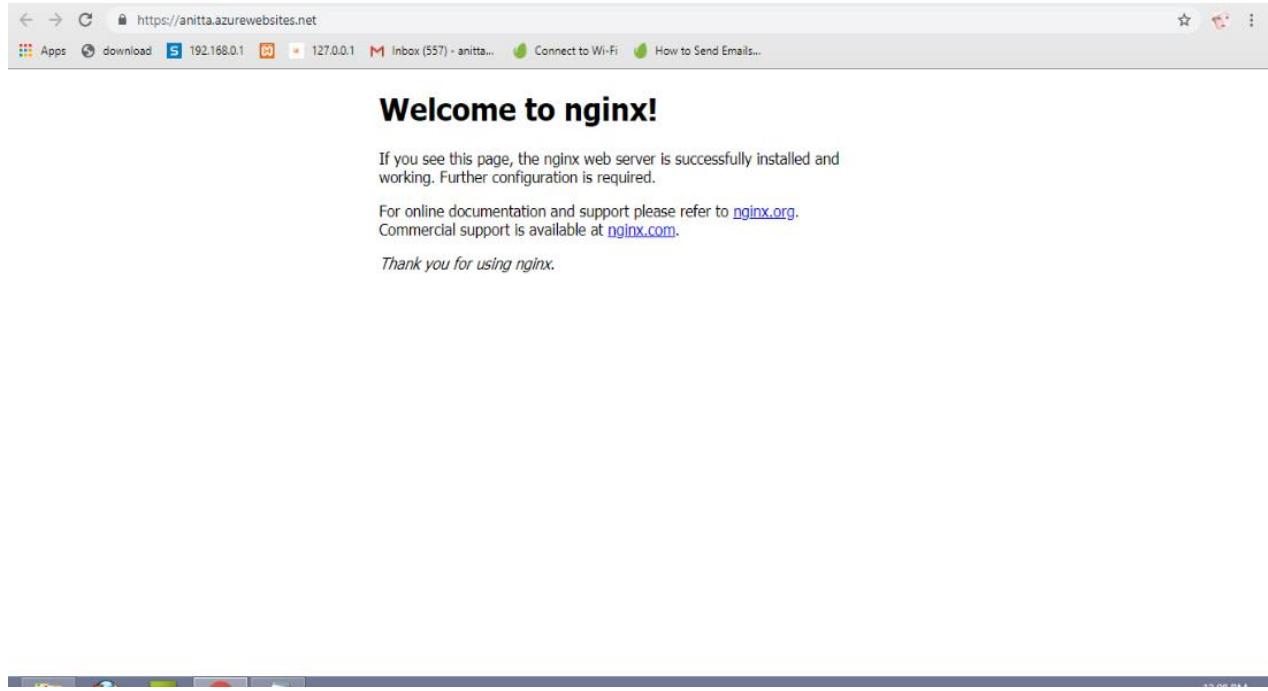
App Ser... Documentation < X | **Web App**

PROJECT DETAILS: Select a subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

* Subscription: Azure for Students
* Resource Group: eplants (Create new)

INSTANCE DETAILS: * Name: anitta.azurewebsites.net
* Publish: Docker Image (selected)
* Operating System: Windows
* Location: Southeast Asia

Buttons: Review and create, Next: Docker >



P1.3.2 Virtual Machines

It is an operating system or application environment that is installed on software, which reproduces dedicated hardware. The end user has the same experience on a virtual machine as they would have on dedicated hardware. Azure Virtual Machines gives you the flexibility of virtualization for a wide range of computing solutions with support for Linux, Windows Server, SQL Server, Oracle, IBM, SAP, and more. All current generation Virtual Machines include load balancing and auto-scaling, for free. For optimal performance, we recommend pairing your Virtual Machines with Managed Disks. Standard egress charges apply.

Benefits

- Limits cost by reducing the need for physical hardware systems.
- Efficiently use hardware, which lowers the quantities of hardware and associated maintenance costs, and reduces power and cooling demand
- Ease of management because the virtual hardware does not fail.

Vendors?

- VMware - mature product portfolio, with many years of use in the IT industry
- Microsoft - a bit of a late player to virtualization, Microsoft is showing considerable progress.

P1.3.3 Azure Storage Database

Azure SQL Database is the intelligent, fully-managed relational cloud database service that provides the broadest SQL Server engine compatibility, so you can migrate your SQL Server databases without changing your apps. Accelerate app development and make maintenance easy and productive using the SQL tools you love to use. Take advantage of built-in intelligence that learns app patterns and adapts to maximize performance, reliability and data protection. And it supports structures such as relational data, JSON, spatial, and XML. SQL Database offers managed single SQL databases, managed SQL databases in an elastic pool, and managed SQL instances - called SQL Database Managed Instance (in public preview). It delivers dynamically scalable performance and provides options such as column store indexes for extreme analytic analysis and reporting and in-memory OLTP for extreme transactional processing. Microsoft handles all patching and updating of the SQL code base seamlessly and abstracts away all management of the underlying infrastructure.

SQL Database shares its code base with the Microsoft SQL Server database engine. With Microsoft's cloud-first strategy, the newest capabilities of SQL Server are released first to SQL Database, and then to SQL Server itself. This approach provides you with the newest SQL Server capabilities with no overhead for patching or upgrading - and with these new features tested across millions of databases

P1.3.4 DevOps in Azure

In order to release quickly and have stable application environments with minimal errors, it is of vital importance that developers work well with IT operations people and vice versa. To do this, they need to communicate well and sometimes work on the same team.

Ideally, they work in the same environment. Makes sense, right? This is called DevOps. DevOps is a hyped-up term, but it comes down to implementing common sense by working better together.

One of the most important goals that DevOps helps to achieve is:

- Faster and more reliable releases of the application through Continuous Integration (CI) and Continuous Deployment (CD).□

Microsoft provides some awesome services and features that can help your team to achieve this goal. You'll learn about them in this article.

- Continuous Deployment of Azure App Services
- Azure DevOps Projects
- Visual Studio Team Services

Continuous deployment of Azure App Services

Azure App Services are services that you use to host your web application or API. When you have the source code of your application in source control somewhere, you can easily have it deployed automatically to the App Service, every time you push up a change.

You do this by configuring the Deployment Options feature in App Services. This is really simple to do.

1. In your App Service (like a Web App), go to the Deployment Options blade
2. Here, it asks you to choose a source. So, choose where your source code lives
3. When you've chosen your source code repository, you'll need to authenticate so that Azure can use those credentials to access the source code.
4. Next, you can choose the details of your deployment, which can include setting up a performance test as part of the process. In my case, I have chosen GitHub as my source.
5. Once this is done, the process starts to run and builds and deploys your source code into the App Service.

Once this is configured, every time that you commit changes to the source code repository, it will get built and deployed to the App Service automatically.

You can see the deployments in the Deployment Options blade in the App Service. This is a pretty cool feature and very useful. Especially when you work with a team of developers that are all checking in code to the same repository. However, the Deployment Options feature in App Service is pretty restricted. It is easy to setup, but that also means that you do not have a lot of configuration choices if you need to do more.

PART 2

USING GIT AS A VERSION CONTROL SYSTEM

P2.1 INTRODUCTION TO GITHUB

GitHub is a web-based version-control and collaboration platform for software developers. GitHub, which is delivered through a software-as-a-service (SaaS) business model, was started in 2008 and was founded on Git, an open source code management system created by Linus Torvalds to make software builds faster. And it is used to store the source code for a project and track the complete history of all changes to that code. It allows developers to collaborate on a project more effectively by providing tools for managing possibly conflicting changes from multiple developers. GitHub allows developers to change adapt and improve software from its public repositories for free, but it charges for private repositories, offering various paid plans. Each public or private repository contains all of a project's files, as well as each file's revision history. Repositories can have multiple collaborators and can be either public or private.

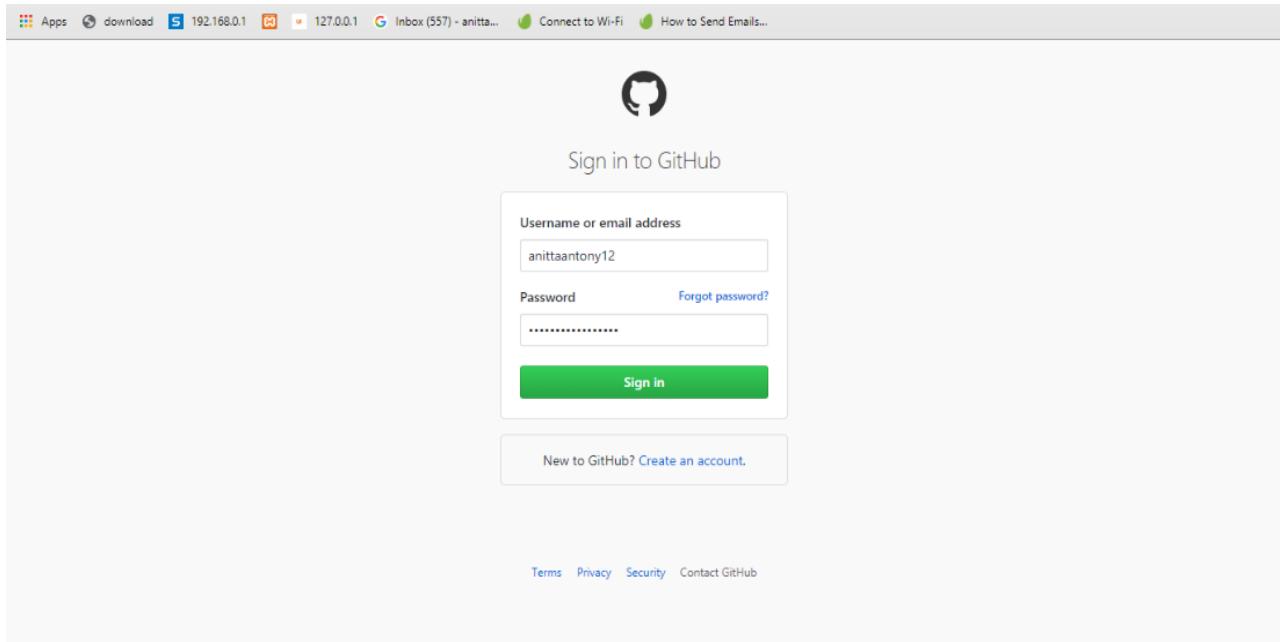
GitHub facilitates social coding by providing a web interface to the Git code repository and management tools for collaboration. GitHub can be thought of as a serious social networking site for software developers. Members can follow each other, rate each other's work, receive updates for specific projects and communicate publicly or privately.

GitHub products and features

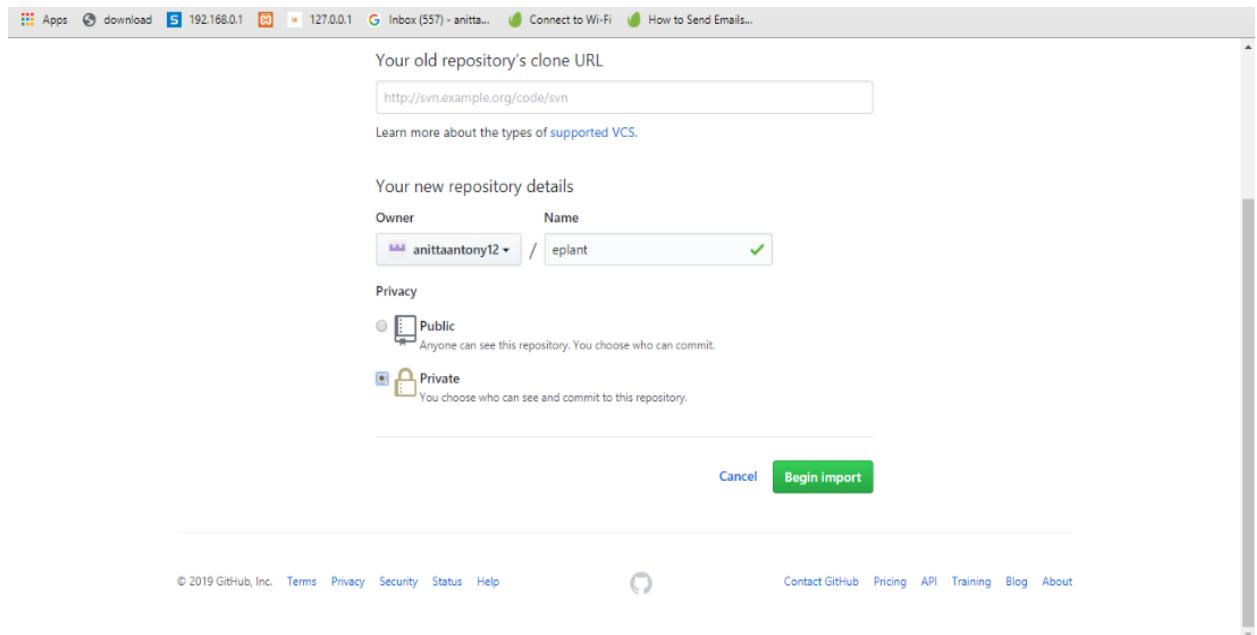
GitHub offers an on-premises version in addition to the well-known SaaS product. GitHub Enterprise supports integrated development environments and continuous integration tool integration, as well as a litany of third-party apps and services. It offers increased security and auditability than the SaaS version.

P2.2 WORKING WITH GIT

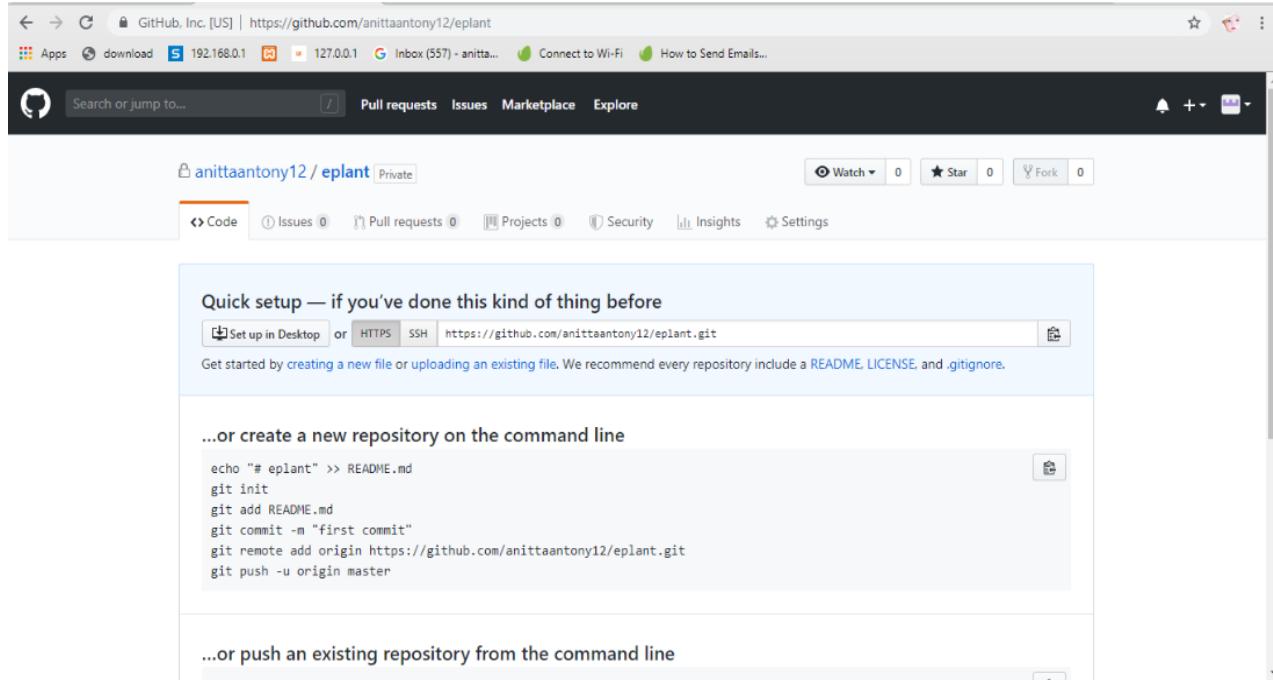
Step 1: Sign in to GitHub



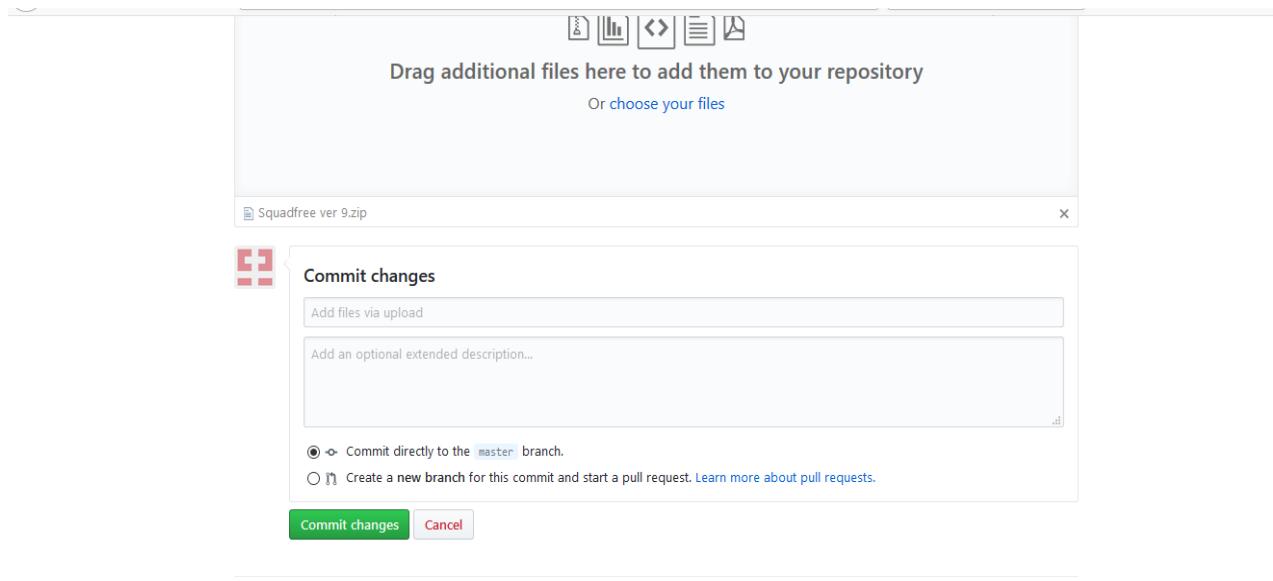
Step 2: Once successfully sign in, set up personal account, and create a repository.



Step 3: Once repository is completed, you can setup the repository



Step 4: Commit changes



Step 5: Refresh GitHub.com repository to fetch commits

No description, website, or topics provided.

Manage topics

33 commits 1 branch 0 releases 1 contributor

Branch: master New pull request Create new file Upload files Find File Clone or download

File/Zip	Description	Date
anittaantony12 Add files via upload		Latest commit 3cedb29 5 days ago
ABSTRACT.docx	Abstract	this year
Anitta_feasibility.docx	feasibility study	this year
Assignment.docx	Assignment	this year
Form Designing.docx	Form design	this year
MvcDatabaseApp.zip	Create a registration form and insert values to the database in ASP.NET	this year
Project Title.docx	Requirement gathering document	this year

PART 3

DATA DESIGN IN NOVEL TECHNOLOGIES

P3.1 MONGODB

P3.1.1 INTRODUCTION TO MONGODB

MongoDB is an open source database that uses a document-oriented data model. And it is one of several database types to arise in the mid-2000s under the NoSQL banner. Instead of using tables and rows as in relational databases, MongoDB is built on architecture of collections and documents. Documents comprise sets of key-value pairs and are the basic unit of data in MongoDB. Collections contain sets of documents and function as the equivalent of relational database tables. Like other NoSQL databases, MongoDB supports dynamic schema design, allowing the documents in a collection to have different fields and structures. The database uses a document storage and data interchange format called BSON, which provides a binary representation of JSON-like documents. Automatic sharding enables data in a collection to be distributed across multiple systems for horizontal scalability as data volumes increase.

MongoDB was created by Dwight Merriman and Eliot Horowitz, who had encountered development and scalability issues with traditional relational database approaches while building Web applications at Double Click, an Internet advertising company that is now owned by Google Inc.

P3.1.2 IMPLEMENTATION OF MONGODB

1. Download and Install MongoDB server for Windows.

https://www.mongodb.com/dr/fastdl.mongodb.org/win32/mongodb-win32-x86_64-2008plusssl-3.6.2-signed.msi/download.

2. Download and extract MongoDB PHP driver

https://s3.amazonaws.com/drivers.mongodb.org/php/php_mongo-1.6.8.zip

4. Rename any one file (Eg. php_mongo-1.6.8-5.6-vc11.dll) to php_mongo.dll and copy it to Extension directory known as ext directory. XAMPP: xampp\php\ext WAMPP: wamp\bin\php\php\ext

5. Add the following line to your php.ini extension=php_mongo.dll

6. Add Environment variable (Control Panel -> System and Security -> System -> Advanced system settings ->Environment variables) by editing PATH variable. C:\Program

Files\MongoDB\Server\3.6\bin C:\xampp\php OR C:\wamp\bin\php

7. Create directory C:\data\db

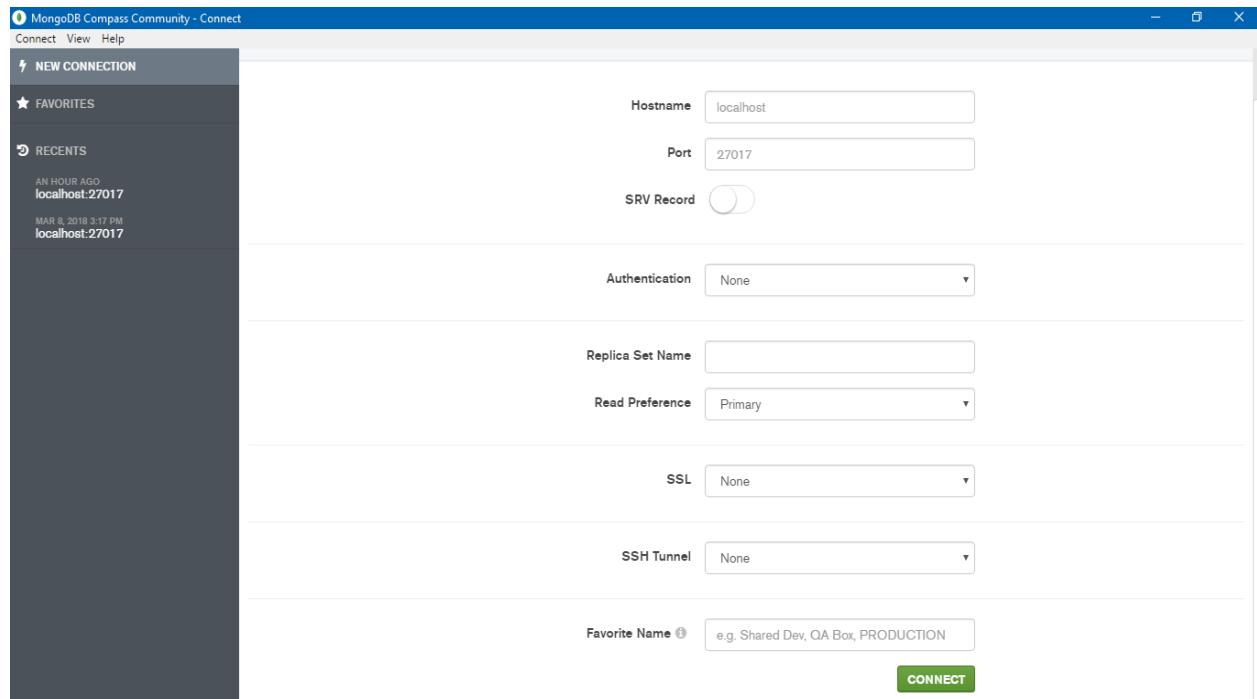
8. Restart Apache server

9. Open CMD and start MongoDB server by using command Mongod

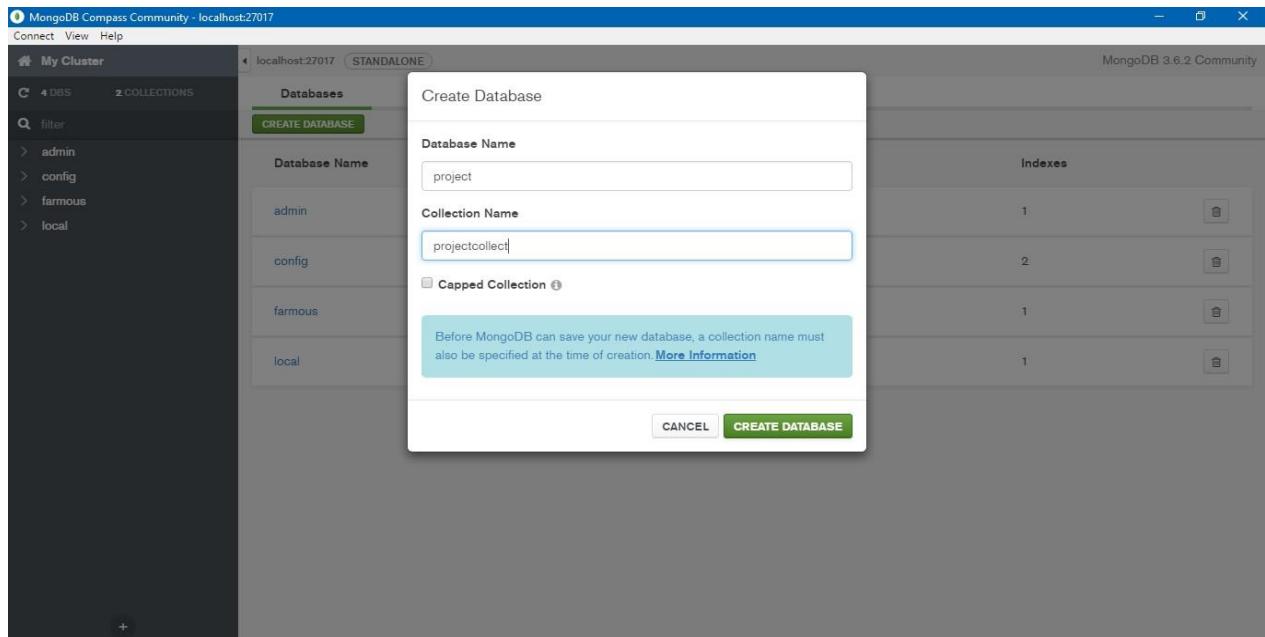
Working with MongoDB Server

1. Open the MongoDB Server (MongoDB Compass community: local host)

2. Connect to local host

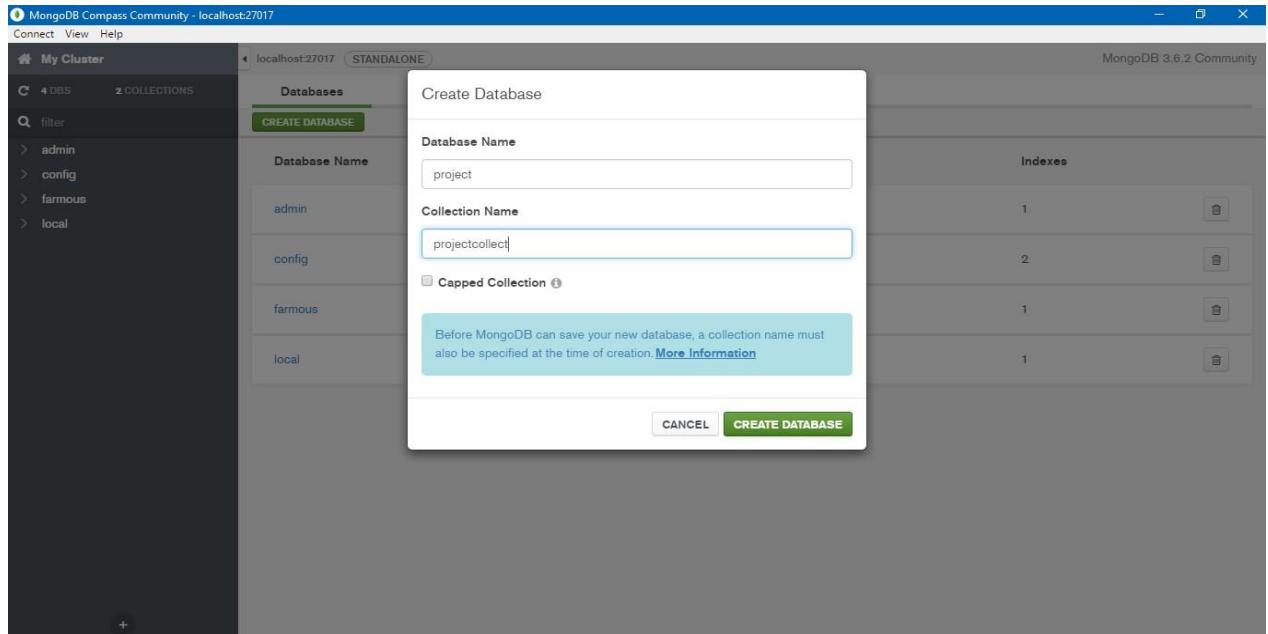


3. Once connected to the server, create a database and collection as well. A collection in MongoDB is equivalent to RDBMS table

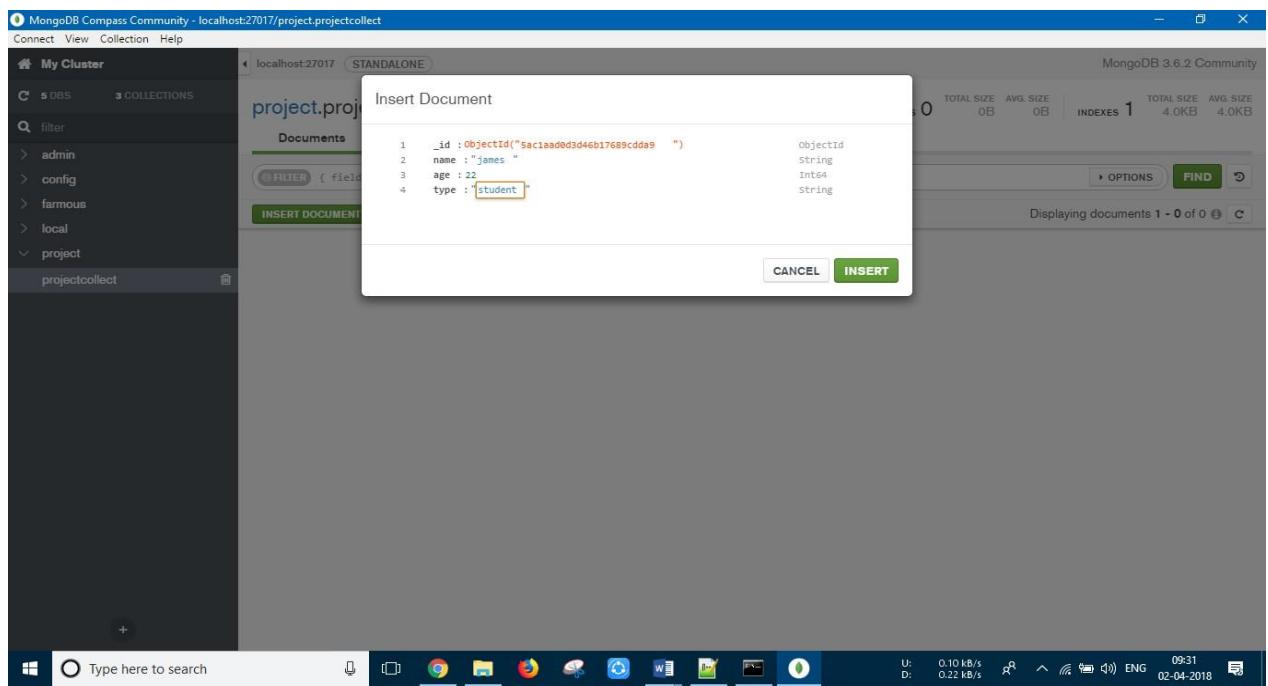


4. Once the database and collection are created, insert your documents into the collection. Documents in MongoDB are equivalent to the rows in RDBMS.

Collection Name	Documents	Avg. Document Size	Total Document Size	Num. Indexes	Total Index Size
projectcollect	0	-	0.0 B	1	4.0 KB



5. Document ID is the default and unique value provided by the MongoDB



Basic queries to access your database

1. MongoDB Connection \$con = new MongoClient();
2. Selection or Creation of Database (MySQL: Database) \$db = \$con->database_name;
3. Collection Creation (MySQL: Table) \$collection = \$db->createCollection("collection_name");
4. Document Insertion (MySQL: Insert - Row) \$document = array ("key-1" => "value-1", "key-n" => "value-n"); \$collection->insert(\$document);
5. View data (MySQL: Select) \$cursor = \$collection->find(); foreach (\$cursor as \$document)


```
{echo $document["key"];
```
6. Updating data (MySQL: Update) \$collection->update(array("key"=>"old-value"), array("\$set"=>array("key"=>"new-value")));
7. Deletion of data (MySQL: Delete) \$collection->remove(array("condition-key"=>"condition-value"));

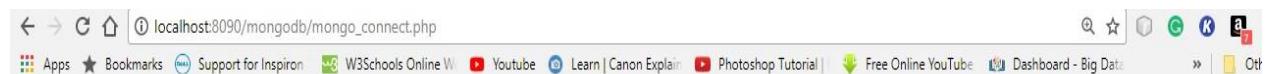
. php page to with basic queries access MongoDB

```

1  <?php
2      // connect to mongodb
3      $m = new MongoClient();
4
5      echo "Connection to database successfully<br>";
6      // $db = $m->mymongodb;
7      $db = $m->farmous; //Database
8      echo "Database mydb selected<br>";
9      // $collection = $db->mongo_collection;
10     $collection = $db->farmous_collection; //Collection
11     echo "collection ook<br>";
12
13     $cursor = $collection->find();
14     // iterate cursor to display title of documents
15
16     foreach ($cursor as $document) {
17         echo ("Name: ".$document['name']. " - Age: ".$document['age']."<br>");
18         //fields in the database
19     }
20 ?>

```

Output



Connection to database successfully

Database mydb selected

collection ook

Name: james - Age: 22

Name: subin - Age: 21

P3.2 BIGTABLE IN GCP

P3.2.1 INTRODUCTION TO BIGTABLE

Google Bigtable is a distributed, column-oriented data store created by Google Inc. to handle very large amounts of structured data associated with the company's Internet search and Web services operations. And it was designed to support applications requiring massive scalability; from its first iteration, the technology was intended to be used with peta bytes of data. The database was designed to be deployed on clustered systems and uses a simple data model that Google has described as "a sparse, distributed, persistent multidimensional sorted map." Data is assembled in order by row key and indexing of the map is arranged according to row, column keys, and timestamps. Compression algorithms help achieves high capacity. Google Bigtable serves as the database for applications such as the Google App Engine Data store, Google Personalized Search, Google Earth and Google Analytics. Google has maintained the software as a proprietary, in-house technology. Nevertheless, Bigtable has had a large impact on NoSQL database design. Google software developers publicly disclosed Bigtable details in a technical paper presented at the USENIX Symposium on Operating Systems and Design Implementation in 2006.

Google's thorough description of Bigtable's inner workings has allowed other organizations and open source development teams to create Bigtable derivatives, Apache HBase database, which is built to run on top of the Hadoop Distributed File System (HDFS). Other examples include Cassandra, which originated at Facebook Inc., and Hyper table, an open source technology that is marketed in a commercial version as an alternative to HBase.

P3.2.2 IMPLEMENTATION OF BIGTABLE

1. Creating a Cloud Bigtable Instance through the Google Cloud Platform Console.

Cost estimate

Item	Estimated cost
1 cluster	\$1,423.50/month
1000 GB SSD	\$170.00/month
Total	\$1,593.50/month

Clusters

Cluster
Cluster ID nexuscbt

Instance ID	Instance name	Application profiles	Zones	Nodes	Storage utilization
nexuscbt	nexus_cbt	default Add	us-central1-a Add	3	Loading

2. Installing the Cloud SDK for Cloud Bigtable

gcloud components update beta

gcloudconfig set project [PROJECT_ID]

gcloud beta Bigtable instances --help # help for all commands

gcloud beta bigtable instances create --help # help for the `create` command

Instance details

Cluster ID: nexuscbt-c1

CPU utilization	Rows	Throughput	System error rate
Average: 0.3%	Read: 0/s Write: 0/s	Read: 0 B/s Write: 0 B/s	0%

Cluster ID	Zone	Nodes	Storage utilization	Tables available
nexuscbt-c1	us-central1-a	3	0 B / 7.5 TB	0/0

```

nvision755@cloudshell:~ (nexus-1x)$ cbt createfamily courses cid
2019/05/27 15:06:20 - creds flag unset, will use gcloud credential
nvision755@cloudshell:~ (nexus-1x)$ cbt createfamily courses crs_name
2019/05/27 15:06:42 - creds flag unset, will use gcloud credential
nvision755@cloudshell:~ (nexus-1x)$ cbt set courses cid=1 crs_name="artificial intelligence"
2019/05/27 15:07:39 - creds flag unset, will use gcloud credential
2019/05/27 15:07:41 Bad set arg "crs_name=artificial intelligence"
nvision755@cloudshell:~ (nexus-1x)$ cbt set courses cid:c1:1 crs_name:c2="artificial intelligence"
2019/05/27 15:08:18 - creds flag unset, will use gcloud credential
nvision755@cloudshell:~ (nexus-1x)$ cbt read courses
2019/05/27 15:08:48 - creds flag unset, will use gcloud credential
cid:c1:
  crs_name:c2
    "artificial intelligence"
nvision755@cloudshell:~ (nexus-1x)$
  
```

Tables

nexus_cbt

Table ID	Cluster	Status	Storage utilization
courses	nexuscbt-c1	Ready	-

PART 4

SEARCH ENGINE OPTIMIZATION

Search Engine Optimization

Search engine optimization is a methodology of strategies, techniques, and tactics or it is the process of getting traffic from the free, organic, editorial or natural search results on search engines used to increase the number of visitors to a website by obtaining a high-ranking placement in the search results page of a search engine (SERP) — including Google, Bing, Yahoo and other search engines.

P4.1 GOOGLE ADWORDS

P4.1.1 INTRODUCTION TO GOOGLE ADWORDS

AdWords (Google AdWords) is an advertising service by Google for businesses wanting to display ads on Google and its advertising network. The AdWords program enables businesses to set a budget for advertising and only pay when people click the ads. The ad service is largely focused on keywords.

Businesses that use AdWords can create relevant ads using keywords that people who search the Web using the Google search engine would use. The keyword, when searched for triggers your ad to be shown. AdWords at the top ads that appear under the heading "Sponsored Links" found on the right-hand side or above Google search results. If your AdWords ad is clicked on, Google search users are then directed to your website.

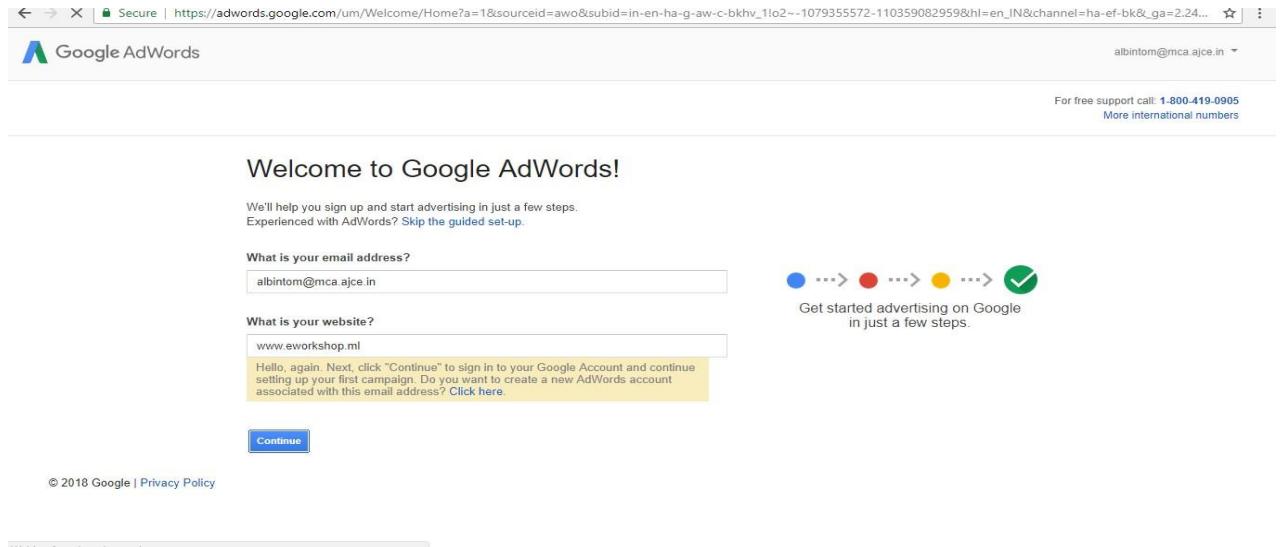
When choosing keywords for your AdWords campaigns different matching options are available. The two main keyword match options include the following:

- **Broad Match:** This reaches the most users by showing your ad whenever your keyword is searched for.
- **Negative Match:** This option prevents your ad from showing when a word or phrase you specify is searched for.
- **Phrase Match:** Your ad is shown for searches that match the exact phrase.
- **Exact Match:** Your ad is shown for searches that match the exact phrase exclusively.

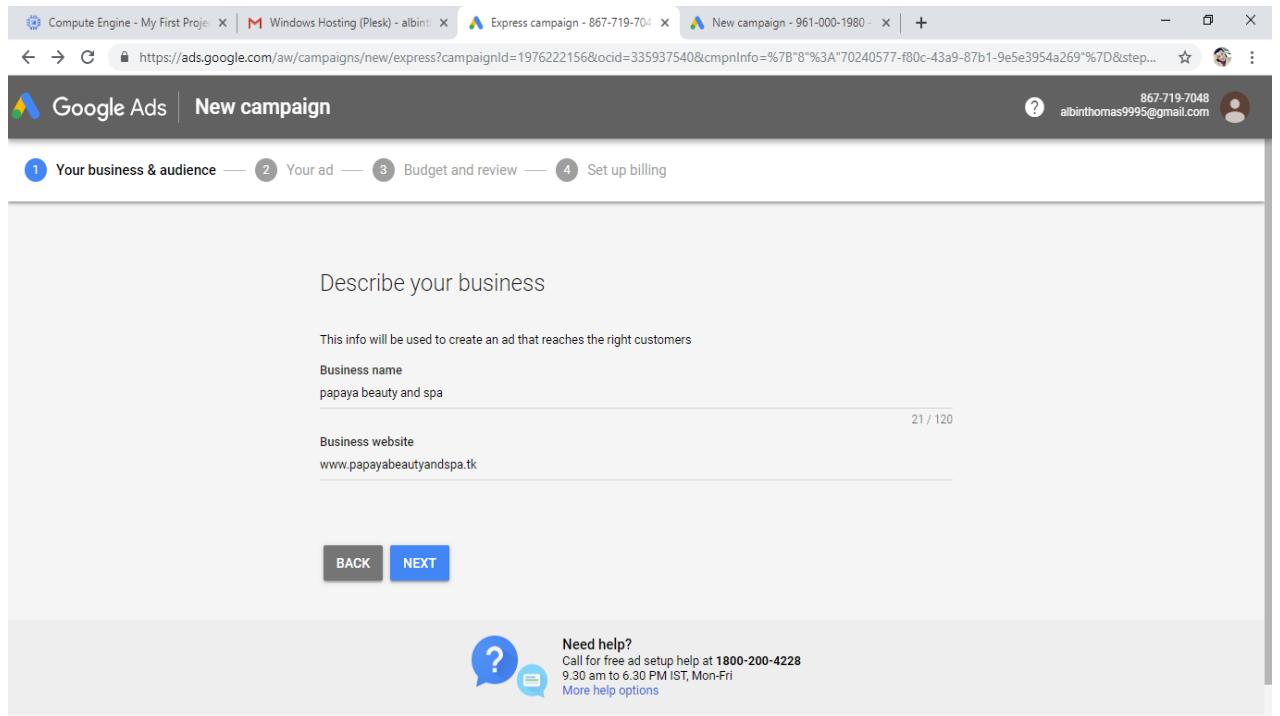
When using AdWords keywords are also used to determine your cost of advertising. Each keyword you choose will have a cost per click (CPC) bid amount. The bids specify the maximum amount you're willing to pay each time someone clicks your ad (the maximum cost-per-click). A higher CPC bid can allow your ad to show at a higher position on the page.

4.1.2 IMPLEMENTATION OF GOOGLE ADWORDS

Step 1: Go to Google AdWords Express and sign into your Google account



Step 2: Describe your business and website URL.



Step 3: Pick a goal for your ad, which means, what action do you most want customers to take?

What's your main advertising goal?

Ads that focus on a specific goal help you get the results you want

- Get more calls
- Get more visits to your physical location
- Get more website sales or sign-ups

Choose this goal if:

- ✓ Most of your business is conducted online
- ✓ You want customers to complete a trackable action (such as a purchase or sign-up) on your website

PICK GOAL

Experienced with Google Ads?

Need help? Call for free ad setup help at 1800-200-4228
9.30 am to 6.30 PM IST, Mon-Fri

Step 4: Pick an area to show your ad in, here Google is providing two options; one is Near my business (Which allows you to specify the distance of area from your location) and second is in specific cities, states or countries.

Where are your customers?

Find new customers in the areas you serve

- Set up a radius around your business
- Set up specific areas**

Where do you want your ad to appear?

- Kochi
- Ernakulam
- Kakkad
- Mulanthuruthy
- Aikaranad South

+ Add location (city, state, or country)

Google Map showing locations in Kerala, India. Labeled locations include Angamaly, Aluva, Thodupuzha, Pala, Vagamon, Munnar, Idukki, Kattappa, Kollam, Kottayam, Alappuzha, and Kozhikode. Roads are marked with route numbers like 544, 85, 165, and 66.

Potential audience size

9,272,154 people per month

This is an estimate of how many people search on Google in your selected locations. Audience size doesn't affect your cost.

Step 5: Define your products and services. Specifically, it aims for the business category.

Define your product or service

Which language do you want to advertise in?

English

What is your business category?

Spa and health club

What specific products or services do you want to promote in this ad?

We'll show your ad to people searching for similar terms on Google

Potential audience size

Limited people per month

How to increase your potential audience:

- Target a larger area to reach more people.
- Choose a product or service that is less specific, but still appropriate for your business.

+ ADD ANOTHER

Suggested for you

- + Beauty Treatments
- + Massage Services
- + Physiotherapy
- + Spa Breaks
- + Pool
- + Sauna
- + Gym
- + Personal Training
- + Couples
- + Hair Care
- + Manicure and Pedicure
- + Aerobic Classes
- + Waxing
- + Yoga Classes
- + Spa Packages

Step 6: Create your Ad preview including Headline, Description, Ad URL.

Your business & audience Your ad Budget and review Set up billing

Let's write your ad

Highlight the products and services you offer, and what makes your business unique

Get tips and view sample ads

Ad #1

Headline 1
papaya beauty and spa

21 / 30

Headline 2
Kochi Health Club

17 / 30

Description
Searching for a Place to Unwind When You Have Some Free Time? Look No Further!

78 / 90

Your ad preview

papaya beauty and spa | Kochi Health Club
[Ad] http://www.papaya beauty and spa.tk
Searching for a Place to Unwind When You Have Some Free Time? Look No Further!

SEE MORE AD LAYOUTS

WRITE ANOTHER AD

Clicks on your ad go to [\(?\)](#)

Step 7: Review your Ad and settings.

The screenshot shows the Google Ads interface for creating a new campaign. The campaign name is 'papaya beauty and spa'. The estimated performance section shows 12,747 - 21,281 impressions per month and 605 - 1,010 clicks per month. The campaign goal is set to 'Take an action on your website'. The locations section shows a map of Kochi, Ernakulam, Kakkanad, Mulanthuruthy, and Alkaranad South. The ad preview shows a blue banner for 'papaya beauty and spa | Kochi Health Club' with the URL 'www.papayabeautyandspa.tk' and the text 'Searching for a Place to Unwind When You Have Some Free Time? Look No Further!'. There is an 'EDIT' button below the ad preview.

P4.2 Google AdSense

P4.2.1 Introduction to Google AdSense

AdSense (*Google AdSense*) is an advertising placement service by Google. The program is designed for website publishers who want to display targeted text, video or image advertisements on website pages and earn money when site visitors view or click the ads. The advertisements are controlled and managed by Google and Web publishers simply need to create a free AdSense account and copy and paste provided code to display the ads. Revenue using AdSense is generated on a per-click or per-impression basis. It is free to become a verified website publisher in the Google AdSense program.

Google currently offers a number of different AdSense programs, depending on the type of content you will place the ads on (e.g. a webpage or RSS feed). Some of the more common programs include:

- AdSense for content: display ads on a website
- AdSense for search: display ads in search results on a website
- AdSense for mobile: display ads on a mobile site
- AdSense for feeds: display ads in RSS feeds
- AdSense for domains: display ads on unused domains

AdSense programs are also available to qualified publishers and developers. Qualified publishers may use AdSense to drive revenues for iPhone applications, video or Web browser games.

P4.2.2IMPLEMENTATION OD ADSENSE

1: Go to AdSense Custom Search Ads Generator

The screenshot shows the 'Page Options' configuration screen. It includes sections for 'Required' fields (Pub ID, Query, Number of ad units, Page Number) and 'Ad Extensions' (Location extension, Seller Ratings, Site Links). A note states: '★ Note: Some Ad Extensions may not appear in the preview.'

Required		Ad Extensions	
Pub ID	pub-961638900	<input checked="" type="checkbox"/> Location extension	
Query	hotels	<input checked="" type="checkbox"/> Seller Ratings	
Number of ad units	1	<input checked="" type="checkbox"/> Site Links	
Page Number	1		

Configuration Settings

Ad Language	ENGLISH
Adsafe Level	HIGH
Channel ID	
Testing Mode	OFF

2: Configure page options and page settings, such as Ad query string, no. of ad units, no. of pages, font, and color etc.

The screenshot shows the 'Ad Unit 1 Options' configuration screen. It includes sections for 'Required' fields (Container ID, Width), 'Configuration Settings' (Type of ad, Number of ads), and 'Fonts' (Font family, Title font size, Description font size).

Required	
Container ID	afscontainer1
Width (px)	700

Configuration Settings

Type of ad	BTF
Number of ads	2

Fonts

Font family	ARIAL
Title font size	12 PX
Description font size	12 PX

3: Preview your Ad unit.

Ad Unit 1 Preview

Ads by Google related to: hotels

Hotels.com Hotels.com: Cheap Hotels - Free Nights With Our Rewards ★★★★★ (4.4) Mumbai Hotels Bengaluru Hotels New Delhi Hotels Sydney Hotels Honolulu Hotels New York Hotels

booking.com Hotels: Booking.com Lowest Price Guarantee Book at over 1,744,000 hotels online. Best Price Guarantee. Get Instant Confirmation. 24/7 Customer Service. Read Real Guest Reviews. Book Now Book for Tonight Book for Tomorrow No Booking Fees Secure Booking

Get the Code

4: Place the java script code in your <head> tag and HTML content in your <body>tag.

Place this code in the <head> tag on your page.

```
<script async="async" src="https://www.google.com/adsense/search/ads.js"></script>
<!!-- other head elements from your page -->
<script type="text/javascript" charset="utf-8">
(function(g,o){g[o]=g[o]||function(){(g[o]['q']=g[o]['q']||[]).push(
    arguments),g[o]['t']=!new Date()})(window,'_googCsa');
</script>
```

Place this code in the <body> tag on your page.

```
<div id='afscontainer1'></div>
<script type="text/javascript" charset="utf-8">
var pageOptions = {
    "pubId": "pub-9616389000213823", // Make sure this is the correct client ID!
    "query": "hotels",
    "adPage": 1
};
```

P4.3 GOOGLE WEBMASTERS

P4.3.1 INTRODUCTION TO GOOGLE WEBMASTERS

Google Webmaster Tools (GWT) is the primary mechanism for Google to communicate with webmasters. Google Webmaster Tools helps you to identify issues with your site and can even let you know if it has been infected with malware (not something you ever want to see, but if you haven't spotted it yourself, or had one of your users tweet at you to let you know, it's invaluable). And also, GWT let you evaluate and maintain your website's performance in search results Offered as a free service to anyone who owns a website, Google Webmaster Tools (GWT) is a conduit of information from the largest search engine in the world to you, offering insights into how it sees your website and helping you uncover issues that need fixing. You do not need to use GWT for your website to appear in search results, but it can offer you valuable information that can help with your marketing efforts.

How GWT can help monitor your website's performance

1. It verifies that Google can access the content on your website.
2. GWT makes it possible to submit new pages and posts for Google to crawl and remove content you don't want search engine users to discover.
3. It helps you deliver and evaluate content that offers users a more visual experience.
4. You can maintain your website without disrupting its presence in search results.
5. It allows you to discover and eliminate malware or spam problems that may not be easily found through other means.

P4.3.2 Implementation of Sitemap

A site map is a model of a website's content designed to help both users and search engines navigate the site. A sitemap can be a hierarchical list of pages (with links) organized by topic, an organization chart, or an XML document that provides instructions to search engine crawl bots. The Sitemaps protocol allows a webmaster to inform search engines about URLs on a website that are available for crawling.

1. Generate your website sitemap using an online sitemap generator. Enter your website URL and Start the process

The screenshot shows the XML-Sitemaps.com website interface. At the top, it says "Please wait, we are crawling your website". Below that, there are two sections: "PASSED" (0:27) and "REMAINING" (0:17). Under "SCANNED", there are counts of 24, 15, and 16. A progress bar indicates the crawl is 24% complete. The "Current page:" field shows "/". A "CANCEL THE PROCESS" button is present. A tooltip message "Check this while crawling is in progress" is shown above the "Use our PRO Sitemaps service to maintain your sitemap (free 500 pages account)" button. The main content area is divided into three columns: "Free and simple", "Powerful, yet easy to use", and "Installable version". Each column lists features and benefits.

Features		
Free and simple	Powerful, yet easy to use	Installable version
Suitable when you need to quickly create a sitemap for a small web site (up to 500) pages. No registration required and you get sitemaps ready immediately. You can download xml sitemap file or receive it via email and put it on your website after that. You are on the online generator home page right now. Just enter your website URL using the form.	Free account provides you everything you get with Online generator and allows you to: <ul style="list-style-type: none"> submit sitemap directly from our servers update sitemap without reuploading it to your website easily manage multiple websites Upgraded account will let you: <ul style="list-style-type: none"> index up to 1.500.000 pages 	We offer a server-side script written in PHP language that you can install on your server and create sitemap for your website. The script doesn't have the limit on number of pages included in sitemap, although server resources required to create sitemap depend on the website size. There are add-ons for it to create images, video and

2. Once the process is completed, it will generate a site map.xml file.

The screenshot shows the XML-Sitemaps.com website interface after the crawling process has completed. It displays the same information as the previous screenshot, including the "PASSED" and "REMAINING" times, scanned pages, and a completed progress bar. The "Current page:" field now shows "e-plants". The "CANCEL THE PROCESS" button is still present. The main content area remains the same, showing the three columns of features.

3. Upload the sitemap.xml file to your root directory and enter the path to submit the sitemap

Sitemaps Tell Bing about the URLs on your site.

URL	Last Submitted	URLs Submitted	Last Crawl	Status
http://eplants.tk/sitemap.xml	31-05-2019	Pending	Pending	Pending

Search Keywords Your top keywords from organic search

Keywords	Clicks from Search	Appeared in Search
No data available		

Inbound Links Links pointed at your website

Target Page	Count of Links
No data available	

Diagnostics & Tools

Enter a URL

Fetch as Bingbot to see how the page's code appears to Bing
Markup Validator reports on any structured markup found on the page

P4.3.3 Implementation of Robots.txt

Robots.txt is a text (not html) file you put on your site to tell search robots which pages you would like them not to visit. Robots.txt is by no means mandatory for search engines but generally search engines obey what they are asked not to do. It is important to clarify that robots.txt is not a way from preventing search engines from crawling your site (i.e. it is not a firewall, or a kind of password protection) and the fact that you put a robots.txt file is something like putting a note “Please, do not enter” on an unlocked door – e.g. you cannot prevent thieves from coming in but the good guys will not open the door and enter. That is why we say that if you have really sensitive data, it is too naïve to rely on robots.txt to protect it from being indexed and displayed in search results.

The location of robots.txt is very important. It must be in the main directory because otherwise user agents (search engines) will not be able to find it—they do not search the whole site for a file named robots.txt. Instead, they look first in the main directory and if they don't find it there, they simply assume that this site does not have a robots.txt file and therefore they index everything they find along the way.

Structure of a Robots.txt File

The structure of a robots.txt is pretty simple (and barely flexible) – it is an endless list of user agents and disallowed files and directories. Basically, the syntax is as follows:

User-agent:

Disallow:

“*User-agent*” are search engines’ crawlers and *disallow*: lists the files and directories to be excluded from indexing. In addition to “user-agent:” and “disallow:” entries, you can include comment lines – just put the # sign at the beginning of the line:

All user agents are disallowed to see the /temp directory. User-agent:

Disallow: /temp/

P4.4 Bing Webmaster Tool

P4.4.1 Introduction to Bing Webmaster Tool

Bing Webmaster Tools (previously the Bing Webmaster Centre) is a free service as part of Microsoft’s Bing search engine which allows webmasters to add their websites to the Bing index crawler. The service also offers tools for webmasters to troubleshoot the crawling and indexing of their website, Sitemap creation, submission and ping tools, website statistics, consolidation of content submission, and new content and community resources. Bing has generally been great to SEOs and webmasters, and nowhere is this more apparent than with Bing Webmaster Tools. In many ways, Bing Webmaster Tools is actually more advanced —and caters more to SEO professionals than its Google counterpart, Google Search Console. For this, I give them a round of applause. I mean, would we have a Google Disavow Links Tool if Bing hadn’t released one first? Maybe but I still applaud Bing for catering to SEOs.

P4.4.2 Implementation of Bing Webmaster Tool

1. Sign in to Bing webmaster

Want more users for your site?

Sign In

New to Webmaster? Sign Up

Sign up now and receive a ₹3000 search advertising credit from Microsoft Advertising.

[Terms and Conditions apply](#)

Get insights into your site

2. Go to MySites (User-friendly interface to maintain multiple websites from a single account.) and add your website URL

Add a Site

Enter site URL

ADD

DELETE EXPORT Search Compact

Last 30 days 27-04-2019 - 26-05-2019

Site Dashboards Messages Clicks from Search Appeared in Search Pages Crawled Pages Indexed

Want to control how your site appears in search?

ADD YOUR SITE

Recent Blog Posts

Webmaster Help Privacy and Cookies Legal Advertise Help Support Search Help Feedback

The screenshot shows the 'Bing webmaster' interface. In the top navigation bar, there are links for Profile, Messages (0), Help, and a personalized greeting 'Hi Anitta Antony MCA LE 2017-2019'. Below the navigation, the 'My Sites' section is displayed. A form allows adding a new site with the URL 'http://eplants.tk' entered and an 'ADD' button highlighted. Below this, there are buttons for Site Dashboards, Messages, Clicks from Search, Appeared in Search, Pages Crawled, and Pages Indexed. A search bar at the top right is set to search for 'Last 30 days' between '27-04-2019' and '26-05-2019'. A call-to-action button 'ADD YOUR SITE' is visible.

The screenshot shows the 'Recent Blog Posts' section. It includes a navigation bar with links for 'Webmaster Blog', 'Privacy and Cookies', 'Legal', 'Advertise', 'Help', 'Support', 'Search Blog', and 'Feedback'. Below the navigation, there is a placeholder text 'Want to control how your site appears in search?' with a 'ADD YOUR SITE' button.

The screenshot shows the 'Add Site' configuration page. The URL 'http://eplants.tk' is already entered in the 'Site URL' field. The 'ABOUT ME' section contains fields for First Name ('Anitta'), Last Name ('Antony'), Email ('anittaantony@mca.ajce.in'), Job role ('Student'), Company or organization Name ('Amal Jyothi College'), Company or organization size (''), Industry ('Education'), Contact phone ('7558814170'), City ('Kannur'), State/Province ('Kerala'), Zip/Postal code ('670582'), and Country or region ('India').

1. Verify ownership of your site.

- Download and Upload BingSiteAuth.xml the file to your root directory.
- Confirm successful upload by visiting your URL/BingSiteAuth.xml in your browser
- Copy and paste a <meta> tag in your default webpage

Verify ownership for: eplants.tk

Option 1: Place an XML file on your web server

1. Download BingSiteAuth.xml
2. Upload the file to <http://eplants.tk/BingSiteAuth.xml>
3. Confirm successful upload by visiting <http://eplants.tk/BingSiteAuth.xml> in your browser
4. Click the verify button below

VERIFY CANCEL

Option 2: Copy and paste a <meta> tag in your default webpage

You can add a <meta> tag containing the authentication code to the <head> section of your default webpage.

```
<meta name="msvalidate.01" content="859DEDFOFA79DB80AEE7AD7344B8E343" />
```

An example:

```
<html>
  <head>
    <meta name="msvalidate.01" content="859DEDFOFA79DB80AEE7AD7344B8E343" />
    <title>Your SEO optimized title</title>
  </head>
  <body>
    page contents
  </body>
</html>
```

Privacy and Cookies Legal Advertise Help Support Feedback

4. Add information about the website and to MySites to complete the process.

Kanjirappally

State/Province: Kerala Zip/Postal code: 686514

Country or region: India

I am an agency, not a site owner

CONTACT PREFERENCE
Bing Webmaster may send out emails notifying users about specific issues with their sites, as well as periodic webmaster news updates, offers and tips.

Yes, I would like to receive Bing Webmaster communication

How often would you like to receive messages about your site(s)' issues?

Daily Weekly Monthly

ALERT PREFERENCE

<input checked="" type="checkbox"/> Crawl Errors	<input checked="" type="checkbox"/> Index Issues
<input checked="" type="checkbox"/> Sitemaps	<input checked="" type="checkbox"/> Malware

Microsoft Privacy Statement **SAVE**

Part 5

Site Security

P5.1 SiteLock Security

SiteLock provides comprehensive, cloud-based website *security* solution service that performs daily scans of a website to identify vulnerabilities and protect against threats like viruses, cross-site scripting, SQL injection and even email back listing's SiteLock Trust Seal provides customer confidence and increases your sales and conversions. And they are the Global Leader in business website security solutions, is the only web security solution to offer complete, cloud-base website protection. Its 360 –degree monitoring finds and fixes threats, prevents future attacks, accelerate website performance and meets PCI compliance standard for business of all sizes. Founded in 2008 SiteLock protects over 12 million websites worldwide.

Key Features

- **Website Acceleration**

Improve SEO and reduce bandwidth and server use with SiteLock's Global Content Delivery Network (CDN); ensure a consistent and speedy consumer experience.

- **DDoS Protection**

Protect websites from all types of DDoS attacks with auto -detection and triggering, and less than 0.01% false positives.

- **Web Application Firewall**

Secure websites from automated and human targeted attacks, prevent scraper, block backdoor access and sort out bot traffic.

- **Automatic Detection and Remediation**

Get 360-degree protection from malware and identify vulnerabilities with daily malware detection scans, automatic malware removal, and expert support.

- **Expert Support 24/7/365**

Connect with SiteLock's specialized security engineers any time of day via email, chat, and phone, and use SiteLock911 for emergency malware removal.

P5.2 PCI Compliance

The Payment Card Industry Data Security Standard (PCIDSS) is an information security standard for organizations that handle branded credit cards from the major card schemes. The PCI Standard is mandated by the card brands and administered by the Payment Card Industry Security Standards Council. The standard was created to increase controls around cardholder data to reduce credit card fraud. Validation of compliance is performed annually, either by an external Qualified Security Assessor (QSA) or by a firm-specific Draft: Internal Security Assessor (ISA) that creates a Report on Compliance for organizations handling large volumes of transactions, or by Self-Assessment Questionnaire (SAQ) for companies handling smaller volumes.

The PCI Data Security Standard specifies twelve requirements for compliance, organized into six logically related groups called "control objectives." These 6 groups are:

1. Build and Maintain a Secure Network and Systems
2. Protect Cardholder Data
3. Maintain a Vulnerability Management Program
4. Implement Strong Access Control Measures
5. Regularly Monitor and Test Networks
6. Maintain an Information Security Policy

Goals of PCI Compliance

1. Building and maintaining a secure network.
2. Protect Cardholder Data.
3. Maintain a Vulnerability Management Program.
4. Implement Strong Access Control Measures.
5. Implement Strong Access Control Measures.
6. Maintain an Information Security Policy.

Part 6

Server Security and Penetration Testing

P6.1 Data Security

Data security refers to protective digital privacy measures that are applied to prevent unauthorized access to computers, databases, and websites. Data security also protects data from corruption. Data security is an essential aspect of IT for organizations of every size and type. Examples of data security technologies include backups, data masking, and data ensure. The core of the data security technology is encryption, where digital data, software/hardware, and hard drives are encrypted and therefore rendered unreadable to unauthorized users and hackers.

Different Ways To Enhance Data Security

1. Limit Data Access
2. Identify Sensitive Data
3. Pre-planned Data Security Policy

P6.2 HTTPS using .htaccess file

.htaccess

.htaccess is a configuration file for use on web servers running the Apache Web Server software. When a .htaccess file is placed in a directory which is in turn' loaded via the Apache Web Server's, then the .htaccess file is detected and executed by the Apache Web Server software. These .htaccess files can be used to alter the configuration of the Apache Web Server software to enable/disable additional functionality and features that the Apache Web Server software has to offer. These facilities include basic redirect functionality, for instance, if a 404 file not found error occurs, or for more advanced functions such as content password protection or image hot link prevention.

How to force HTTPS using a .htaccess file in cPanel

Once an SSL certificate is installed and a site can be reached via https:// appropriately, visitors should be able to access the whole site or key pages via https:// automatically. In other words, by typing domain.com in a web-browser, a user should be redirected to https://domain.com to access the site securely. To accomplish this, a special set of directives called rewrite rules needs to be added to the website's **.htaccess file**, which can be found in the root folder of a specific site in cPanel (e.g. "public_html"). If the file is not shown, please make sure to click on 'Settings' and tick the option 'Show hidden files'. Also, this file can be created if it cannot be located in anyway.

Redirect Only Specified Domain

To force a specific domain to use HTTPS, use the following lines of code in the .htaccess file in your website's root folder:

```
RewriteEngine
on
RewriteOptions
inherit
RewriteCond
%{HTTPS} off
RewriteCond %{REQUEST_URI} !^/[0-9]+\..+\cpaneldcv$
RewriteCond %{REQUEST_URI} !^/[A-F0-9]{32}\.txt(?:\ Comodo\ DCV)?$
RewriteCond %{REQUEST_URI} !^/.well-known/pki-validation/[A-F0-
9]{32}\.txt(?:\ Comodo\ DCV)?$RewriteRule^(.*)$
https://%{HTTP_HOST}%{REQUEST_URI} [L,R=301]
RewriteCond
%{REQUEST_FILENAME}
!-fRewriteRule^([^\.]+)$
$1.php [NC,L]
```

P6.3 ModSecurity Tools

The *ModSecurity Tools* interface allows you to install and manage ModSecurity rules.

ModSecurity Core Rule Set (CRS) is a set of generic attack detection **rules** for use

With **ModSecurity** or compatible web application firewalls. The CRS aims to protect web applications from a wide range of attacks

Step 1: Install ModSecurity Apache module in order to use this interface.

- If your runs EasyApache 3, use WHM's EasyApache 3 interface (WHM >>HSoftware>>EasyApache3) to install the ModSecurity ApacheModule
- If your system runs EasyApache4, use WHM's EasyApache4 interface

(WHM>>Home>>Software>>EasyApache4) or yum install ea-apache24-mod_security2 command to install the ModSecurity Apache module

- If your system runs EasyApache 4, use WHM's EasyApache 4 interface (WHM>>command to install the ModSecurity Apache module

(WHM >> Home >>Software >>EasyApache 4)

The screenshot shows the WHM Software interface. On the left, there is a sidebar with links like Transfers, Themes, Packages, DNS Functions, SQL Services, IP Functions, and Software. The Software link is currently selected. The main area displays several software management tools:

- EasyApache 4
- Install a Perl Module
- Install an RPM
- Module Installers
- MultiPHP INI Editor
- MultiPHP Manager
- MySQL/MariaDB Upgrade
- Rebuild RPM Database
- System Update
- Update Server Software

Step: 2

(WHM >> Home >>Security Center) Modsecurity Tools ModSecurity Vendors

The screenshot shows the WHM Security Center interface. On the left, there is a sidebar with links like Server Configuration, Support, Networking Setup, Security Center (which is currently selected), Server Contacts, Resellers, Service Configuration, Locales, Backup, and Clusters. The main area displays several security-related tools and vendors:

- Apache mod_userdir Tweak
- Compiler Access
- Configure Security Policies
- cPHulk Brute Force Protection
- Host Access Control
- Manage External Authentications
- Manage root's SSH Keys
- Manage Wheel Group Users
- ModSecurity™ Configuration
- ModSecurity™ Tools
- ModSecurity™ Vendors
- Password Strength Configuration

Step 3: Managing Vendors

The screenshot shows the WHM interface with the 'ModSecurity™ Vendors' section selected. The main content area displays a table of vendors. One row is shown for 'OWASP ModSecurity Core Rule Set V3.0', which is provided by 'SpiderLabs'. A note indicates that this vendor is not installed, with a '+ Install' button available. Navigation links like 'Back To Top' and 'Add Vendor' are present, along with search and page size controls.

Vendor	Provider	Enabled	Updates	Sets Included
OWASP ModSecurity Core Rule Set V3.0	SpiderLabs		This vendor is not installed.	

Step 4: Add COMODO ModSecurity Apache Rule Set

The screenshot shows the 'Add Vendor' dialog box. The 'ModSecurity™ Vendors' option is selected in the left sidebar. The main area contains fields for 'Vendor Name', 'Vendor Description', 'Vendor Documentation URL', 'Vendor Report URL', and 'Path'. A 'Load' button is available to import vendor information from a YAML file. A note at the top explains the required URL format: it must begin with 'meta_'. Examples are provided: 'https://example.com/example/meta_example.yaml' and 'https://example.com/example/meta_example.yaml'.

The screenshot shows the 'ModSecurity™ Vendors' section of the E-plants interface. On the left, a sidebar lists various security features: Server Configuration, Support, Networking Setup, Security Center (selected), Apache mod_userdir Tweak, Compiler Access, Configure Security Policies, cPHulk Brute Force Protection, Host Access Control, Manage External Authentications, Manage root's SSH Keys, Manage Wheel Group Users, ModSecurity™ Configuration, ModSecurity™ Tools, and ModSecurity™ Vendors (selected). The main content area has a title 'ModSecurity™ Vendors' with a storefront icon. Below it, a sub-section titled 'Add Vendor' with the sub-sub-section 'Vendor Configuration URL'. A text input field contains the URL 'https://waf.comodo.com/doc/meta_comodo_apache.yaml'. Below the URL field, there is explanatory text: 'The file name should begin with meta_ followed by the short vendor identification code, and finally the .yaml extension.' and 'Example: https://example.com/example/meta_example.yaml'. A blue 'Load' button is present. Further down, there are fields for 'Vendor Name' (containing 'COMODO ModSecurity Apache Rule Set') and 'Vendor Description' (containing 'COMODO ModSecurity Rules for Apache').

Successfully added COMODO ModSecurity Apache Rule Set

The screenshot shows the 'Manage Vendors' page. The left sidebar is identical to the previous screenshot. The main content area has a title 'Manage Vendors'. A green success message box displays: 'Success: You have successfully added "COMODO ModSecurity Apache Rule Set" to the vendor configuration list.' Below the message is a search bar and navigation controls for 'Page Size' (set to 10), 'First', 'Last', and a current page indicator '1'. A table lists vendors. The first row is for 'OWASP ModSecurity Core Rule Set V3.0' (Provider: SpiderLabs OWASP V3 curated ModSecurity rule set, Status: This vendor is not installed, Actions: + Install). The second row is for 'COMODO ModSecurity Apache Rule Set' (Provider: Third Party, Status: Enabled On, Updates: 34 / 34, Actions: Edit, Delete). At the bottom, there are links for 'Back To Top' and 'Add Vendor', and another set of navigation controls for 'Page Size' (10), 'First', 'Last', and a current page indicator '1'.

Step 5: Installing OWASP ModSecurity Core Rule Set V3.0 Vendor

Successfully installed the vendor: OWASP ModSecurity Core Rule Set V3.0

The screenshot shows the WHM (Web Host Manager) interface. In the top right corner, it displays system information: CENTOS 7.4 kvm [centos] v68.0.36 Load Averages: 0.07 0.05 0.0. The main navigation bar includes News, Change Log, and Log Out (root). Below the navigation, a success message in a green box states: "Success: You have successfully added 'COMODO ModSecurity Apache Rule Set' to the vendor configuration list." The left sidebar contains various WHM modules like Server Configuration, Support, Networking Setup, Security Center, and ModSecurity™ Configuration. The Security Center section is expanded, showing sub-options such as Apache mod_userdir Tweak, Compiler Access, Configure Security Policies, cPHulk Brute Force Protection, Host Access Control, Manage External Authentications, Manage root's SSH Keys, Manage Wheel Group Users, and ModSecurity™ Configuration. The main content area shows a table for managing vendors. The table has columns: Vendor, Provider, Enabled ▲, Updates, and Sets included. One row is visible for "COMODO ModSecurity Apache Rule Set", which is listed as a "Third Party" vendor. The "Enabled" status is set to "On". The "Sets included" section shows "34 / 34" and includes links for "Edit" and "Delete". At the bottom of the vendor table, a modal dialog box asks, "Are you sure that you wish to install the 'OWASP ModSecurity Core Rule Set V3.0' vendor?", with "Install and Restart Apache" and "Cancel" buttons.

Rules List by the two Vendors COMODO and OWASP

The screenshot shows the ModSecurity™ Tools interface. The left sidebar lists various tools and configurations, with "ModSecurity™ Tools" currently selected. The main content area is titled "ModSecurity™ Tools" and "Rules List". It features a search bar, a page size selector (10 items), and navigation buttons (First, Last, Page Number). There are also buttons for "Hits List", "Edit Rules", and "Add Rule". The rules list table has columns: Status ▼, Staging, Vendor, ID, and Message. One rule is listed: "Enabled" (green button), "Published" (blue button), Vendor "OWASP3", ID "900990". The "Message" column shows the rule content, which includes a CRS setup template and a SecAction directive. To the right of the rule, there are "Copy" and "Disable" buttons.

Home » Security Center » ModSecurity™ Tools » Rules List

Rules List				
SecAction "id:900990, phase:1, nolog, pass, t:none, setvar:tx.crs_setup_version=302"				
Enabled	Published	OWASP3	953011	
SecRule TX:PARANOIA_LEVEL "@lt 1" "phase:3,id:953011,nolog,pass,skipAfter:END-RESPONSE-953-DATA-LEAKAGES-PHP"				
Enabled	Published	OWASP3	953012	
SecRule TX:PARANOIA_LEVEL "@lt 1" "phase:4,id:953012,nolog,pass,skipAfter:END-RESPONSE-953-DATA-LEAKAGES-PHP"				
Enabled	Published	OWASP3	953100	
PHP Information Leakage				
#	# -=[PHP Error Message Leakage]=.			
SecRule RESPONSE_BODY "@pmf php-errors.data" "msg:'PHP Information Leakage', id:953100, phase:response, ver:'OWASP CRS/3.0.0', rev:'3', maturity:'9', accuracy:'9', tnone, capture, ct:auditLogParts==E, block, severity:'ERROR', logdata:'Matched Data: %TX.0 found within % {MATCHED_VAR_NAME}: %{MATCHED_VAR}', tag:'application-multi', tag:'language-php', tag:'platform-multi', tag:'attack-disclosure', tag :'OWASP CRS/LEAKAGE/ERRORS_PHP', tag:'WASC/CTC/WASC-13', tag:'OWASP_TOP_10/A6', tag:'PCI/6.5.6', setvar:tx.msg=%{rule.msg}, setvar:tx.outbound_anomaly_score+=%{tx.error_anomaly_score}, setvar:tx.anomaly_score+=%{tx.error_anomaly_score}, setvar:tx.%{rule.id}-OWASP CRS /LEAKAGE/ERRORS-%{matched_var_name}=%{tx.0}"				
Enabled	Published	OWASP3	953110	
PHP source code leakage				
#				

- Testing Vulnerabilities with sqlmap kali Linux Tool

```

root@kali:~# sqlmap --url="https://eworkshop.ml/project/spare_order.php?category_id=95"
[!] to see full list of options run with '-hh'
[*] starting at 20:28:21
[20:28:22] [INFO] testing connection to the target URL
[20:28:22] [WARNING] the web server responded with an HTTP error code (403) which could interfere with the results of the tests
[20:28:23] [INFO] checking if the target is protected by some kind of WAF/IPS/IDS
[20:28:23] [INFO] testing if the target URL is stable
[20:28:23] [INFO] target URL is stable
[20:28:23] [INFO] testing if GET parameter 'category_id' is dynamic
[20:28:23] [WARNING] GET parameter 'category_id' does not appear to be dynamic
[20:28:24] [WARNING] heuristic (basic) test shows that GET parameter 'category_id' might not be injectable
[20:28:24] [INFO] testing for SQL injection on GET parameter 'category_id'
[20:28:24] [INFO] testing 'AND boolean-based blind - WHERE or HAVING clause'
[20:28:27] [INFO] testing 'MySQL >= 5.0 boolean-based blind - Parameter replace'
[20:28:28] [INFO] testing 'MySQL >= 5.0 AND error-based - WHERE, HAVING, ORDER BY or GROUP BY clause (FLOOR)'
[20:28:31] [INFO] testing 'PostgreSQL AND error-based - WHERE or HAVING clause'
[20:28:33] [INFO] testing 'Microsoft SQL Server/Sybase AND error-based - WHERE or HAVING clause (IN)'
[20:28:35] [INFO] testing 'Oracle AND error-based - WHERE or HAVING clause (XMLType)'
[20:28:38] [INFO] testing 'MySQL >= 5.0 error-based - Parameter replace (FLOOR)'
[20:28:38] [INFO] testing 'MySQL inline queries'
[20:28:39] [INFO] testing 'PostgreSQL inline queries'

```

- Here we use ModSecurity tool, and we get the results given below

Date	Host	Source	Severity	Status	Rule ID
2018-04-05 16:36:56	216.10.243.105	195.22.127.231	CRITICAL	403	210492: More
2018-04-05 16:15:41	techrecruit.ml	40.77.167.94	ERROR	403	950130: Directory Listing More
2018-04-05 16:15:41	techrecruit.ml	40.77.167.94		403	980140: Outbound Anomaly Score Exceeded (score 4): Directory Listing More
2018-04-05 16:05:12	angelweddings.ml	5.255.250.130	ERROR	403	950130: Directory Listing More
2018-04-05 16:05:12	angelweddings.ml	5.255.250.130		403	980140: Outbound Anomaly Score Exceeded (score 4): Directory Listing More
2018-04-05 16:00:47	mobgalla.gq	106.203.98.184	CRITICAL	403	930100: Path Traversal Attack (..) More
2018-04-05 16:00:46	mobgalla.gq	106.203.98.184	CRITICAL	403	930110: Path Traversal Attack (..) More
2018-04-05 16:00:46	mobgalla.gq	106.203.98.184	CRITICAL	403	930110: Path Traversal Attack (..) More

P6.4 OWASP

The Open Web Application Security Project (OWASP), an online community, produces freely-available articles, methodologies, documentation, tools, and technologies in the field of web application security. The Open Web Application Security Project (OWASP) is a worldwide not-for-profit charitable organization focused on improving the security of software. **OWASP** Operating as a community of like-minded professionals, OWASP issues software tools and knowledge-based documentation on application security. All of its articles, methodologies, and technologies are made available free of charge to the public.

OWASP seeks to educate developers, designers, architects and business owners about the risks associated with the most common Web application security vulnerabilities. OWASP, which supports both open source and commercial security products, has become known as a forum in which information technology professionals can network and build expertise. The organization publishes a popular Top Ten list that explains the most dangerous Web application flaws

and provides recommendations for dealing with those flaws.

OWASP tools, document and code library projects are organized into three categories, tools and documents that can be used to find security-related design and implementation flaws, tools and documents that can be used to guard against security-related design and implementation flaws and tools and documents that can be used to add security-related activities into the application lifecycle management (ALM).

The Open Web Application Security Protocol team released the top10 vulnerabilities that are more prevalent on the web in the recent years. The OWASP Top Ten is a list of the 10 most dangerous current Web application security flaws along with effective methods of dealing with those flaws, which tracks the top software security vulnerabilities

1. Unvalidated input.
2. Broken access control.
3. Broken authentication and session management.
4. Cross-site scripting (XSS) flaws.
5. Buffer overflows.
6. Injection flaws.
7. Improper error handling.
8. Insecure storage.
9. Denial of service (DoS).
10. Insecure configuration management.

P6.5 Kali Linux Tools

P6.5.1 Introduction to Kali Linux Tools

Kali Linux is the worlds most powerful and popular penetration testing platform, used by security professionals in a wide range of specializations, including penetration testing, forensics, reverse engineering, and vulnerability assessment. It is the culmination of years of refinement and there sul continuous evolution of the platform, from WHoppi X to WHAX, to BackTrack, and now to a complete penetration testing frame work leveraging many features of DebianGNU/Linux and the vibrant open source community worldwide. Kali contains several hundred tools which are geared

towards various information security tasks, such as Penetration Testing, Security research, Computer Forensics and Reverse Engineering. Kali Linux is developed, funded and maintained by Offensive Security, a leading information security training company.

Kali Linux was released on the 13th March 2013 as a complete, top-to-bottom rebuild of Backtrack Linux, adhering completely to Debian development standards.

- Download and open the mole.exe file
- Once a command-line interface is opened, use the following commands
- Now find out any keywords available on the website, it may anything means any word find you on this site, I'm using '**alto**'.
- finally, use command schemas to fetch tables

P6.6 Server Hardening

Server Hardening is the process of enhancing server security through a variety of means which results in a much more secure server operating environment. This is due to the advanced security measures that are put in place during the server hardening process.

- The term "hardening," in the general sense, implies taking a soft surface or material and making changes to it which result in that surface becoming stronger and more resistant to damage. That is exactly how server hardening impacts server security. Hardened servers are more resistant to security issues than non-hardened servers.
- In a time when nearly every computing resource is online and susceptible to attack, server hardening is a near absolute must to perform on your servers.
- The Internet has vastly altered the complexion of the server hardening industry over the last decade. Much of the applications and system software that is now developed is intended for use on the Internet, and for connections to the Internet.
- Many servers online today are attacked thousands of times per hour, tens and sometimes hundreds of thousands of times each and every day. The best defense against such attacks is to ensure that server hardening is a well-established practice within your organization or to outsource this task to an experienced & established server hardening agency.

Server Hardening, probably one of the most important tasks to be handled on your servers becomes more understandable when you realize all the risks involved. The default config of most operating systems are not designed with security as the primary focus. Instead, default setups focus more on usability, communications and functionality. To protect your servers you must establish solid and sophisticated server hardening policies for all servers in your organization. Developing a server hardening checklist would likely be a great first step in increasing your server and network security. Make sure that your checklist includes minimum security practices that you expect of your staff. If you go with a consultant you can provide them with your server hardening checklist to use as a baseline.

Server Hardening Tips & Tricks: Every server security conscious organization will have their own methods for maintaining adequate system and network security. Often you will find that server hardening consultants can bring your security efforts up a notch with their specialized expertise. Some common server hardening tips & tricks include:

- Use Data Encryption for your Communications
- Avoid using insecure protocols that send your information or passwords in plain text.
- Minimize unnecessary software on your servers.
- Disable Unwanted SUID and SGID Binaries
- Keep your operating system up to date, especially security patches.
- Using security extensions is a plus.

Linux server hardening is a primary focus for the web hosting industry, however in web hosting SELinux is probably not a good option as it often causes issues when the server is used for web hosting purposes.

- User Accounts should have very strong passwords
- Change passwords on a regular basis and do not reuse them
- Lock accounts after too many login failures. Often these login failures are illegitimate attempts to gain access to your system.
- Do not permit empty passwords.
- SSH Hardening --- Change the port from default to a nonstandard one --- Disable direct root logins. Switch to root from a lower level account only when necessary.

- Unnecessary services should be disabled. Disable all instances of IRC
- BitchX, bnc, eggdrop, generic-sniffers, guard services, ircd, psyBNC, ptlink.
- Securing /tmp /var/tmp /dev/shm

Part 7

Technology Frameworks

P7.1 ASP.NET MVC

Introduction

ASP.NET MVC is open-source software from Microsoft. Its web development framework combines the features of MVC (Model-View-Controller) architecture, the most up-to-date ideas and techniques from agile development and the best parts of the existing ASP.NET platform. This tutorial provides a complete picture of the MVC framework and teaches you how to build an application using this tool. ASP.NET MVC is basically a web development framework from Microsoft, which combines the features of MVC (Model-View-Controller) architecture, the most up-to-date ideas and techniques from agile development, and the best parts of the existing ASP.NET platform.

ASP.NET MVC is not something, which is built from ground zero. It is a complete alternative to traditional ASP.NET Web Forms. It is built on the top of ASP.NET, so developers enjoy almost all the ASP.NET features while building the MVC application.

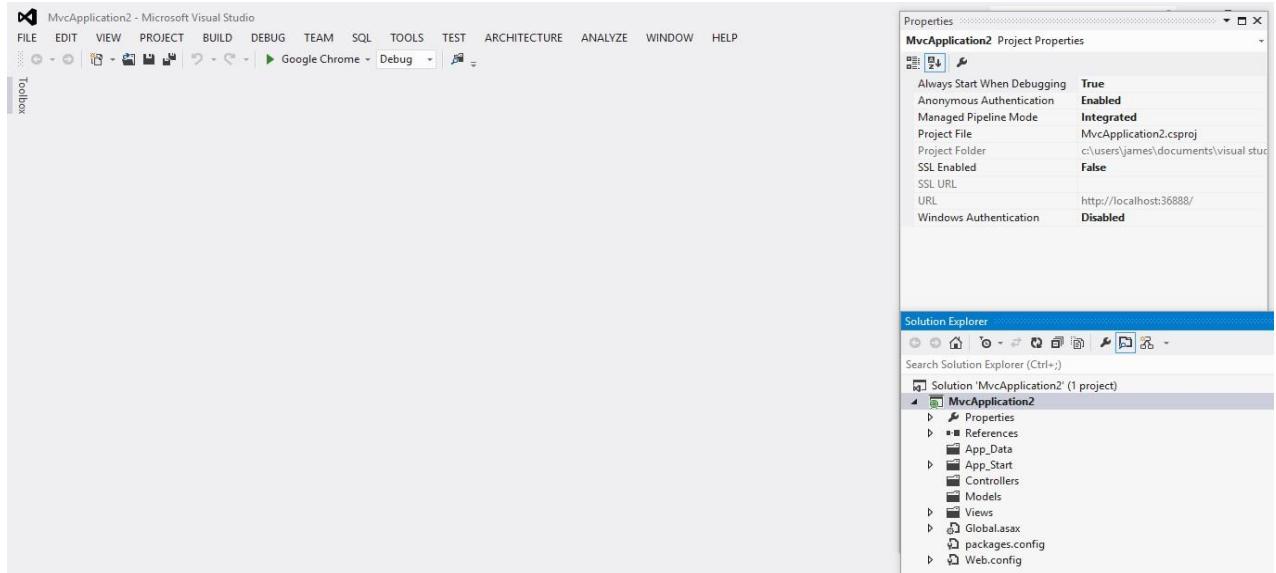
The MVC architectural pattern separates the user interface (UI) of an application into three main parts.

- **The Model** –A set of classes that describes the data you are working with as well as the business logic.
- **The View**–Define show the application's UI will be displayed. It is a pure HTML, which decides how the UI is going to look like.
- **The Controller** – A set of classes that handles communication from the user, overall application flow, and application-specific logic.

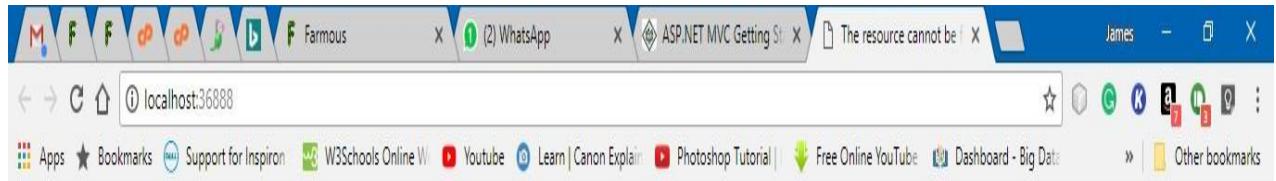
Implementation of ASP.Net MVC

- Download and install Microsoft Visual Studio 2012 and on wards
- Create an ASP.Net MVC Application. Open the Visual Studio. Click File>New > Project menu option. A new Project dialog opens.
- From the left pane, select Templates → Visual C# → Web.

- In the middle pane, select ASP.NET Web Application.
- Enter the project name, MVCApplication2, in the Name field and click ok to continue. You will see the following dialog which asks you to set the initial content for the ASP.NET project.



- Run this application from Debug > Start Debugging menu option and you will see a **404 Not Found** Error.



Server Error in '/' Application.

The resource cannot be found.

Description: HTTP 404. The resource you are looking for (or one of its dependencies) could have been removed, had its name changed, or is temporarily unavailable. Please review the following URL and make sure that it is spelled correctly.

Requested URL: /

Version Information: Microsoft .NET Framework Version:4.0.30319; ASP.NET Version:4.7.2633.0

Add Controller

- To remove the 404 Not Found errors, we need to add a controller, which handles all the incoming requests.
- To add a controller, right-click on the controller folder in the solution explorer and select Add > Controller.
- Select the MVC 5 Controller – Empty option and click ‘Add’ button. The Add Controller dialog will appear.
- Set a name to Controller and click the Add button.
- To make this a working example, let’s modify the controller class by changing the action method called **Index** using the following code.

The screenshot shows the Microsoft Visual Studio interface with the following components:

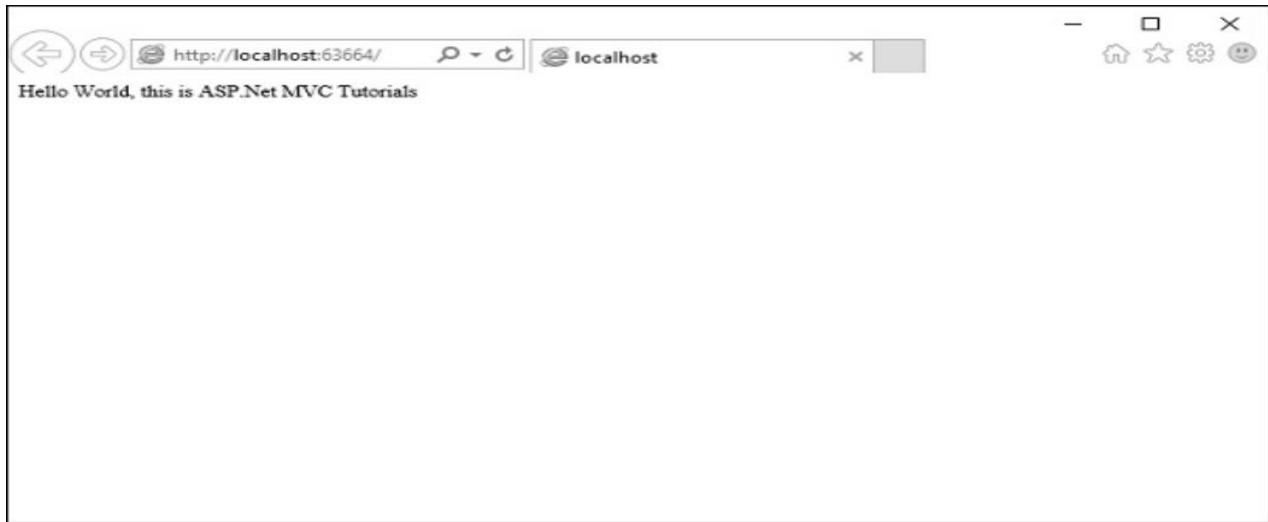
- Code Editor:** Displays the `DefaultController.cs` file content:using System;
using System.Collections.Generic;
using System.Linq;
using System.Web;
using System.Web.Mvc;

namespace MvcApplication2.Controllers
{
 public class DefaultController : Controller
 {
 // GET: Home
 public string Index()
 {
 return "Hello World, this is ASP.Net MVC Tutorials";
 }
 }
}
- Solution Explorer:** Shows the project structure for 'MvcApplication2' (1 project):

```
Solution 'MvcApplication2' (1 project)
  - Properties
  - References
  - App_Data
  - App_Start
  - Controllers
    - DefaultController.cs
  - Models
  - Views
  - Global.asax
  - packages.config
  - Web.config
```
- Properties Window:** Shows the project properties for 'MvcApplication2' with the following settings:

Always Start When Debugging	True
Anonymous Authentication	Enabled
Managed Pipeline Mode	Integrated
Project File	MvcApplication2.csproj
Project Folder	C:\Users\JAMES\Documents\Visual St
SSL Enabled	False
SSL URL	
URL	http://localhost:36888/

- Run this application from Debug



P7.2 Laravel for PHP

Laravel is an MVC framework with bundles, migrations, and Artisan CLI. Laravel offers a robust set of tools and an application architecture that incorporates many of the best features of frameworks like CodeIgniter, Yii, ASP.NET MVC, Ruby on Rails, Sinatra, and others.

Laravel is an Open Source framework. It has a very rich set of features which will boost the speed of Web Development. If you familiar with Core PHP and Advanced PHP; Laravel will make your task easier. It will save a lot time if you are planning to develop a website from scratch. Not only that, the website built in Laravel is also secure. It prevents the various attacks that can take place on websites.

Installation

For managing dependencies, Laravel uses composer. Make sure you have a Composer installation on your system before you install Laravel.

Step 1: Visit the following URL and download composer to install it on your system.

<https://getcomposer.org/download/>

Step 2: After the Composer is installed, check the installation by typing the Composer command

in the command prompt as shown in the following screenshot.

```
Administrator: C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\wamp\www\laravel>php artisan --version
Laravel Framework version 5.1.23 (LTS)

C:\wamp\www\laravel>cd\

C:\>composer
A decorative graphic consisting of a grid of short, diagonal black lines forming a stylized, abstract pattern.

Composer version 1.0-dev <c7ed232ef42c2bd63cd8a057b6c7c8043b37cd5a> 2015-10-29 0
9:52:59

Usage:
  command [options] [arguments]

Options:
  -h, --help          Display this help message
  -q, --quiet         Do not output any message
  -V, --version       Display this application version
  --ansi             Force ANSI output
  --no-ansi          Disable ANSI output
  -n, --no-interaction Do not ask any interactive question
  --profile          Display timing and memory usage information
  -d, --working-dir=WORKING-DIR If specified, use the given directory as working directory.
  -v[vvvvvvvv], --verbose Increase the verbosity of messages: 1 for normal output, 2 for more verbose output and 3 for debug
```

Step 3: Create a new directory anywhere in your system for your new Laravel project.

After that, move to path where you have created the new directory and type the following

Command there to install Laravel.

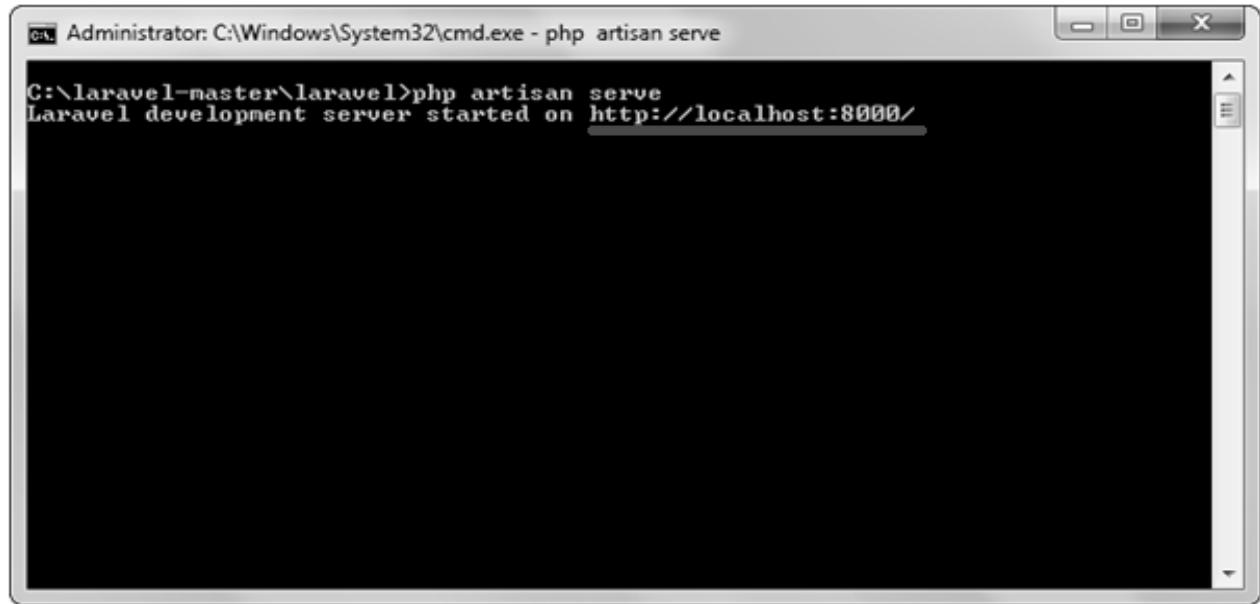
```
Composer create-project laravel/laravel --prefer-dist
```

Step 4: The above command will install Laravel in the current directory. Start the

Laravel service by executing the following command.

php artisan serve

Step 5: After executing the above command, you will see a screen as shown below:



The screenshot shows a Windows Command Prompt window titled "Administrator: C:\Windows\System32\cmd.exe - php artisan serve". The command entered is "php artisan serve". The output displayed is "Laravel development server started on http://localhost:8000/". The URL "http://localhost:8000/" is underlined in gray.

Step 6: Copy the URL underlined in gray in the above screenshot and open that URL in the browser. If you see the following screen, it implies Laravel has been installed successfully.

Laravel 5

P7.3 Angular

Angular 6 is a JavaScript framework for building web applications and apps in JavaScript, html, and TypeScript, which is a superset of JavaScript. Angular provides built-in features for animation, http service, and materials which in turn have features such as auto-complete, navigation, toolbar, menus, etc. The code is written in TypeScript, which compiles to JavaScript and displays the same in the browser.

Step 1: Install the Angular CLI

Install the Angular CLI globally.

To install the CLI using npm, open a terminal/console window and enter the following command:

```
npm install -g @angular/cli
```

Step 2: Create a workspace and initial application

You develop apps in the context of an Angular workspace. A workspace contains the files for one or more projects. A project is the set of files that comprise an app, a library, or end-to-end (e2e) tests.

To create a new workspace and initial app project:

Run the CLI command `ng new` and provide the name `my-app`, as shown here:

```
ng new my-app
```

The `ng new` command prompts you for information about features to include in the initial app project. Accept the defaults by pressing the Enter or Return key.

The Angular CLI installs the necessary Angular npm packages and other dependencies. This can take a few minutes.

It also creates the following workspace and starter project files:

A new workspace, with a root folder named my-app

An initial skeleton app project, also called my-app (in the src subfolder)

An end-to-end test project (in the e2e subfolder)

Related configuration files

The initial app project contains a simple Welcome app, ready to run.

Step3: Serve the Application

Angular includes a server, so that you can easily build and serve your app locally.

Go to the workspace folder (my-app).

Launch the server by using the CLI command ng serve, with the --open option.

```
cd my-app
```

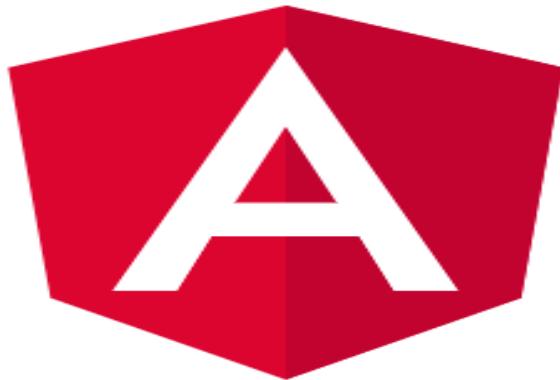
```
ng serve --open
```

The ng serve command launches the server, watches your files, and rebuilds the app as you make changes to those files.

The --open (or just -o) option automatically opens your browser to <http://localhost:4200/>.

Your app greets you with a message:

Welcome to my-app!



Step 4: Edit your first Angular component

Components are the fundamental building blocks of Angular applications. They display data on the screen, listen for user input, and take action based on that input. As part of the initial app, the CLI created the first Angular component for you. It is the root component, and it is named app-root.

Open ./src/app/app.component.ts.

Change the title property from 'my-app' to 'My First Angular App'.

```
src/app/app.component.ts
```

```
@Component({  
  selector: 'app-root',  
  templateUrl: './app.component.html',  
  styleUrls: ['./app.component.css']  
})  
  
export class AppComponent {  
  title = 'My First Angular App!';  
}
```

The browser reloads automatically with the revised title. That's nice, but it could look better.

Open ./src/app/app.component.css and give the component some style.

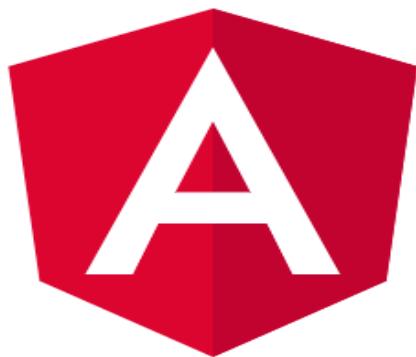
```
src/app/app.component.css
```

```
h1 {  
  color: #369;  
  font-family: Arial, Helvetica, sans-serif;  
  font-size: 250%;
```

}

Output of Getting Started app

Welcome to My First Angular App!



P7.4Android

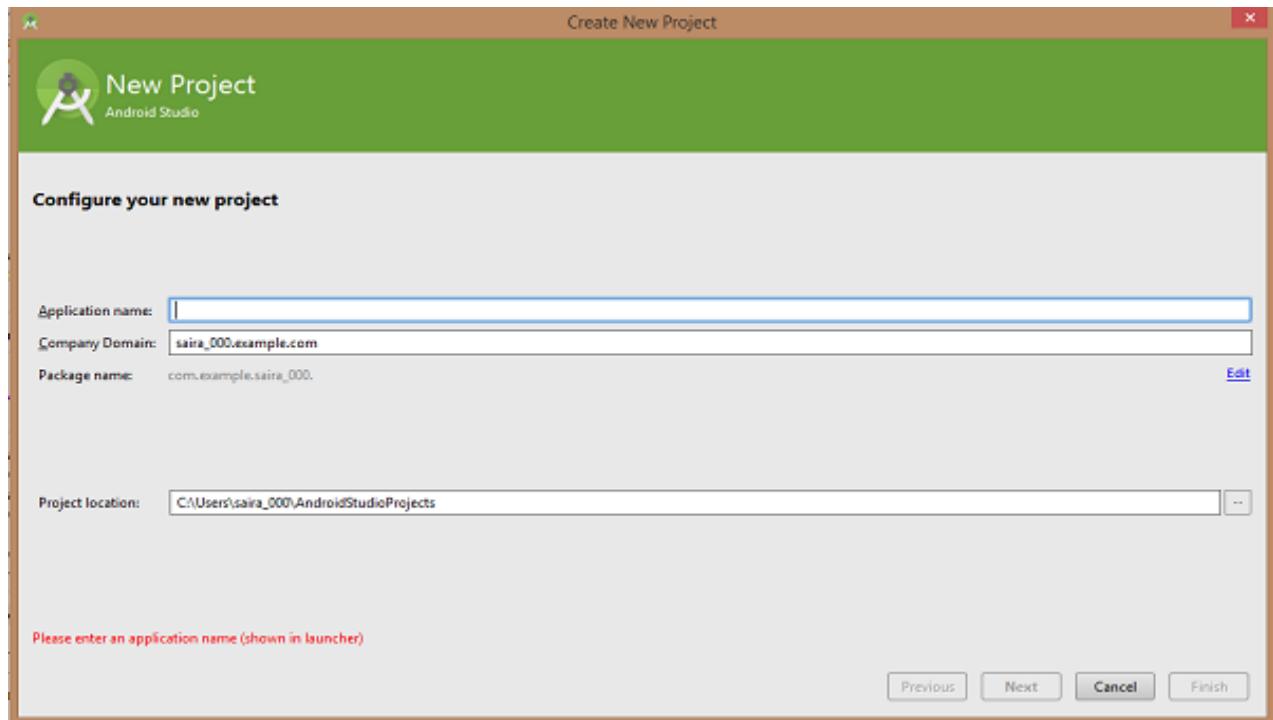
Android is a software package and linux based operating system for mobile devices such as tablet computers and smart phones. It is developed by Google and later the OHA (Open Handset Alliance). Java language is mainly used to write the android code even though other languages can be used. The goal of android project is to create a successful real-world product that improves the mobile experience for end users. There are many code names of android such as Lollipop, Kitkat, Jelly Bean, Ice cream Sandwich, Froyo, Ecliar, Donut etc.

Creating Android Application

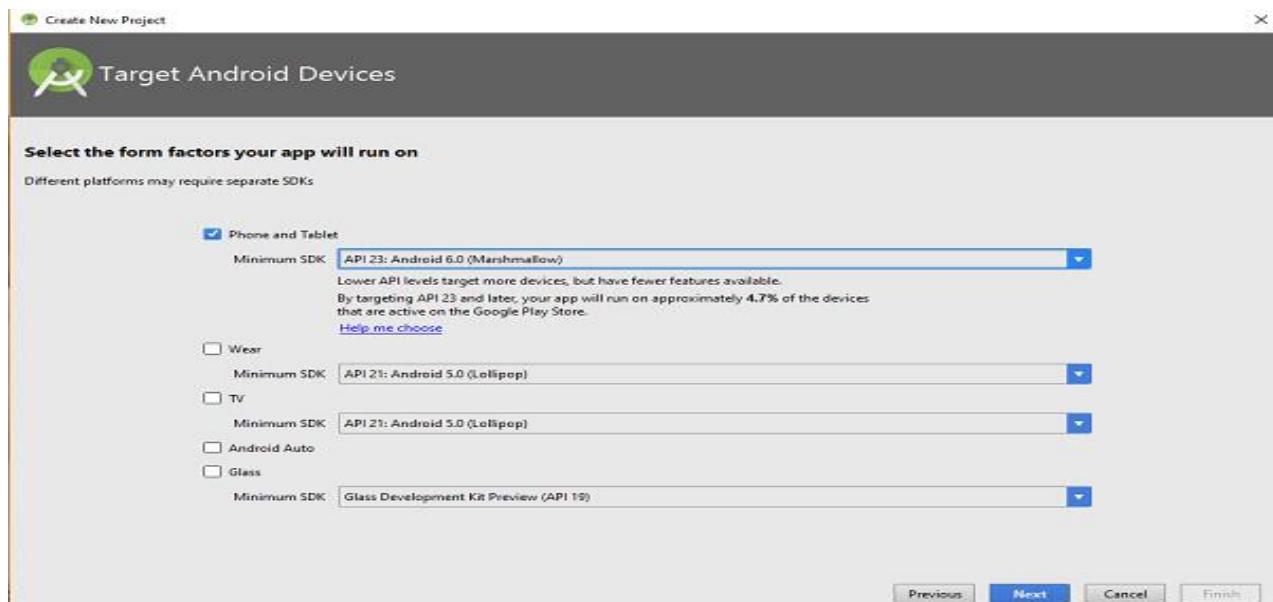
The first step is to create a simple Android Application using Android studio. When you click on Android studio icon, it will show screen as shown below



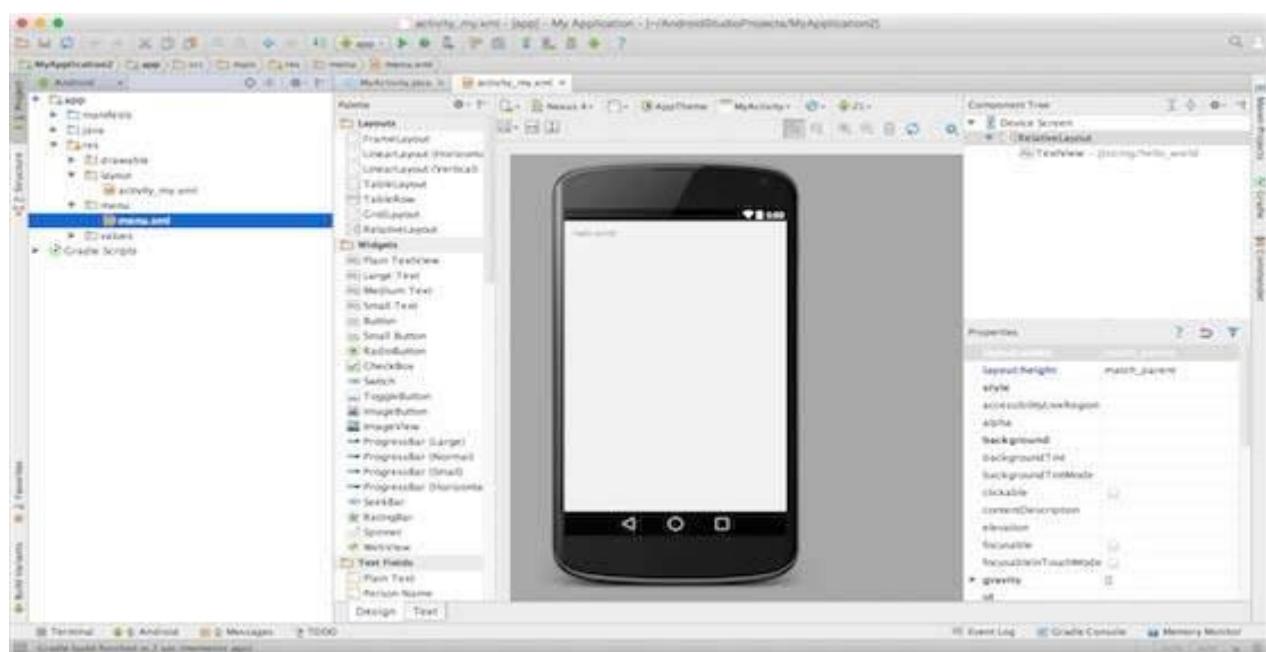
You can start your application development by calling start a new android studio project. in a new installation frame should ask Application name, package information and location of the project.–



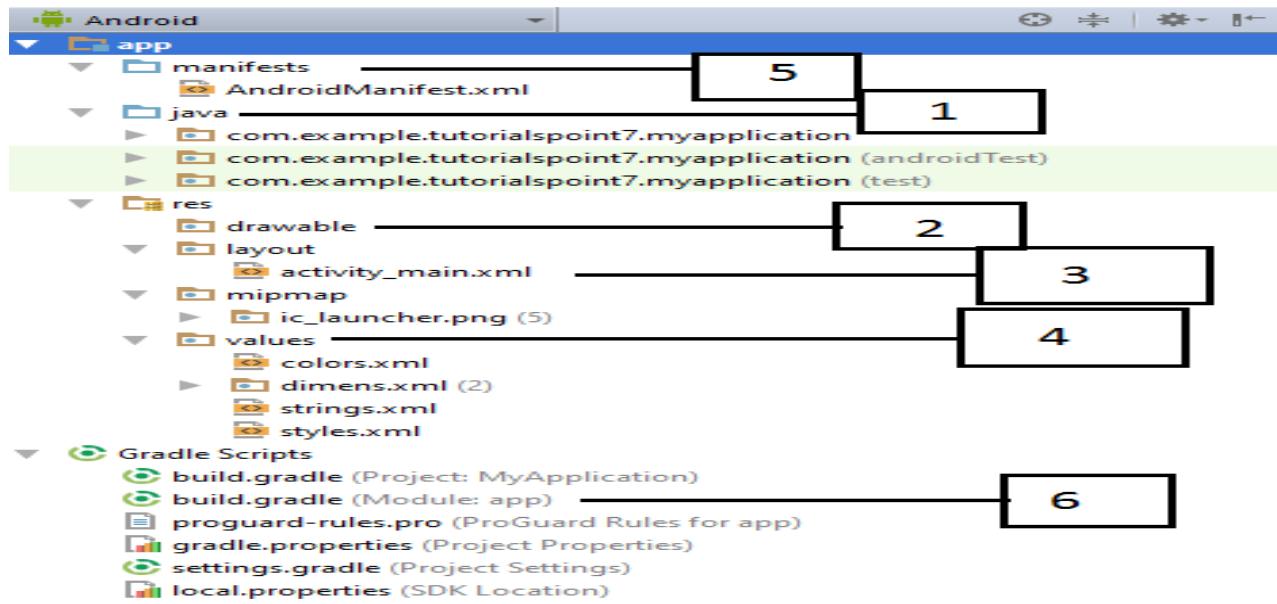
After entered application name, it going to be called select the form factors your application runs on, here need to specify Minimum SDK, in our tutorial, I have declared as API23: Android 6.0(Marshmallow) –



The next level of installation should contain selecting the activity to mobile; it specifies the default layout for Applications.



Anatomy of Android Application. Before you run your app, you should be aware of a few directories and files in the Android project.



Sl.No.	Folder, File & Description
1	<p>Java</p> <p>This contains the .java source files for your project. By default, it includes an <i>MainActivity.java</i> source file having an activity class that runs when your app is launched using the app icon.</p>
2	<p>res/drawable-hdpi</p> <p>This is a directory for drawable objects that are designed for high-density screens.</p>

3	res/layout This is a directory for files that define your app's user interface.
4	res/values This is a directory for other various XML files that contain a collection of resources, such as strings and colours definitions.
5	AndroidManifest.xml This is the manifest file which describes the fundamental characteristics of the app and defines each of its components.
6	Build.gradle This is an auto generated file which contains compileSdkVersion, buildToolsVersion, applicationId, minSdkVersion, targetSdkVersion, versionCode and versionName

Following section will give a brief overview of the important application files.

The Main Activity File

The main activity code is a Java file **MainActivity.java**. This is the actual application file which ultimately gets converted to a Dalvik executable and runs your application. Following is the default code generated by the application wizard for *Hello World!* application –

```
package com.example.helloworld;
```

```
import android.support.v7.app.AppCompatActivity;  
  
import android.os.Bundle;  
  
public class MainActivity extends AppCompatActivity {  
  
    @Override  
  
    protected void onCreate(Bundle savedInstanceState) {  
  
        super.onCreate(savedInstanceState);  
  
        setContentView(R.layout.activity_main); } }
```

Here, *R.layout.activity_main* refers to the *activity_main.xml* file located in the *res/layout* folder. The *onCreate()* method is one of many methods that are figured when an activity is loaded.

The Manifest file whatever component you develop as a part of your application, you must declare all its components in a *manifest.xml* which resides at the root of the application project directory. This file works as an interface between Android OS and your application, so if you do not declare your component in this file, then it will not be considered by the OS. For example, a default manifest file will look like as following file –

```
<?xml version="1.0" encoding="utf-8"?>  
  
<manifest xmlns:android="http://schemas.android.com/apk/res/android"  
  
package="com.example.tutorialspoint7.myapplication">  
  
<application  
  
    android:allowBackup="true"  
  
    android:icon="@mipmap/ic_launcher"  
  
    android:label="@string/app_name"  
  
    android:supportsRtl="true"  
  
    android:theme="@style/AppTheme">  
  
<activity android:name=".MainActivity">  
  
<intent-filter>
```

```
<action android:name="android.intent.action.MAIN" />  
  
<category android:name="android.intent.category.LAUNCHER" />  
  
</intent-filter>  
  
</activity>  
  
</application>  
  
</manifest>
```

Here `<application>...</application>` tags enclosed the components related to the application. Attribute `android:icon` will point to the application icon available under `res/drawable-hdpi`.

The application uses the image named `ic_launcher.png` located in the drawable folders. The `<activity>` tag is used to specify an activity and `android:name` attribute specifies the fully qualified class name of the `Activity` subclass and the `android:label` attributes specifies a string to use as the label for the activity. You can specify multiple activities using `<activity>` tags.

The action for the intent filter is named `android.intent.action.MAIN` to indicate that this activity serves as the entry point for the application. The category for the intent-filter is named `android.intent.category.LAUNCHER` to indicate that the application can be launched from the device's launcher icon.

The `@string` refers to the `strings.xml` file explained below. Hence, `@string/app_name` refers to the `app_name` string defined in the `strings.xml` file, which is "Hello World". Similar way, other strings get populated in the application.

Following is the list of tags which you will use in your manifest file to specify different Android application components –

- `<activity>` elements for activities
- `<service>` elements for services
- `<receiver>` elements for broadcast receivers
- `<provider>` elements for content providers

The Strings File

The **strings.xml** file is located in the *res/values* folder and it contains all the text that your application uses. For example, the names of buttons, labels, default text, and similar types of strings go into this file. This file is responsible for their textual content. For example, a default strings file will look like as following file –

```
<resources>

<string name="app_name">HelloWorld</string>

<string name="hello_world">Hello world!</string>

<string name="menu_settings">Settings</string>

<string name="title_activity_main">MainActivity</string>

</resources>
```

The Layout File

The **activity_main.xml** is a layout file available in *res/layout* directory, that is referenced by your application when building its interface. You will modify this file very frequently to change the layout of your application. For your "Hello World!" application, this file will have following content related to default layout –

```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"

    xmlns:tools="http://schemas.android.com/tools"

    android:layout_width="match_parent"

    android:layout_height="match_parent" >

    <TextView

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_centerHorizontal="true"
```

```
    android:layout_centerVertical="true"  
  
    android:padding="@dimen/padding_medium"  
  
    android:text="@string/hello_world"  
  
    tools:context=".MainActivity" />  
  
</RelativeLayout>
```

This is an example of simple *RelativeLayout* which we will study in a separate chapter. The *TextView* is an Android control used to build the GUI and it have various attributes like *android:layout_width*, *android:layout_height* etc which are being used to set its width and height etc.. The *@string* refers to the strings.xml file located in the res/values folder. Hence, *@string/hello_world* refers to the hello string defined in the strings.xml file, which is "Hello World!".

Running the Application

Let's try to run our Hello World! Application we just created. I assume you had created your AVD while doing environment set-up. To run the app from Android studio, open one of your project's activity files and click Run  icon from the tool bar. Android studio installs the app on your AVD and starts it and if everything is fine with your set-up and application, it will display following Emulator window –



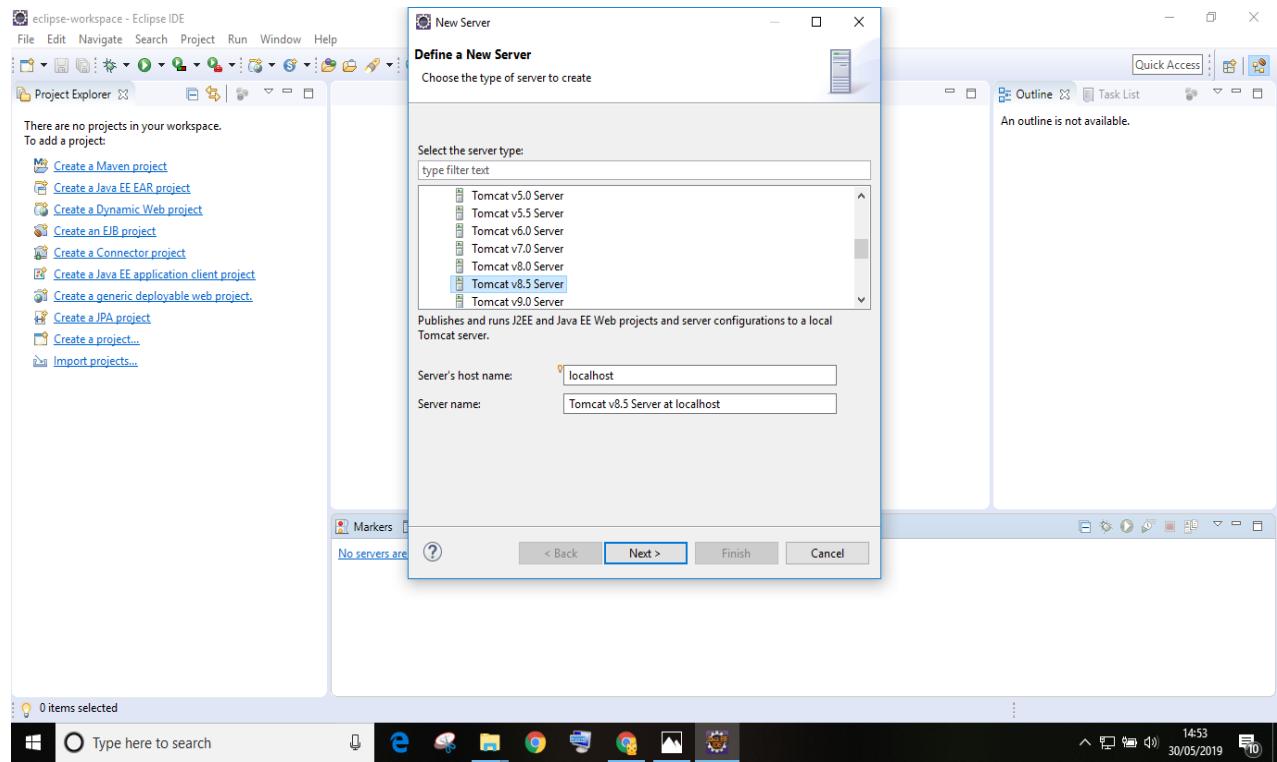
P7.5 Java Spring

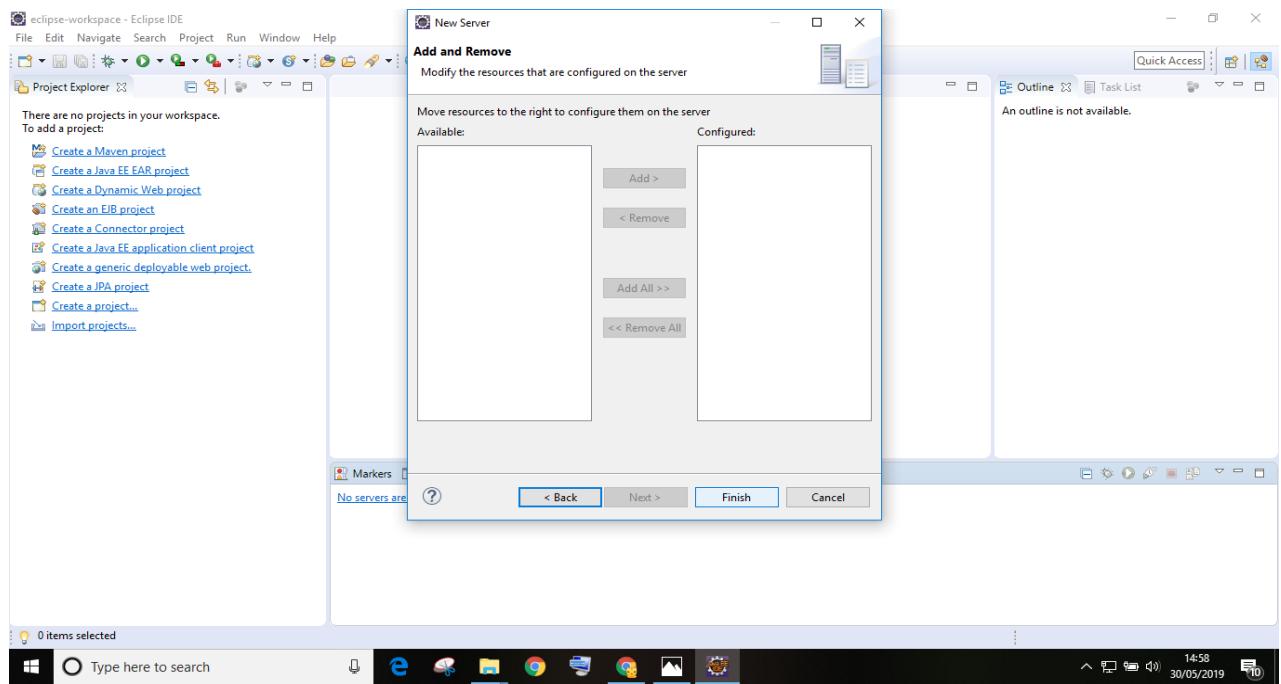
P7.5.1 Introduction to Java Spring

The Spring Framework is an application framework and inversion of control container for the Java platform. The framework's core features can be used by any Java application, but there are extensions for building web applications on top of the Java EE (Enterprise Edition) platform. Although the framework does not impose any specific programming model, it has become popular in the Java community as an addition to, or even replacement for the Enterprise JavaBeans (EJB) model. The Spring Framework is open source.

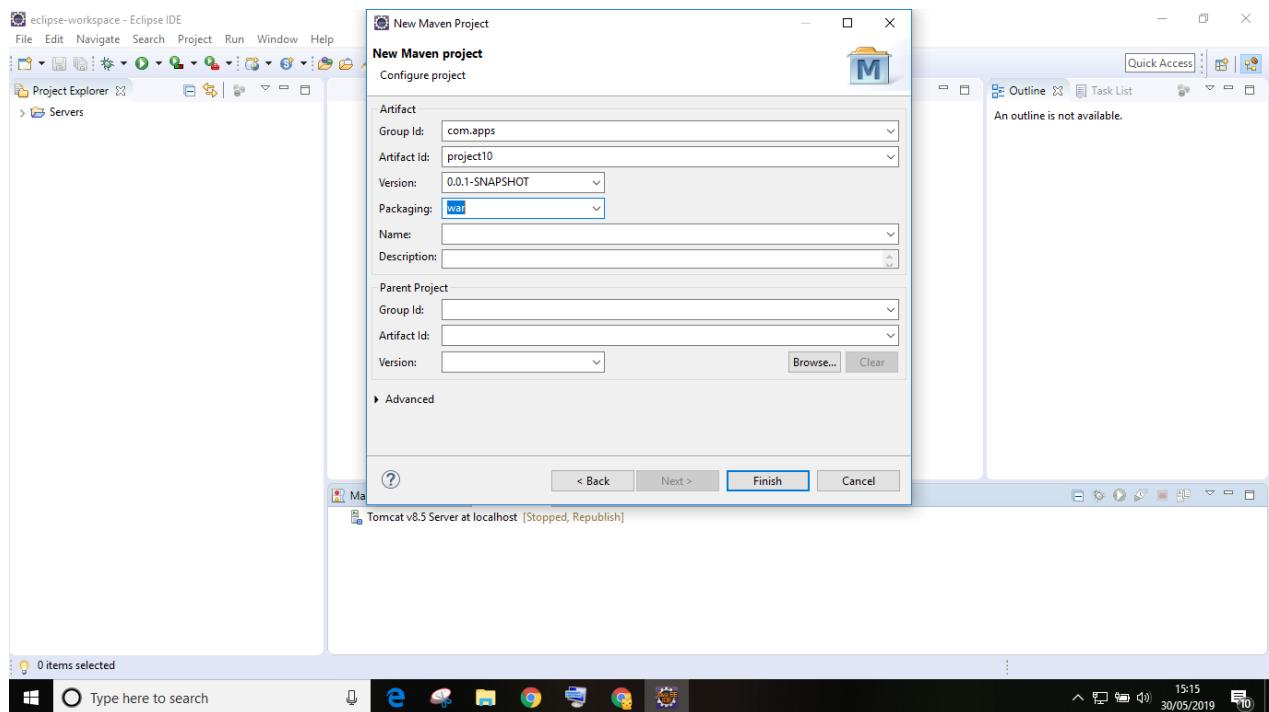
Sample Program Implementation

Step1: Install JDK 1.8 and set Tomcat server

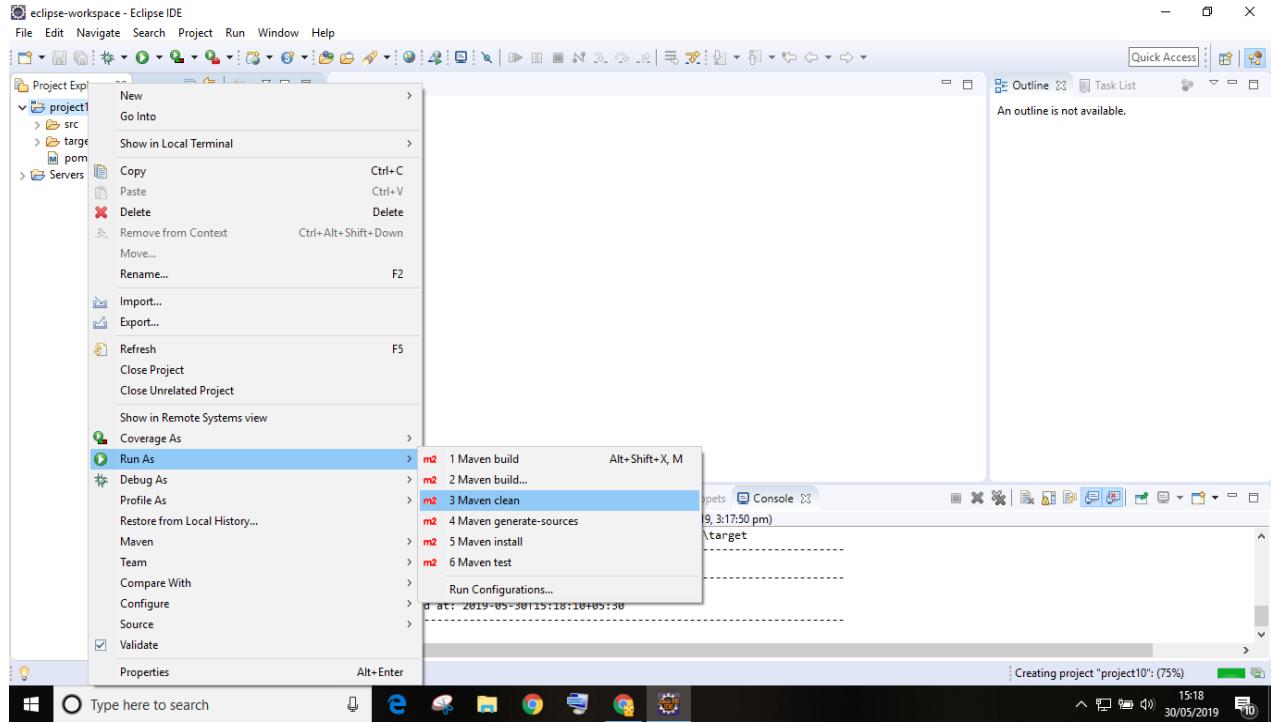




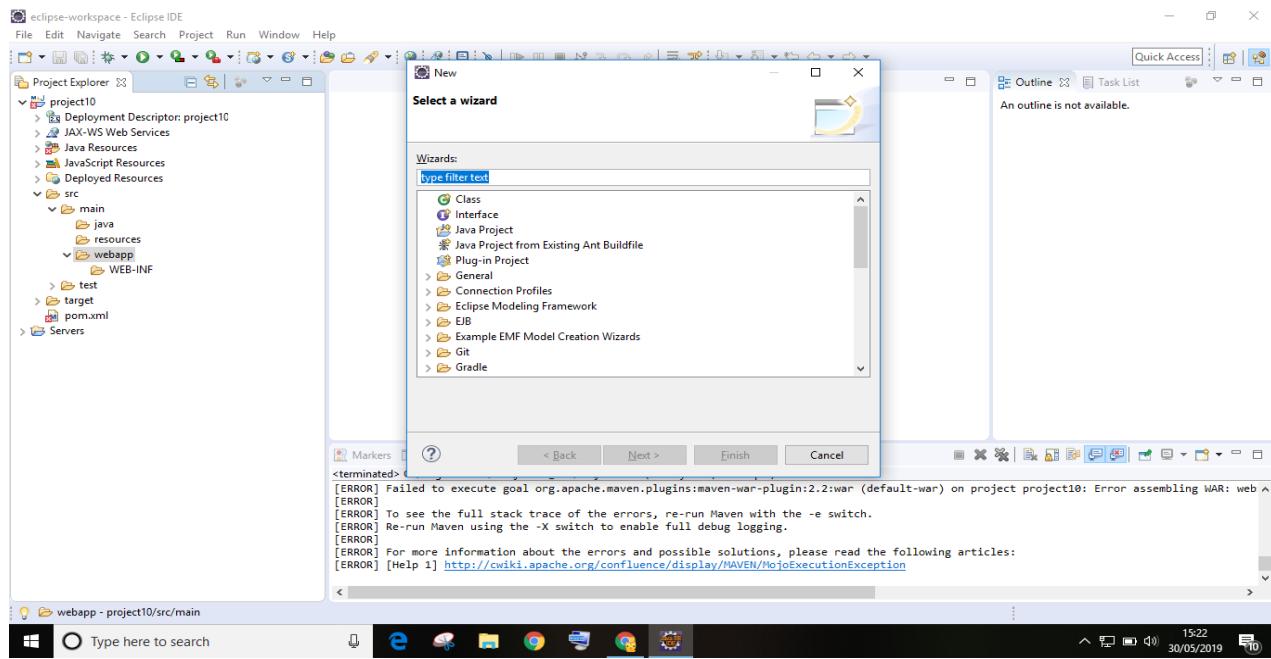
Step2: Start Maven project – file-> new -> maven



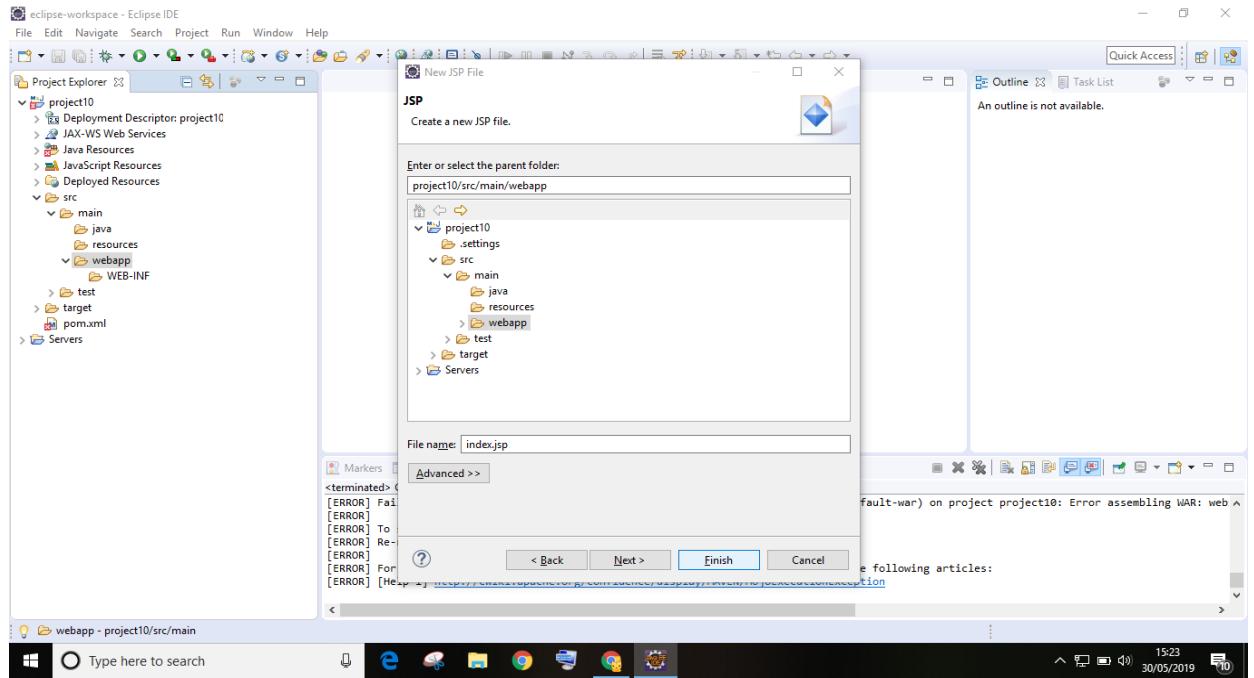
Step3: Build your maven project



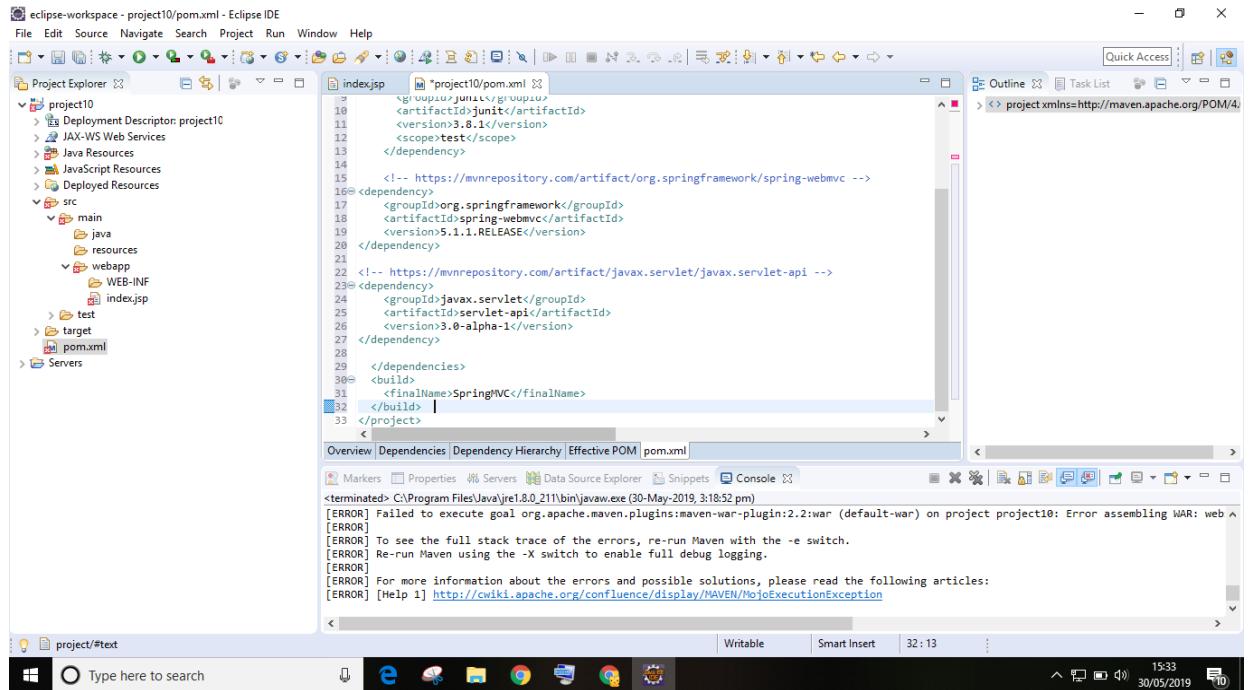
Step4: Add a folder in webapp and the folder name is WEB-INF



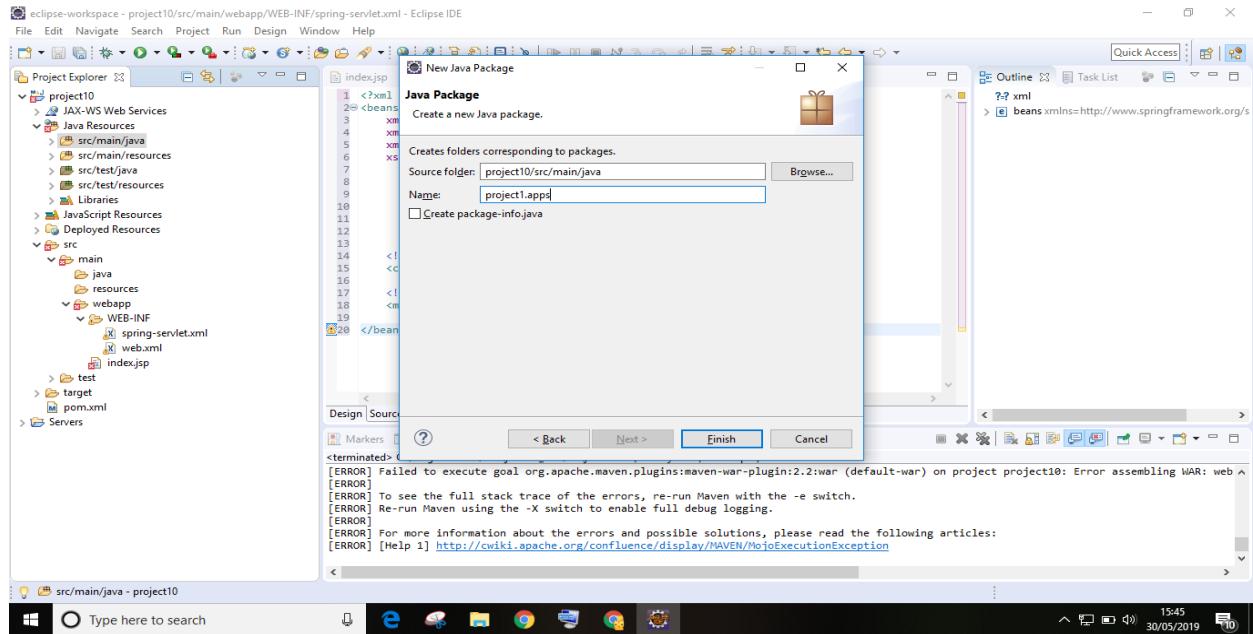
Step5: Click WEB-INF ->Ctrl+N -> select jsp file -> name the file with index.jsp



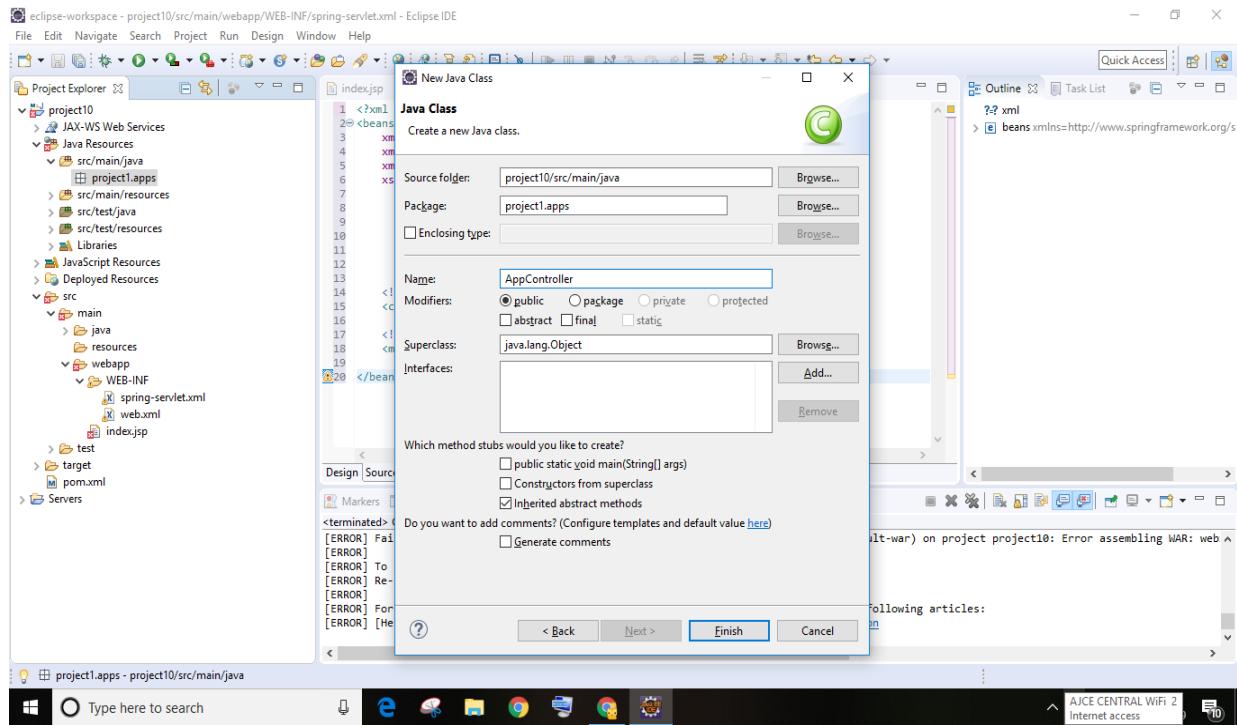
Step6: Set Pom file



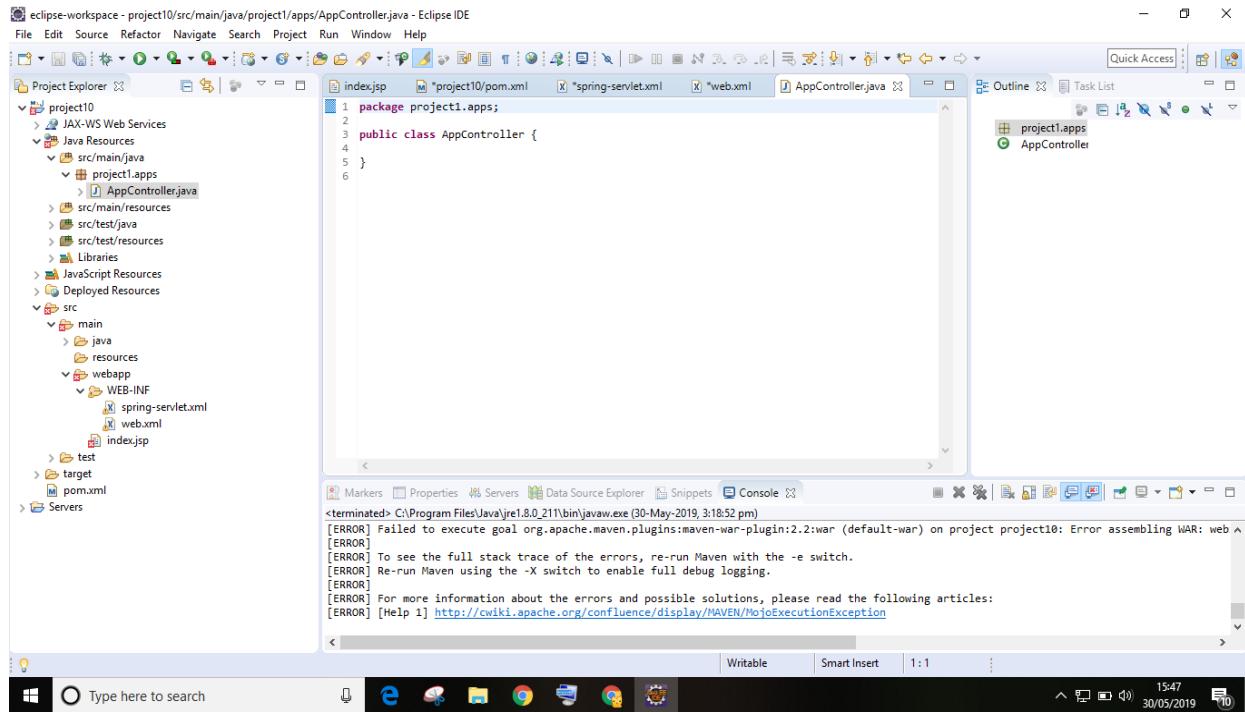
Step7: Create java packages



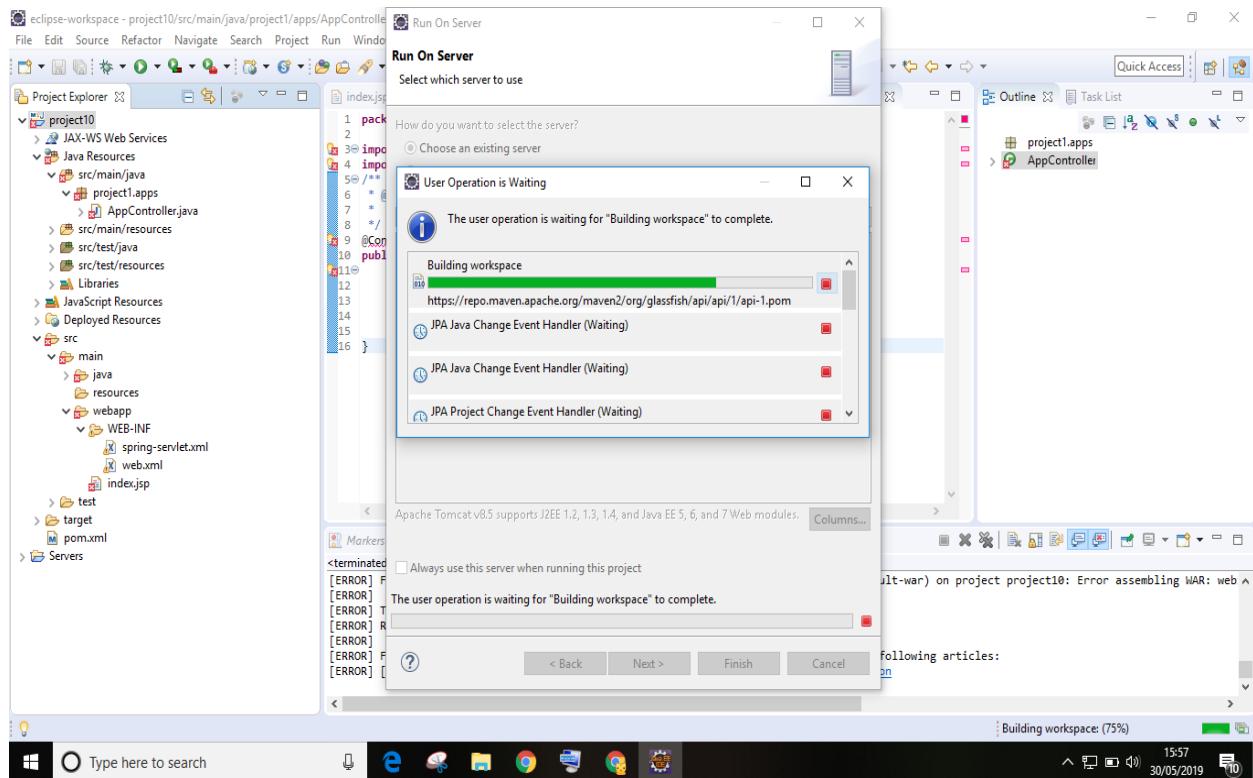
Step: 8 Create java class

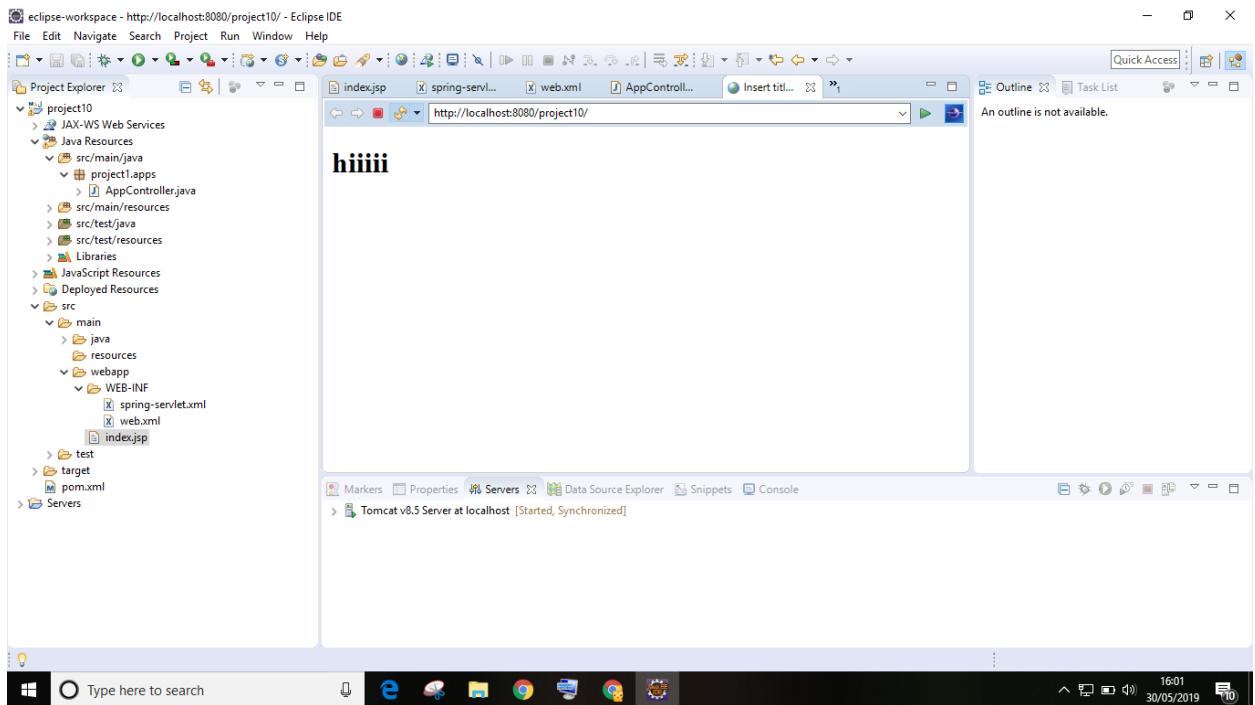


Step: 9 Set AppController



Step: 10 Run your project



Output:

Part 8

Project Documentation

P8.1 INTRODUCTION

P8.1.1 Project Overview

E-plant is an online website which helps the users to buy plants, fertilizer, pesticides through online also user can take land in lease to start a new plant nursery or their farming needs.

The registered user can search available products and order that products also they can search available lands and they can book the lands. And customers get approval via mail, and they can make payment and they can use that land based on the agreement.

The E-plants system can be helpful to customers it reduce the service delay, and buy the products easily, and also spend less time rather than paper work.

P8.1.2 Project Specification

This is a website in which we will get the good services. It will be a simple platform for users to buy products and take land in lease for their needs. It provides the services are order and buy plants, fertilizer, pesticides and take land in lease to start a new plants nursery or their farming needs.

The system includes 3 modules. They are:

- **Admin:** Admin is main backbone for this portal .Admin can login with username and password. Admin can view all registered users. Admin can view all the products that are added by the manager also he can view all orders that are made by the users.
- **Manager:** Manager has the role of adding different categories of products like plants, fertilizer, pesticides and available lands for lease .Manager can also edit or delete the added products. He can view the orders made by the user. He can approve or reject the land order and the notifications send via email to the user.
- **User Module:** The user can fill the registration form and get his credential. Then only the user can view the details of different categories of products and lands. The user can choose the products he wants and he can add to the cart. And from the cart he can delete or make payment and buy the products. User can order and he can buy only after the approval of admin.

P8.2 SYSTEM STUDY

P8.2.1 Introduction

System analysis is a process of gathering and interpreting facts, diagnosing problems and the information to recommend improvements on the system. It is a problem solving activity that requires intensive communication between the system users and system developers. System analysis or study is an important phase of any system development process. The system is studied to the minute's detail and analyzed. The system analyst plays the role of the interrogator and dwells deep into the working of the present system. The system is viewed as a whole and the input to the system are identified. The outputs from the organizations are traced to the various processes. System analysis is concerned with becoming aware of the problem, identifying the relevant and decisional variables, analyzing and synthesizing the various factors and determining an optimal or at least a satisfactory solution or program of action.

A detailed study of the process must be made by various techniques like interviews, questionnaires etc. The data collected by these sources must be scrutinized to arrive to a conclusion. The conclusion is an understanding of how the system functions. This system is called the existing system. Now the existing system is subjected to close study and problem areas are identified. The designer now functions as a problem solver and tries to sort out the difficulties that the enterprise faces. The solutions are given as proposals. The proposal is then weighed with the existing system analytically and the best one is selected. The proposal is presented to the user for an endorsement by the user. The proposal is reviewed on user request and suitable changes are made. This is loop that ends as soon as the user is satisfied with proposal.

Preliminary study is the process of gathering and interpreting facts, using the information for further studies on the system. Preliminary study is problem solving activity that requires intensive communication between the system users and system developers. It does various feasibility studies. In these studies, a rough figure of the system activities can be obtained, from which the decision about the strategies to be followed for effective system study and analysis can be taken.

P8.2.2 PROPOSED SYSTEM

The main objective of E-plants system is to enhance and upgrade the existing system by increasing its efficiency and effectiveness. The software improves the working methods by replacing the existing manual system with the computer-based system. E-plant is an online website which helps the users to buy plants, fertilizer, pesticides through online also user can take land in lease to start a new plant nursery or their farming needs. This system will consist of three users, admin, manager, and the people who need a products and lands for lease. The manager can add different categories products and lands, admin can view all added products by manager. The interested people will check the products and land in their preference. Security amount will be paid to the manager at the time of booking.

ADVANTAGES OF PROPOSED SYSTEM

The system is very simple in design and to implement. The system requires very low system resources and the system will work in almost all configurations. It has got following features:

➤ *Better security:-*

For data to remain secure measures must be taken to prevent unauthorized access. Security means that data are protected from various forms of destruction. The system security problem can be divided into four related issues: security, integrity, privacy and confidentiality. Username and password requirement to sign in ensures security. It will also provide data security as we are using the secured databases for maintaining the documents.

➤ *Ensure data accuracy:-*

The proposed system eliminates the manual errors while entering the details of the users during the registration.

➤ *Better service:-*

The product will avoid the burden of hard copy storage. We can also conserve the time and human resources for doing the same task. The data can be maintained for longer period with no

loss of data.

➤ *User friendliness and interactive:-*

The proposed system will help the user to reduce the workload and provides user friendly environment so that they can easily do their jobs. The system alerts the users for each activity to be carried out, through notification.

➤ *Minimum time required:-*

The data management is in such a way that a particular registered user can search service provider very easily.

P8.3 REQUIREMENT ANALYSIS

P8.3.1 Feasibility Study

Feasibility study is made to see if the project on completion will serve the purpose of the organization for the amount of work, effort and the time that spend on it. Feasibility study lets the developer foresee the future of the project and the usefulness. A feasibility study of a system proposal is according to its workability, which is the impact on the organization, ability to meet their user needs and effective use of resources. Thus, when a new application is proposed it normally goes through a feasibility study before it is approved for development.

The document provides the feasibility of the project that is being designed and lists various areas that were considered very carefully during the feasibility study of this project such as Technical, Economic and Operational feasibilities. The following are its features:

P8.3.1.1 Economical Feasibility

The developing system must be justified by cost and benefit. Criteria to ensure that effort is concentrated on project, which will give best, return at the earliest. One of the factors, which affect the development of a new system, is the cost it would require.

The following are some of the important financial questions asked during preliminary investigation:

- The costs conduct a full system investigation.
- The cost of the hardware and software.
- The benefits in the form of reduced costs or fewer costly errors.

Since the system is developed as part of project, there is no manual cost to spend for the proposed system. Also all the resources are already available, it give an indication of the system is economically possible for development.

E-plants will be a simple platform for users to access services for their huge needs. It is completely free. Using this system large number people can solve their problems with free of cost.

P8.3.1.2 Technical Feasibility

The system must be evaluated from the technical point of view first. The assessment of this feasibility must be based on an outline design of the system requirement in the terms of input, output, programs and procedures. Having identified an outline system, the investigation must go on to suggest the type of equipment, required method developing the system, of running the system once it has been designed.

Technical issues raised during the investigation are:

- Does the existing technology sufficient for the suggested done?
- Can the system expand if developed?

The project should be developed such that the necessary functions and performance are achieved within the constraints. Through the technology may become obsolete after some period of time, due to the fact that newer version of same software supports older versions, the system may still be used. So, there are minimal constraints involved with this project. The system has been developed using php in front end and MySql in server in back end, the project is technically feasible for development.

P8.3.1.3 Behavioral Feasibility

This includes the following questions:

- Is there sufficient support for the users?
- Will the proposed system cause harm?

The project would be beneficial because it satisfies the objectives when developed and installed. All behavioral aspects are considered carefully and conclude that the project is behaviorally feasible.

At your service, GUI is simple so that users can easily use it. E-plants is simple enough so that no training is needed.

P8.4 Requirement Modeling

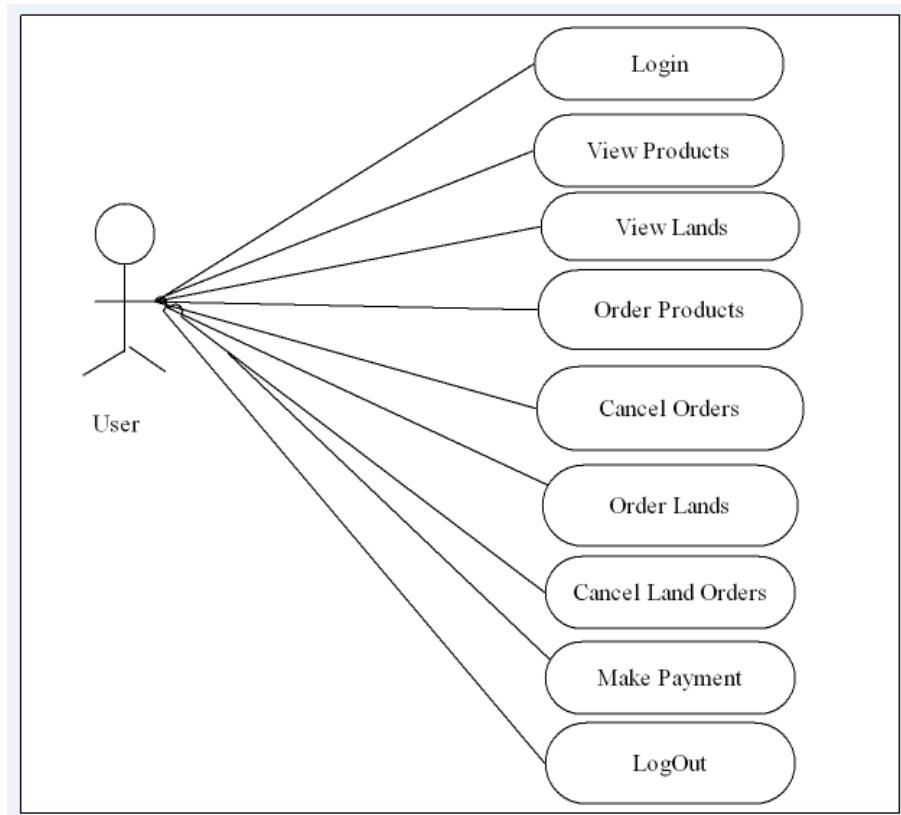
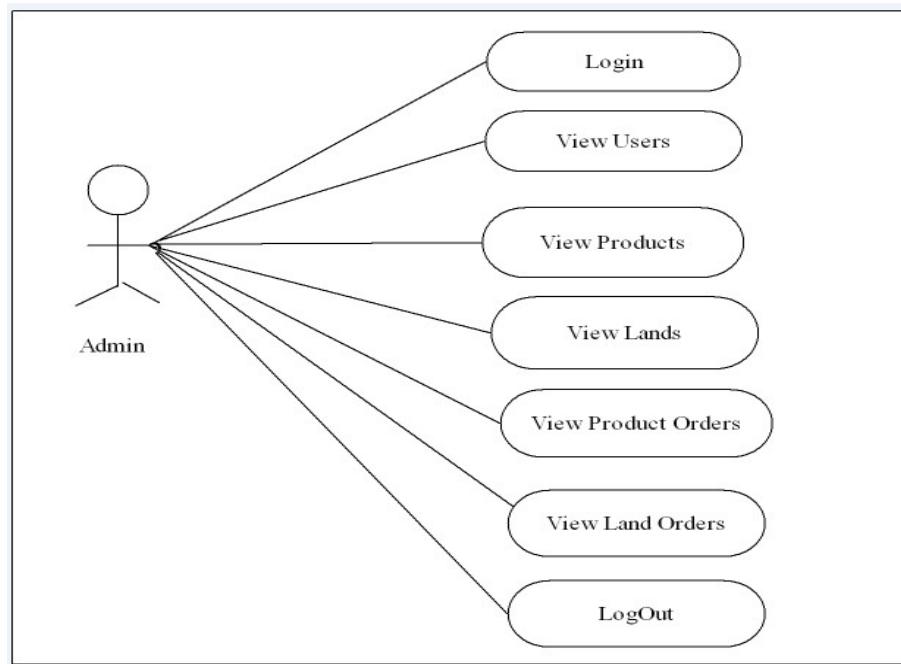
P8.4.1 UML Use Case Diagram

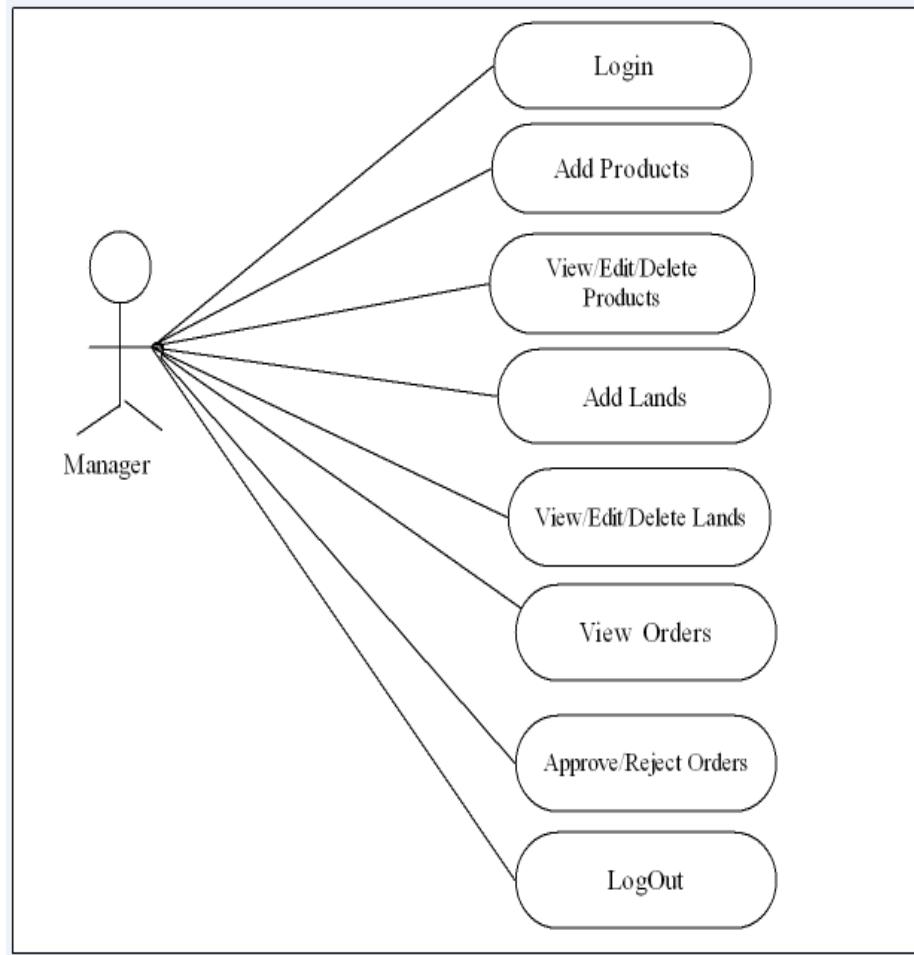
A use case diagram is a graphic depiction of the interactions among the elements of a system. A use case is a methodology used in system analysis to identify, clarify, and organize system requirements. In this context, the term "system" refers to something being developed or operated, such as a mail-order product sales and service Website. Use case diagrams are employed in UML (Unified Modeling Language), a standard notation for them of real-world objects and systems.

System objectives can include planning overall requirements, validating a hardware design, testing and debugging a software product under development, creating an online help reference, or performing a consumer-service-oriented task. For example, use cases in a product sales environment would include item ordering, catalog updating, payment processing, and customer relations. A use case diagram contains four components.

- The boundary, which defines the system of interest in relation to the world around it.
- The actors, usually individuals involved with the system defined according to their roles.
- The use cases, which the specific roles are played by the actors within and around the system.

- The relationships between and among the actors and the use cases.





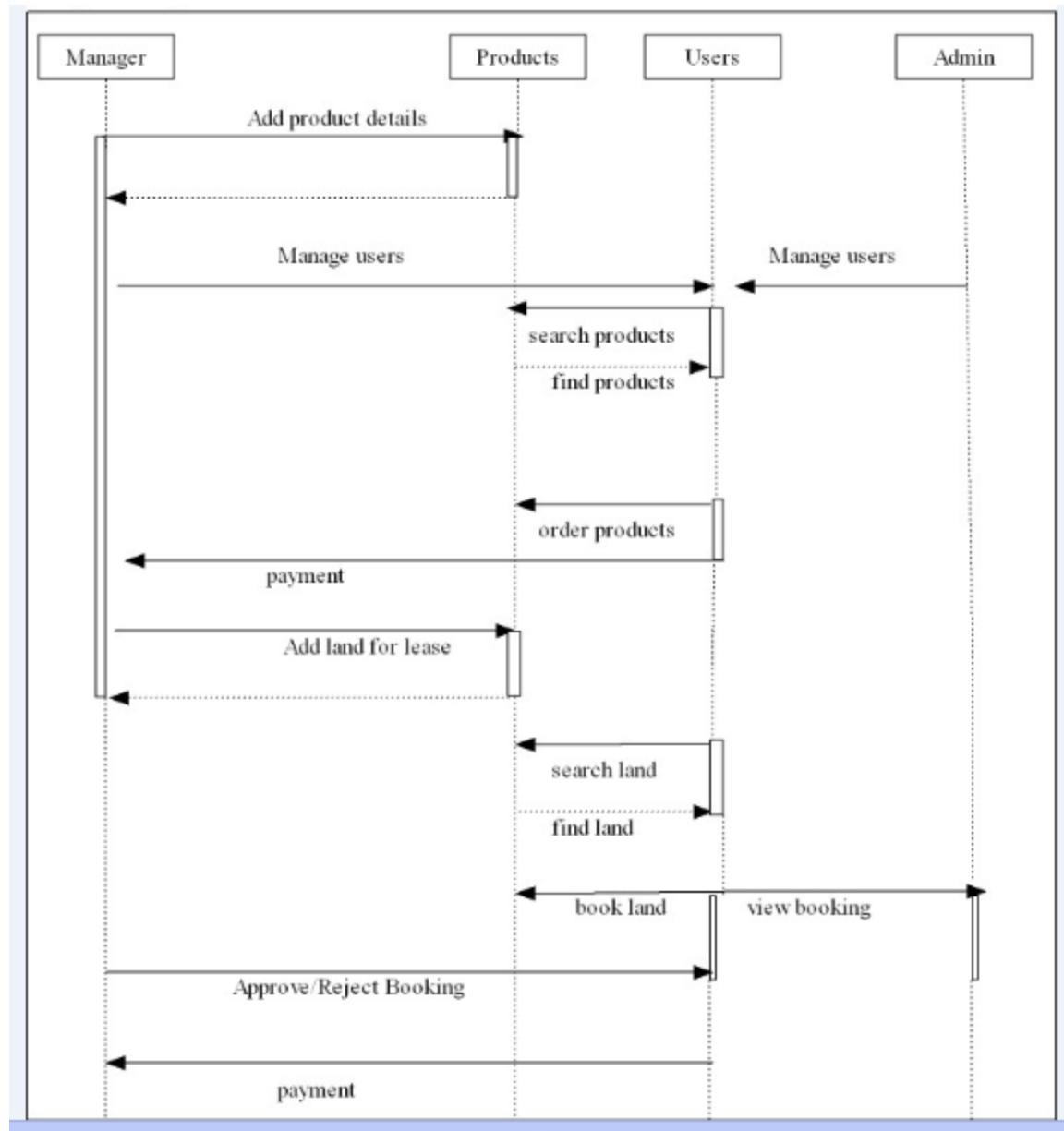
P8.4.2 UML Sequence Diagram

A sequence diagram is an interaction diagram that shows how objects operate with one another and in what order. It is a construct of a message sequence chart.

A sequence diagram shows object interactions arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario. Sequence diagrams are typically associated with use case realizations in the Logical View of the system under development. Sequence diagrams are sometimes called event diagrams or event scenarios.

A sequence diagram shows, as parallel vertical lines (*lifelines*), different processes or objects that live simultaneously, and, as horizontal arrows, the messages exchanged between them, in the order

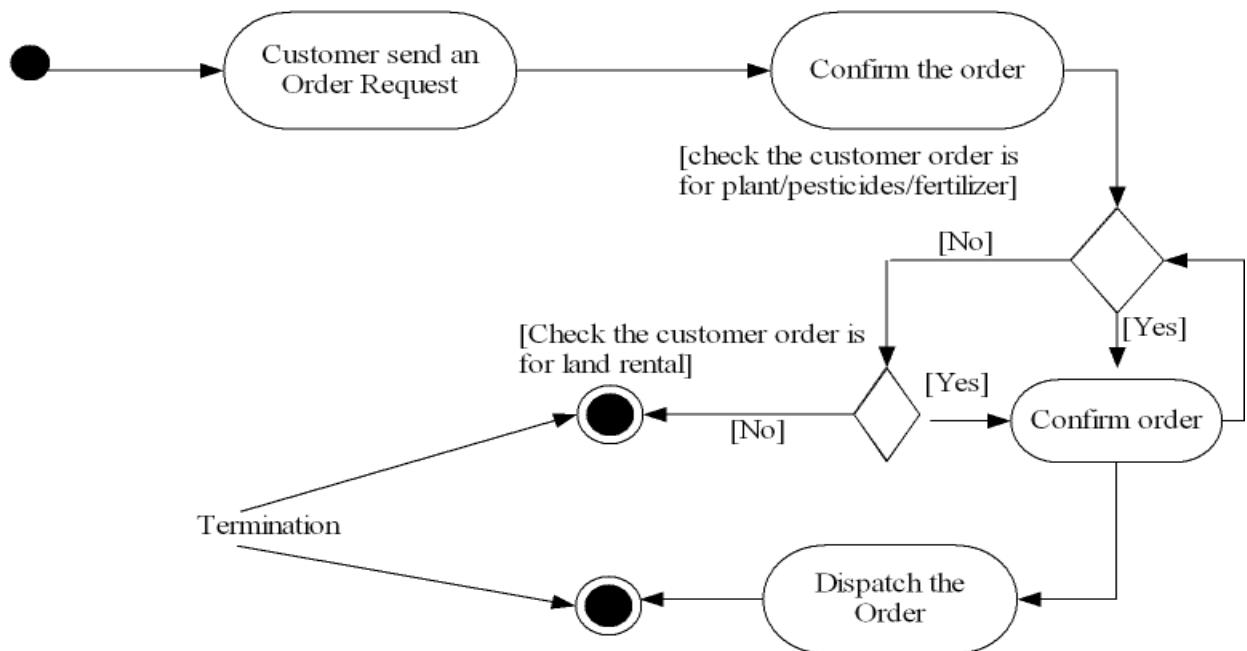
in which they occur. This allows the specification of simple runtime scenarios in a graphical manner.



P8.4.3 Activity Diagram

Activity diagram is another important diagram in UML to describe the dynamic aspects of the system. Activity diagram is basically a flowchart to represent the flow from one activity to another activity. The activity can be described as an operation of the system. The control flow is drawn from one operation to another. This flow can be sequential, branched, or concurrent. Activity diagrams deal with all type of flow control by using different elements such as fork, join, etc

Activity Diagram

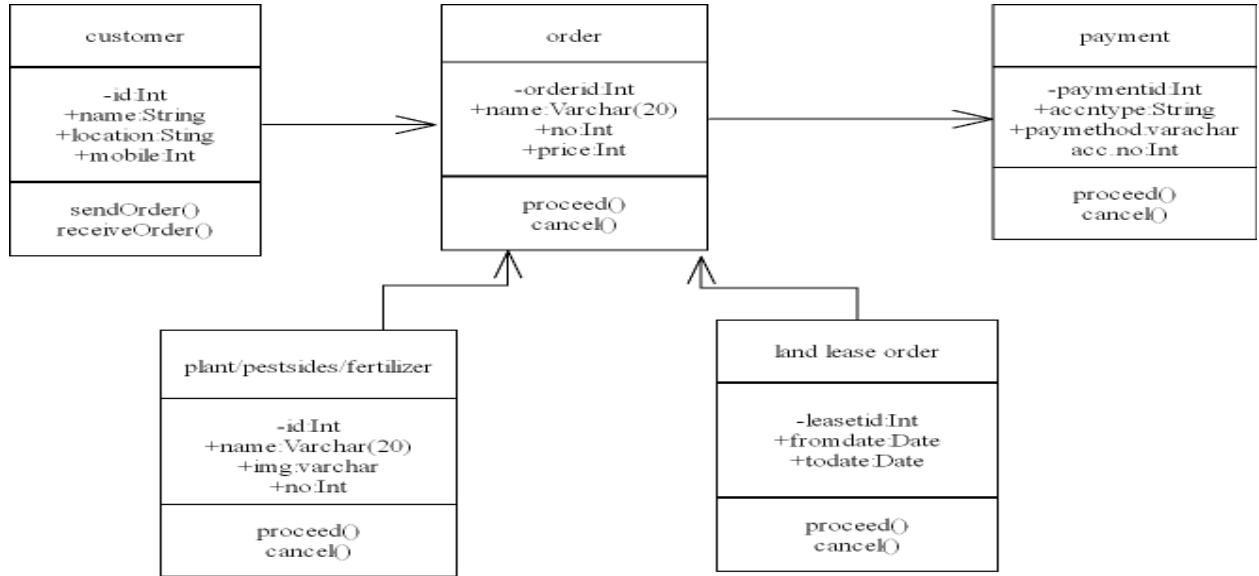


P8.4.4 Class Diagram

Class diagram is a static diagram. It represents the static view of an application. Class diagram is not only used for visualizing, describing, and documenting different aspects of a system but also for constructing executable code of the software application.

Class diagram describes the attributes and operations of a class and also the constraints imposed on the system. The class diagrams are widely used in the modeling of object-oriented systems because they are the only UML diagrams, which can be mapped directly with object-oriented

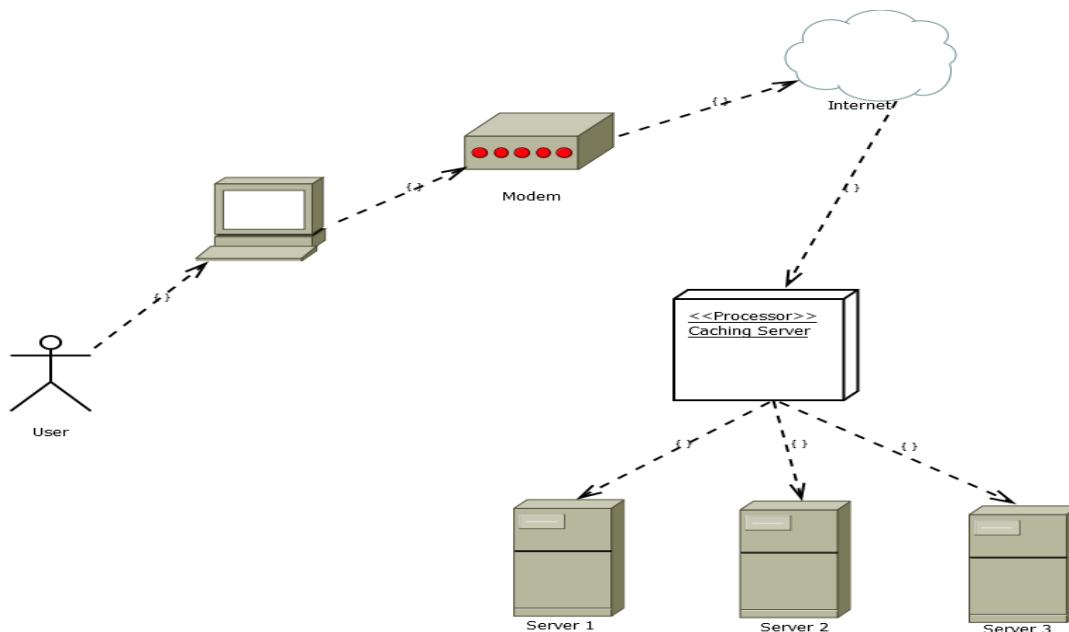
languages. Class diagram shows a collection of classes, interfaces, associations, collaborations, and constraints. It is also known as a structural diagram.



P8.4.5 Deployment diagrams

Deployment diagrams are used to visualize the topology of the physical components of a system, where the software components are deployed.

Deployment diagrams are used to describe the static deployment view of a system. Deployment diagrams consist of nodes and their relationships.

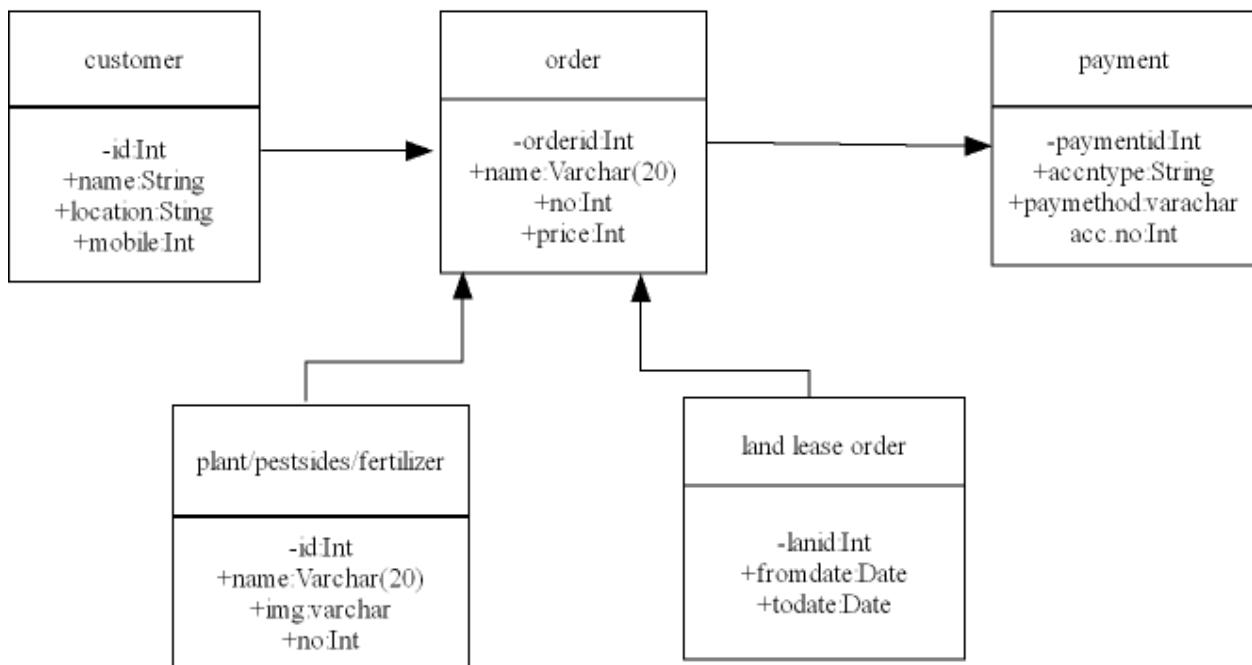


P8.4.6 Object diagrams

Object diagrams are derived from class diagrams so object diagrams are dependent upon class diagrams.

Object diagrams represent an instance of a class diagram. The basic concepts are similar for class diagrams and object diagrams. Object diagrams also represent the static view of a system but this static view is a snapshot of the system at a particular moment. Object diagrams are used to render a set of objects and their relationships as an instance.

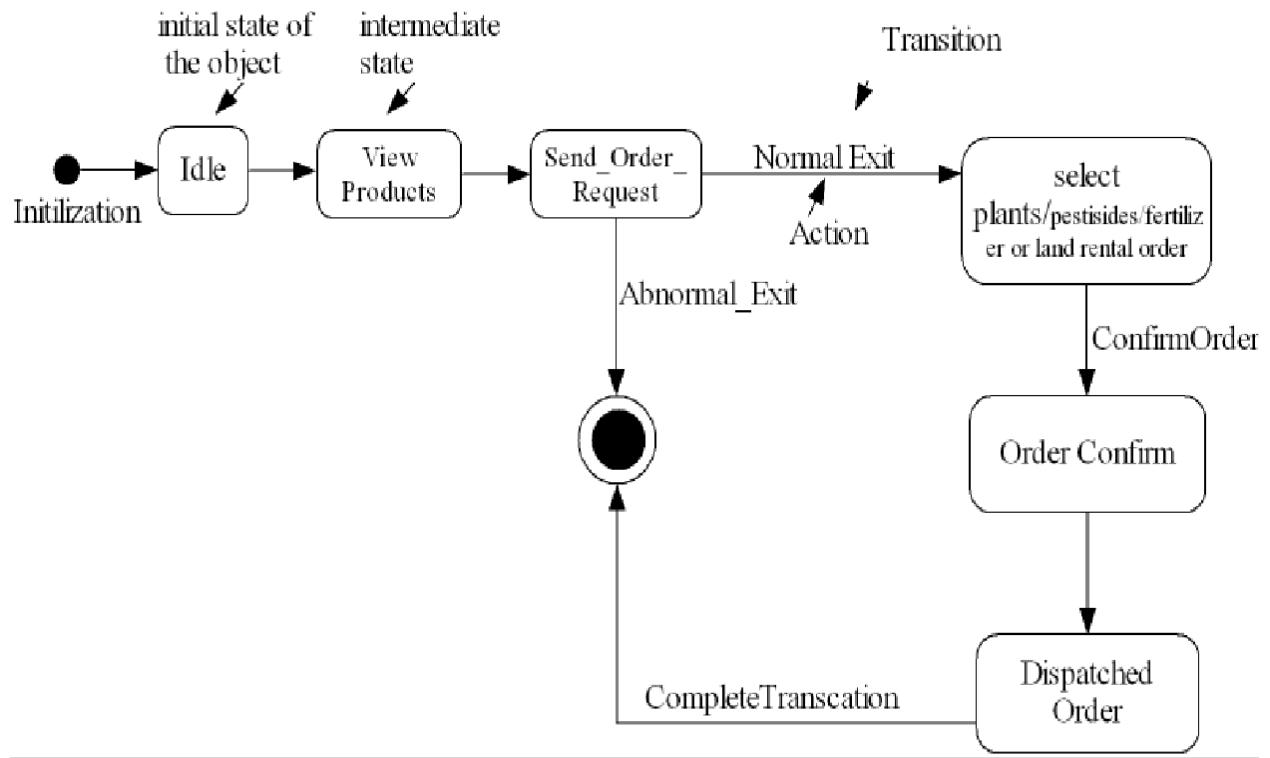
Object Diagram



P8.4.7 State Chart Diagram

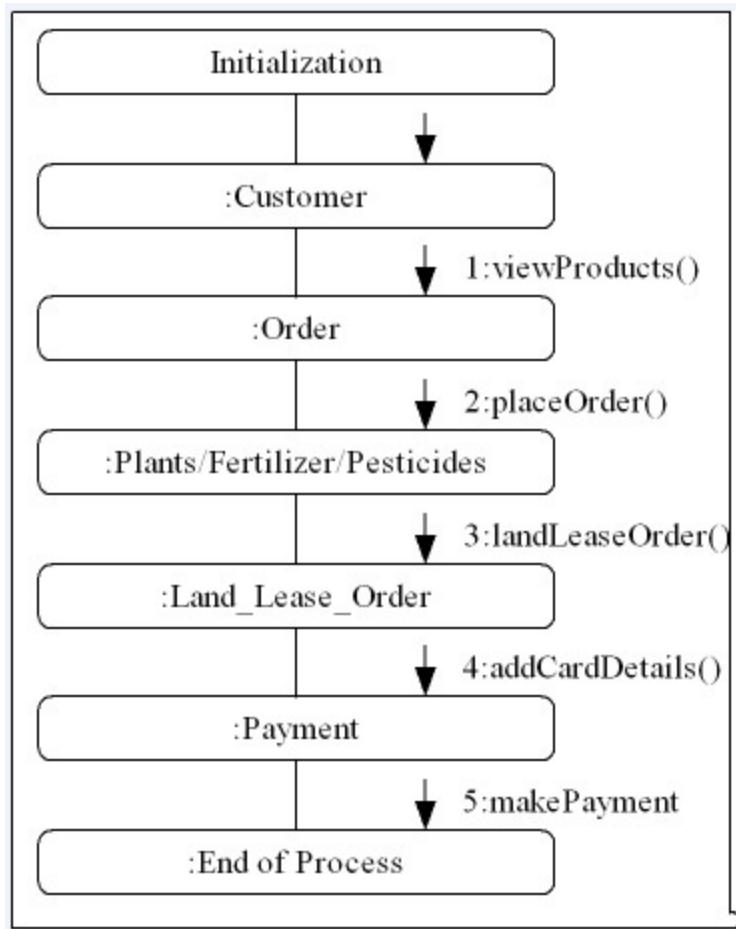
The name of the diagram itself clarifies the purpose of the diagram and other details. It describes different states of a component in a system. The states are specific to a component/object of a system.

A State chart diagram describes a state machine. State machine can be defined as a machine which defines different states of an object and these states are controlled by external or internal events. Activity diagram explained in the next chapter is a special kind of a State chart diagram. As State chart diagram defines the states, it is used to model the lifetime of an object.



P8.4.8 Collaboration Diagram

Collaboration diagrams (known as Communication Diagram in UML 2.x) are used to show how objects interact to perform the behavior of a particular use case, or a part of a use case. Along with sequence diagrams, collaboration are used by designers to define and clarify the roles of the objects that perform a particular flow of events of a use case. They are the primary source of information used to determining class responsibilities and interfaces.



P8.5 System Specification

P8.5.1 Hardware Specification

Processor - Intel CORE i3

RAM - 1GB

Hard disk - 500GB

P8.5.2 Software Specification

Front End - PHP-Laravel Framework

Backend - MYSQL

Client on PC - Windows 8

Technologies used - JS, HTML5, AJAX, J Query, PHP, CSS

P8.6 Software Description

P8.6.1 Laravel

Laravel is a free, open-source PHP web framework, created by Taylor Otwell and intended for the development of web applications following the model–view–controller (MVC) architectural pattern and based on Symphony. Some of the features of Laravel are a modular packaging system with a dedicated dependency manager, different ways for accessing relational databases, utilities that aid in application deployment and maintenance, and its orientation toward syntactic sugar.

Laravel aims to make the development process a pleasing one for the developer without sacrificing application functionality. Laravel is accessible, yet powerful, providing powerful tools needed for large, robust applications. A superb inversion of control container, expressive migration system, and tightly integrated unit testing support give you the tools you need to build any application with which you are tasked.

Laravel offers you the following advantages, when you are designing a web application based on it

- The web application becomes more scalable, owing to the Laravel framework.

- Considerable time is saved in designing the web application, since Laravel reuses the components from other framework in developing web application.
- It includes namespaces and interfaces, thus helps to organize and manage resources.

Composer: Composer is a tool which includes all the dependencies and libraries. It allows a user to create a project with respect to the mentioned framework (for example, those used in Laravel installation). Third party libraries can be installed easily with help of composer. All the dependencies are noted in composer.json file which is placed in the source folder.

Artisan: Command line interface used in Laravel is called Artisan. It includes a set of commands which assists in building a web application. These commands are incorporated from Symphony framework.

Laravel offers the following key features which make it an ideal choice for designing web applications –

Modularity: Laravel provides 20 built in libraries and modules which help in enhancement of the application. Every module is integrated with Composer dependency manager which eases updates.

Testability: Laravel includes features and helpers which help in testing through various test cases. This feature helps in maintaining the code as per the requirements.

Routing: Laravel provides a flexible approach to the user to define routes in the web application. Routing helps to scale the application in a better way and increases its performance.

Configuration Management: A web application designed in Laravel will be running on different environments, which means that there will be a constant change in its configuration. Laravel provides a consistent approach to handle the configuration in an efficient way.

Query Builder and ORM: Laravel incorporates a query builder which helps in querying databases using various simple chain methods. It provides ORM (Object Relational Mapper) and Active Record implementation called Eloquent.

Schema Builder: Schema Builder maintains the database definitions and schema in PHP code. It also maintains a track of changes with respect to database migrations.

Template Engine: Laravel uses the Blade Template engine, a lightweight template language used to design hierarchical blocks and layouts with predefined blocks that include dynamic content.

E-mail: Laravel includes a mail class which helps in sending mail with rich content and attachments from the web application.

Authentication: User authentication is a common feature in web applications. Laravel eases designing authentication as it includes features such as register, forgot password and send password reminders.

P8.6.2 MySQL

MySQL, the most popular Open Source SQL database management system, is developed, distributed, and supported by Oracle Corporation. The MySQL Web site provides the latest information about MySQL software.

- **MySQL is a database management system.**

A database is a structured collection of data. It may be anything from a simple shopping list to a picture gallery or the vast amounts of information in a corporate network. To add, access, and process data stored in a computer database, you need a database management system such as MySQL Server. Since computers are very good at handling large amounts of data, database management systems play a central role in computing, as standalone utilities, or as parts of other applications.

- **MySQL databases are relational.**

A relational database stores data in separate tables rather than putting all the data in one big storeroom. The database structures are organized into physical files optimized for speed. The logical model, with objects such as databases, tables, views, rows, and columns, offers a flexible programming environment. You set up rules governing the relationships between different data fields, such as one-to-one, one-to-many, unique, required or optional, and “pointers” between different tables. The data base enforces these rules, so that with a well-designed database, your application ever sees inconsistent, duplicate, orphan, out-of-date, or missing data.

The SQL part of “MySQL” stands for “Structured Query Language”. SQL is the most common standardized language used to access databases. Depending on your programming environment,

you might enter SQL directly (for example, to generate reports), embed SQL statements into code written in another language, or use a language-specific API that hides the SQL syntax. SQL is defined by the ANSI/ISO SQL Standard. The SQL standard has been evolving since 1986 and several versions exist. In this manual, “SQL92” refers to the standard released in 1992, “SQL: 1999” refers to the standard released in 1999, and “SQL: 2003” refers to the current version of the standard. We use the phrase “the SQL standard” to mean the current version of the SQL Standard at anytime.

- **MySQL software is Open Source.**

Open Source means that it is possible for anyone to use and modify the software. Anybody can download the MySQL software from the Internet and use it without paying anything. If you wish, you may study the source code and change it to suit your needs. The MySQL software uses the GPL (GNU General Public License), to define what you may and may not do with the software indifferent situations. If you feel uncomfortable with the GPL or need to embed MySQL code into a commercial application, you can buy a commercially licensed version from us. See the MySQL Licensing Overview for more information.

- **The MySQL Database Server is very fast, reliable, scalable, and easy to use.**

If that is what you are looking for, you should give it a try. MySQL Server can run comfortable your desktop or laptop, alongside your other applications, web servers, and so on, requiring little or no attention. If you dedicate an entire machine to MySQL, you can adjust the settings to take advantage of all the memory, CPU power, and I/O capacity available. MySQL can also scale up to clusters of machines, networked together.

MySQL Server was originally developed to handle large databases much faster than existing solutions and has been successfully used in highly demanding production environments for several years. Although under constant development, MySQL Server today offers a rich and useful set of functions. Its connectivity, speed, and security make MySQL Server highly suited for accessing databases on the Internet.

- **MySQL Server works in client/server or embedded systems.**

The MySQL Database Software is a client/server system that consists of a multi-threaded SQL server that supports different back ends, several different client programs and libraries,

administrative tools, and a wide range of application programming interfaces (APIs).

We also provide MySQL Server as an embedded multi-threaded library that you can link into your application to get a smaller, faster, easier-to-manage standalone product.

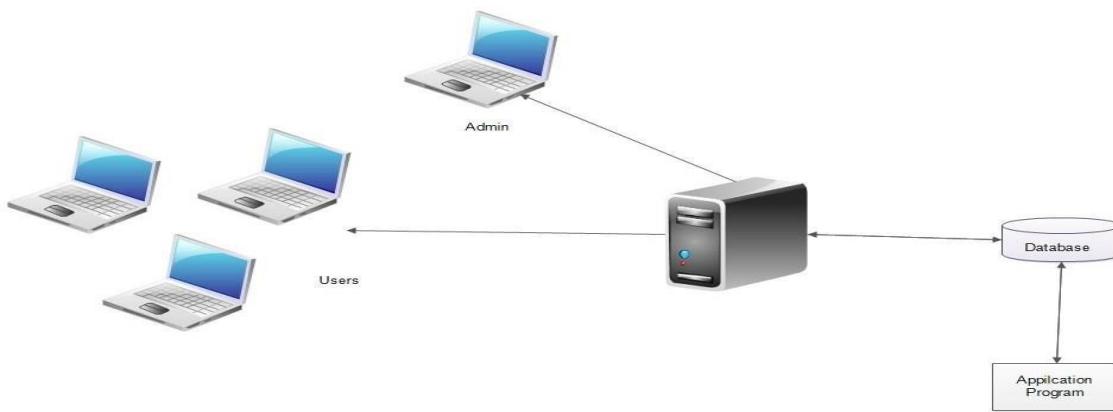
- A large amount of contributed MySQL software is available.**

MySQL Server has a practical set of features developed in close cooperation with our users. It is very likely that your favorite application or language supports the MySQL Database Server.

P8.7 System Design

Design is the first step into the development phase for any engineered product or system. Design is a creative process. A good design is the key to effective system. The term “design” is defined as “the process of applying various techniques and principles for the purpose of defining a process or a system in sufficient detail to permit its physical realization”. It may be defined as a process of applying various techniques and principles for the purpose of defining a device, a process or a system in sufficient detail to permit its physical realization. Software design sits at the technical kernel of the software engineering process and is applied regardless of the development paradigm that is used. The system design develops the architectural detail required to build a system or product. As in the case of any systematic approach, this software too has undergone the best possible design phase fine tuning all efficiency, performance and accuracy levels. The design phase is a transition from a user oriented document to a document to the programmers or database personnel. System design goes through two phases of development: Logical and Physical Design

P8.7.1 Architectural Design



The registered user, admin, service provider can access the e-workshop through internet using their Laptop, Smart Phone, Tablet or Desktop Computer. The System's application program processes the user's request and provides the required services by taking data from the system database.

P8.7.2 Database Design

A database is an organized mechanism that has the capability of storing information through which a user can retrieve stored information in an effective and efficient manner. The data is the purpose of any database and must be protected.

The database design is a two level process. In the first step, user requirements are gathered together and a database is designed which will meet these requirements as clearly as possible. This step is called Information Level Design and it is taken independent of any individual DBMS.

In the second step, this Information level design is transferred into a design for the specific DBMS that will be used to implement the system in question. This step is called Physical Level Design, concerned with the characteristics of the specific DBMS that will be used. A database design runs parallel with the system design. The organization of the data in the database is aimed to achieve the following two major objectives.

- Data Integrity
- Data independence

Relational Database Management System (RDBMS)

A relational model represents the database as a collection of relations. Each relation resembles a table of values or file of records. In formal relational model terminology, a row is called a tuple, a column header is called an attribute and the table is called a relation. A relational database consists of a collection of tables, each of which is assigned a unique name. A row in a table represents a set of related values.

Relations, Domains & Attributes

A table is a relation. The rows in a table are called tuples. A tuple is an ordered set of n elements.

Columns are referred to as attributes. Relationships have been set between every table in the database. This ensures both Referential and Entity Relationship Integrity. A domain D is a set of atomic values. A common method of specifying a domain is to specify a data type from which the data values forming the domain are drawn. It is also useful to specify a name for the domain to help in interpreting its values. Every value in a relation is atomic, that is not decomposable.

Relationships

- Table relationships are established using Key. The two main keys of prime importance are Primary Key & Foreign Key. Entity Integrity and Referential Integrity Relationships can be established with these keys.
- Entity Integrity enforces that no Primary Key can have null values.
- Referential Integrity enforces that no Primary Key can have null values.
- Referential Integrity for each distinct Foreign Key value, there must exist a matching Primary Key value in the same domain. Other key are Super Key and Candidate Keys.

Normalization

Data are grouped together in the simplest way so that later changes can be made with minimum impact on data structures. Normalization is formal process of data structures in manners that eliminates redundancy and promotes integrity. Normalization is a technique of separating redundant fields and breaking up a large table into a smaller one. It is also used to avoid insertion, deletion, and updating anomalies .Normal for min data modeling use two concepts, keys and relationships. A key uniquely identifies a row in a table. There are two types of keys, primary key and foreign key. A primary key is an element or a combination of elements in a table whose purpose is to identify records from the same table. A foreign key is a column in a table that uniquely identifies record from a different table. All the tables have been normalized up to the third normal form.

As the name implies, it denotes putting things in the normal form. The application developer via normalization tries to achieve a sensible organization of data into proper tables and columns and where names can be easily correlated to the data by the user. Normalization eliminates repeating groups at data and thereby avoids data redundancy which proves to be a great burden on the computer resources. These include:

- ✓ Normalize the data.

- ✓ Choose proper names for the tables and columns.
- ✓ Choose the proper name for the data.

First Normal Form

The First Normal Form states that the domain of an attribute must include only atomic values and that the value of any attribute in a tuple must be a single value from the domain of that attribute. In other words 1NF disallows “relations within relations” or “relations as attribute values within tuples”. The only attribute values permitted by 1NF are single atomic or indivisible values. The first step is to put the data into First Normal Form. This can be neither do nor by moving data in to separate tables where the data is of similar type in each table. Each table is given a Primary Key or Foreign Key as per requirement of the project. In this we form new relations for each non-atomic attribute or nested relation. This eliminated repeating groups of data. A relation is said to be in first normal form if only if it satisfies the constraints that contain the primary key only.

Second Normal Form

According to Second Normal Form, for relations where primary key contains multiple attributes, no non-key attribute should be functionally dependent on a part of the primary key. In this we decompose and setup a new relation for each partial key with its dependent attributes. Make sure to keep a relation with the original primary key and any attributes that are fully functionally dependent on it. This step helps in taking out data that is only dependent on a part of the key. A relation is said to be in second normal form if and only if it satisfies all the first normal form conditions for the primary key and every non-primary key attributes of the relation is fully dependent on its primary key alone.

Third Normal Form

According to Third Normal Form, Relation should not have a non-key attribute functionally determined by another non-key attribute or by a set of non-key attributes. That is, there should be no transitive dependency on the primary key. In this we decompose and set up relation that includes the non-key attributes that functionally determines other non-key attributes. This step is taken to get rid of anything that does not depend entirely on the Primary Key. A relation is said to be in third normal form if only if it is in second normal form and more over the non key attributes of the relation should not be depend on other non-key attribute.

P8.7.2 TABLES

Table No 1: logins

Primary Key: id

Field	Data type	Size	Description
id	int	11	Login id
email	varchar	50	User name
password	int	50	User password stored in encrypted form
utype	int	10	Type of users

Table No 2: registrations

Primary Key: regid

Field	Data type	Size	Description
regid	int	11	Registration id
fname	varchar	20	User first name
lname	varchar	20	User last name
hname	varchar	20	User house name
districy	varchar	20	User district name
city	varchar	20	User city name
pincode	varchar	20	User pincode
mobile	varchar	20	User mobile number
email	varchar	20	Email id of user
status	int	20	Status of user

Table No 3: tbl_district**Primary Key:** district_id

Field	Data type	Size	Description
district_id	int	20	District Id
name	varchar	20	Name of district

Table No 4: tbl_city**Primary Key:** city_id

Foreign Key: district_id references from tbl_district

Field	Data type	Size	Description
city_id	int	2	City Id
district_id	int	2	District Id
city_name	varchar	9	Name of city

Table No 5: tbl_prodaddds**Primary Key:** plant_id

Foreign key: catid references from tbl_categories

Field	Data type	Size	Description
plant_id	int	11	plant id
catid	int	11	category id
plantname	varchar	50	Name of plant
plantimage	varchar	50	Image of plant
price	int	50	Price of plant
stock	int	11	Available stock
status	varchar	11	Status of plant

Table No 6: pestadds

Primary Key: pest_id

Foreign key: c_id references from pestcategories

Field	Data type	size	Description
pest_id	int	2	Id of the pesticides
c_id	int	2	category id of pesticides
pestname	varchar	50	Name of pesticides
pestdescription	varchar	100	Description of pesticides
pestimage	varchar	100	Image of pesticides
price	int	100	Price of pesticides
stock	int	100	stock of pesticides
status	int	10	Status

Table No 7: fertadds

Primary key: fert_id

Foreign key: categorid references from fertcategories

Field	Data type	size	Description
fert_id	int	2	Id of the fertilizer
categoryid	int	2	Id of fertilizer category
fertname	varchar	50	Name of fertilizer
fertdescription	varchar	50	details of fertilizer
fertimage	varchar	50	Image of fertilizer
price	int	50	Price of fertilizer

stock	int	20	Stock of fertilizer
status	int	10	status

Table No 8 .tbl_categories

Primary key: catid

Field Name	Field Type	Size	Description
catid	int	10	Category id of plants
name	varchar	20	Category name of plants

Table No 9.pestcategories

Primary key: cid

Field Name	Field Type	Size	Description
cid	int	10	Category id of pesticides
name	varchar	20	Category name of pesticides

Table No 10.fertcategories

Primary key: categoryid

Field Name	Field Type	Size	Description
categoryid	int	10	Category id of fertilizer
name	varchar	20	Category name of fertilizer

Table No 11.lands

Primary key: landid

Field Name	Field Type	Size	Description
landid	int	10	Id of land
landimage	varchar	100	Image of land
squarefeet	varchar	100	acere of land
lamount	varchar	100	Land amount
lowneraddress	varchar	100	Land owner address
district	varchar	100	District
soiltype	varchar	100	Soil type of land
water	varchar	100	Water source of land
landpttayam	varchar	100	Landpattaym
landdescription	varchar	600	land description

Table No 11.landbooks

Primary key: bookid

Foreign Key: id references from logins, landid references from lands

Field Name	Field Type	Size	Description
bookid	int	2	Booking id of land
id	int	5	Login id of the
landid	int	6	Landid of user

type	varchar	10	Type
status	varchar	10	Status
fromdate	date	10	Fromdate
todate	date	10	todate
cdate	date	10	Current date

Table No 12.carts

Primary key: cart_id

Foreign key: id references from logins, plant_id references from tbl_prodaads

Field Name	Field type	Size	Description
cart_id	int	4	Cart Id
id	int	20	login id
plant_id	int	20	Plant id
cart_quantity	int	3	Quantity
totalprice	int	3	Total price
cart_status	int	4	Status
cdate	int	4	Current date

Table No13 .landpayments

Primary key: id

Foreign Key: bookid references from landbooks

Field Name	Field Type	Size	Description
id	int	10	Payment id
bookid	int	10	Booking id
amount	int	10	Land amount
email	varchar	20	Email id
name	varchar	30	Name of user
cardno	varchar	30	Card number
cvv	varchar	30	cvv
status	varchar	30	status
expdate	varchar	30	Expiry date

Table No 14.fertcarts

Primary key: cart_id

Foreign key: id references from logins, fert_id references from fertadds

Field Name	Field Type	Size	Description
fertcart_id	int	4	cart Id
id	int	20	login id
fert_id	int	20	fertilizer id
cart_quantity	int	3	Quantity

totalprice	int	3	Total price
cart_status	int	4	Status
cdate	int	4	Current date

Table No 15.pestcarts

Primary key: pestcart_id

Foreign key: id references from logins, pest_id references from pestadds

Field Name	Field Type	Size	Description
pestcart_id	int	4	cart Id
Id	int	20	login id
pest_id	int	20	pesticides id
cart_quantity	int	3	Quantity
Totalprice	int	3	Total price
cart_status	int	4	Status
Cdate	int	4	Current date

Table No 16.addresses

Primary key: did

Foreign key: id references from login, pest_id references from pestadds, plant_id references from tbl_prodadds, fert_id references from fertadds

Field Name	Field Type	Size	Description
pestcart_id	int	4	cart Id

id	int	20	login id
pest_id	int	20	pesticides id
cart_quantity	int	3	Quantity
totalprice	int	3	Total price
cart_status	int	4	Status
cdate	int	4	Current date

Table No 17.tbl_payment

Primary Key: payment_id

Foreign Key: login_id, booking_id

Field Name	Field Type	Size	Description
payment_id	int	4	Payment Id
login_id	varchar	20	login id
booking_id	int	4	Booking Id
payment_no	varchar	20	Card no
payment_name	varchar	20	Name of user
payment_date	date	3	Expiry Date
status	varchar	10	Status

P8.8 System Testing

P8.8.1Introduction

Software Testing is the process of executing software in a controlled manner, in order to answer the question-Does the software behave as specified? Software testing is often used in association with the terms verification and validation. Validation is the checking or testing of items, includes software, for conformance and consistency with an associated specification. Software testing is just one kind of verification, which also uses techniques such as reviews, analysis, inspections, and walkthroughs. Validation is the process of checking that what has been specified is what the user actually wanted.

Validation: Are we doing the right job? Verification: Are we doing the job right?

Software testing should not be confused with debugging. Debugging is the process of analyzing and localizing bugs when software does not behave as expected. Although the identification of some bugs will be obvious from playing with the software, a methodical approach to software testing is a much more thorough means for identifying bugs. Debugging is therefore an activity which supports testing, but cannot replace testing.

Other activities which are often associated with software testing are static analysis and dynamic analysis. Static analysis investigates the source code of software, looking for problems and gathering metrics without actually executing the code. Dynamic analysis looks at the behavior of software while it is executing, to provide information such as execution traces, timing profiles, and test coverage information.

Testing is a set of activity that can be planned in advanced and conducted systematically. Testing begins at the module level and work towards the integration of entire computers based system. Nothing is complete without testing, as it vital success of the system testing objectives, there are several rules that can serve as testing objectives. They are:

Testing is a process of executing a program with the intent of finding an error.

- A good test case is one that has high possibility of finding an undiscovered error.
- A successful test is one that uncovers an undiscovered error.

If a testing is conducted successfully according to the objectives as stated above, it would uncover

errors in the software. Also testing demonstrate that the software function appear to be working according to the specification, that performance requirement appear to have been met.

There are three ways to test program.

- For correctness
- For implementation efficiency
- For computational complexity

Test for correctness are supposed to verify that a program does exactly what it was designed to do. This is much more difficult than it may at first appear, especially for large programs.

P8.8.2 Test Plan

A test plan implies a series of desired course of action to be followed in accomplishing various testing methods. The Test Plan acts as a blue print for the action that is to be followed. The software engineers create a computer program, its documentation and related data structures. The software developers are always responsible for testing the individual units of the programs, ensuring that each performs the function for which it was designed. There is an independent test group (ITG) which is to remove the inherent problems associated with letting the builder to test the thing that has been built. The specific objectives of testing should be stated in measurable terms. So that the mean time to failure, the cost to find and fix the defects, remaining defect density or frequency of occurrence and test work-hours per regression test all should be stated within the test plan.

The levels of testing include:

- ❖ Unit Testing
- ❖ Integration Testing
- ❖ Data validation Testing
- ❖ Output Testing

P8.8.2.1 Unit Testing

Unit testing focuses verification effort on the smallest unit of software design – the software component or module. Using the component level design description as a guide, important control paths are tested to uncover errors within the boundary of the module.

The relative complexity of tests and uncovered scope established for unit testing. The unit testing

is white-box oriented, and step can be conducted in parallel for multiple components. The modular interface is tested to ensure that information properly flows into and out of the program unit under test. The local data structure is examined to ensure that data stored temporarily maintains its integrity during all steps in an algorithm's execution. Boundary conditions are tested to ensure that all statements in a module have been executed at least once. Finally, all error handling paths are tested.

Tests of data flow across a module interface are required before any other test is initiated. If data do not enter and exit properly, all other tests are moot. Selective testing of execution paths is an essential task during the unit test. Good design dictates that error conditions be anticipated and error handling paths setup to reroute or cleanly terminate processing when an error does occur. Boundary testing is the last task of unit testing step. Software often fails at its boundaries.

Unit testing was done by treating each module as separate entity and testing each one of them with a wide spectrum of test inputs. Some flaws in the internal logic of the modules were found and were rectified. After coding each module is tested and run individually. All unnecessary code where removed and ensured that all modules are working, and gives the expected result.

P8.8.2.2 Integration Testing

Integration testing is systematic technique for constructing the program structure while at the same time conducting tests to uncover errors associated with interfacing. The objective is to take unit tested components and build a program structure that has been dictated by design. The entire program is tested as whole. Correction is difficult because isolation of causes is complicated by vast expanse of entire program. Once these errors are corrected, new ones appear and the process continues in a seemingly endless loop.

After performing unit testing in the System all the modules were integrated to test for any inconsistencies in the interfaces. Moreover differences in program structures were removed and a unique program structure was evolved.

P8.8.2.3 Validation Testing

This is the final step in testing. In this the entire system was tested as a whole with all forms, code, modules and class modules. This form of testing is popularly known as Black Box testing or System tests.

Black Box testing method focuses on the functional requirements of the software. That is, Black Box testing enables the software engineer to derive sets of input conditions that will fully exercise all functional requirements for a program.

Black Box testing attempts to find errors in the following categories; incorrect or missing functions, interface errors, errors in data structures or external data access, performance errors and initialization errors and termination errors.

P8.8.2.4 User Acceptance Testing

The system considered is tested for user acceptance; here it should satisfy the firm's need. The software should keep in touch with perspective system; user at the time of developing and making changes whenever required. This done with respect to the following points:

- Input Screen Designs,
- Output Screen Designs,

The above testing is done taking various kinds of test data. Preparation of test data plays a vital role in the system testing. After preparing the test data, the system under study is tested using that test data. While testing the system by which test data errors are again uncovered and corrected by using above testing steps and corrections are also noted for future use.

P8.8.3 Test Case

Project Name:E-plants					
Login Test Case					
Test Case ID:Fun_1			Test Designed By:Anitta Antony		
Test Priority(Low/Medium/High):High			Test Designed Date::6-04-19		
Module Name:Login Screen			Test Executed By:Ms:Sruhimol Kurian		
Test Title:Verify login with valid username and password			Test Execution Date:15-05-19		
Description:Test the login page					
Pre-condition:user has valid username and password					
Step	Test Step	Test Data	Excepted result	Actual result	Status(Pass/Fail)
1	Navigation to login page		Login Page for user	Login Page for user	Pass
2	Provide valid username	Username:admin@gmail.com	User should able to login	Logged in and user is navigated to dashboard with records	Pass
3	Provide valid password	Password:admin			
4	Click on login button				
5	Provide valid username or password	username:admin@mail.com Password:admin			
6	Provide null username or password	Username:null Password:null	user should not able to logged in	Message for enter valid username and password	Pass
Post condition:User is validated with database and successfully login to account. The account session details are logged in database					

Project Name:E-plants					
User Registration Test Case					
Test Case ID:Fun_2			Test Designed By:Anitta Antony		
Test Priority(Low/Medium/High):High			Test Designed Date:6-04-19		
Module Name: User Registration			Test Executed By:Ms:Sruthimol Kurian		
Test Title:To register new user			Test Execution Date:15-05-19		
Description:Test the user registration					
Pre-condition:user should not be already registered					
Step	Test Step	Test Data	Excepted result	Actual result	Status(Pass/Fail)
1	Navigation to user registration		User registration form	User registration form	Pass
2	Provide null information	Username:admin	Message for enter valid username	Message for enter valid username	Pass
3	Provide valid details of user	Password:admin	User registration	User registered and user can login	Pass
4	Click on registerbutton				
Post condition:User is validated with database and successfully login to account. The account session details are logged in database					

P8.9 Implementation

Implementation is the stage of the project where the theoretical design is turned into a working system. It can be considered to be the most crucial stage in achieving a successful new system gaining the users confidence that the new system will work and will be effective and accurate. It is primarily concerned with user training and documentation. Conversion usually takes place about the same time the user is being trained or later. Implementation simply means convening a new system design into operation, which is the process of converting a new revised system design into an operation alone.

At this stage the main work load, the greatest upheaval and the major impact on the existing system shifts to the user department. If the implementation is not carefully planned or controlled, it can create chaos and confusion.

Implementation includes all those activities that take place to convert from the existing system to the new system. The new system may be a totally new, replacing an existing manual or automated system or it may be a modification to an existing system. Proper implementation is essential to provide a reliable system to meet organization requirements. The process of putting the developed system in actual use is called system implementation. This includes all those activities that take place to convert from the old system to the new system. The system can be implemented only after thorough testing is done and if it is found to be working according to the specifications. The system personnel check the feasibility of the system. The more complex the system being implemented, the more involved will be the system analysis and design effort required to implement the three main aspects: education and training, system testing and change over.

The implementation state involves the following tasks:

- Careful planning.
- Investigation of system and constraints.
- Design of methods to achieve the changeover. Training of the staff in the changeover phase.

P8.9.1 Implementation Procedure

Implementation of software refers to the final installation of the package in its real environment, to the satisfaction of the intended uses and the operation of the system. In many organizations someone who will not be operating it, will commission the software development project. In the initial stage people doubt about the software but we have to ensure that the resistance does not build up, as one has to make sure that:

- The active user must be aware of the benefits of using the new system.
- Their confidence in the software is built up.
- Proper guidance is imparted to the user so that he is comfortable in using the application.

Before going ahead and viewing the system, the user must know that for viewing the result, the server program should be running in the server. If the server object is not up running on the server, the actual process won't take place

P.8.9.2 User Training

User training is designed to prepare the user for testing and converting the system. To achieve the objective and benefits expected from computer based system, it is essential for the people who will be involved to be confident of their role in the new system. As system becomes more complex, the need for training is more important. By user training the user comes to know how to enter data, respond to error messages, interrogate the database and call up routine that will produce reports and perform other necessary functions.

Training on the Application Software after providing the necessary basic training on computer awareness the user will have to be trained on the new application software. This will give the underlying philosophy of the use of the new system such as the screen flow, screen design type of help on the screen, type of errors while entering the data, the corresponding validation check at each entry and the ways to correct the date entered. It should then cover information needed by the specific user/group to use the system or part of the system while imparting the training of the program on the application. This training may be different across different user groups and across different levels of hierarchy.

P.8.9.3 Operational Document

After providing the necessary basic training on computer awareness the user will have to be trained on the new application software. This will give the underlying philosophy of the use of the new system such as the screen flow, screen design type of help on the screen, type of errors while entering the data, the corresponding validation check at each entry and the ways to correct the date entered. It should then cover information needed by the specific user/ group to use the system or part of the system while imparting the training of the program on the application. This training may be different across different user groups and across different levels of hierarchy.

P8.9.4 System Maintenance

Maintenance is the enigma of system development. The maintenance phase of the software cycle is the time in which a software product performs useful work. After a system is successfully implemented, it should be maintained in a proper manner. System maintenance is an important

aspect in the software development life cycle. The need for system maintenance is for it to make adaptable to the changes in the system environment. Software maintenance is of course, far more than "Finding Mistakes".

P8.10 Conclusion & Future Enhancements

P8.10.1 Future Enhancement

New modules can be added to this system with less effort. There is flexibility in all the modules. In future we can have more users rather than admin and allow them to sell plants and lands at low cost just like an auction site. The needs for more fast and efficient systems in each and every field of applications are becoming necessary. My project is ensured to provide services in a fast, efficient, easy and smoother way.

P8.10.2 CONCLUSION

The software reduces the time consumption and the manual efforts of searching and participate in an offer. It will be a simple platform for users to get products at lower cost.

The benefits, we can obtain from the new system are:

- It is more user-friendly
- No noisy crowds like conventional system where users have to sit and participate in offer
- The access time and process time is highly reduced
- Exclude general frustration
- Error free output

The proposed system is expected to replace manual system and provide more efficient Performance and services.

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P8.12 APPENDIX

P8.12.1 SAMPLE CODE

Add Plant Controller

```
<?php  
  
namespace App\Http\Controllers;  
  
use Illuminate\Http\Request;  
  
use DB;  
  
use App\tbl_prodadd;  
  
use App\tbl_category;  
  
use App\pestadd;  
  
use App\fertadd;
```

```
use Redirect;

class AddPlantController extends Controller

{

public function index()

{

$addplant = tbl_prodadd::all();

return view ('manager.viewplant',compact('addplant'));

}

public function create() { }

public function store(Request $request)

{

$name=$request->input('plantname');

$check=DB::table('tbl_prodadds')->where(['plantname'=>$name])->get();

if(count($check)==0)

{

$name = $request->input('plantname');

$catid= $request->input('p_category');

$image = $request->file('plantimage');

$filename= $request->plantimage->getClientOriginalName();

$request->plantimage->storeAs('public/upload',$filename);

$description = $request->input('plantdescription');

$price = $request->input('price');

$stock = $request->input('stock');

}
```

```

$status_id=2;

$newplant=new
tbl_prodadd(['catid'=>$catid,'plantname'=>$name,'plantimage'=>$filename,'plantdescription'=>$de
scription,'price'=>$price,'stock'=>$stock,'status'=>$status_id,]);

$newplant->save();

return redirect('viewplant'); }

else {

return view('manager.plant')->with('success','Invalid E-Mail !');

}

public function edit(Request $request,$plant_id)

{

$request->session()->put('plant_id',$plant_id);

$edit=DB::table('tbl_prodadds')->where('plant_id',$plant_id);

return view('manager.editplant',compact($edit));}

public function edittt($id){

$id;

$edit=DB::table('tbl_prodadds')->where('plant_id',"=",$id)->get();

return view('user.userview1',compact('edit'));}

public function edittt1($id){

$id;

$edit=DB::table('pestadds')->where('pest_id',"=",$id)->get();

return view('user.userviewpest1',compact('edit'));

} public function fert($id){

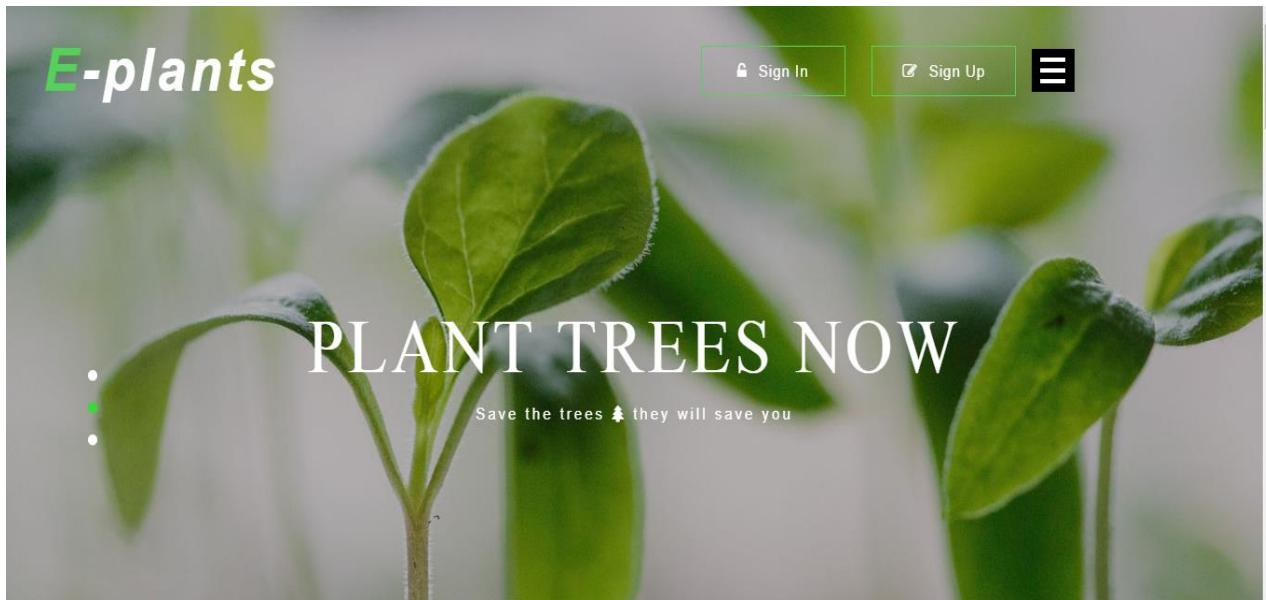
$id;

```

```
$edit=DB::table('fertadds')->where('fert_id','=',$id)->get();  
  
return view('user.userviewfert1',compact('edit'));  
  
}}
```

P8.12.2 SCREENSHOTS

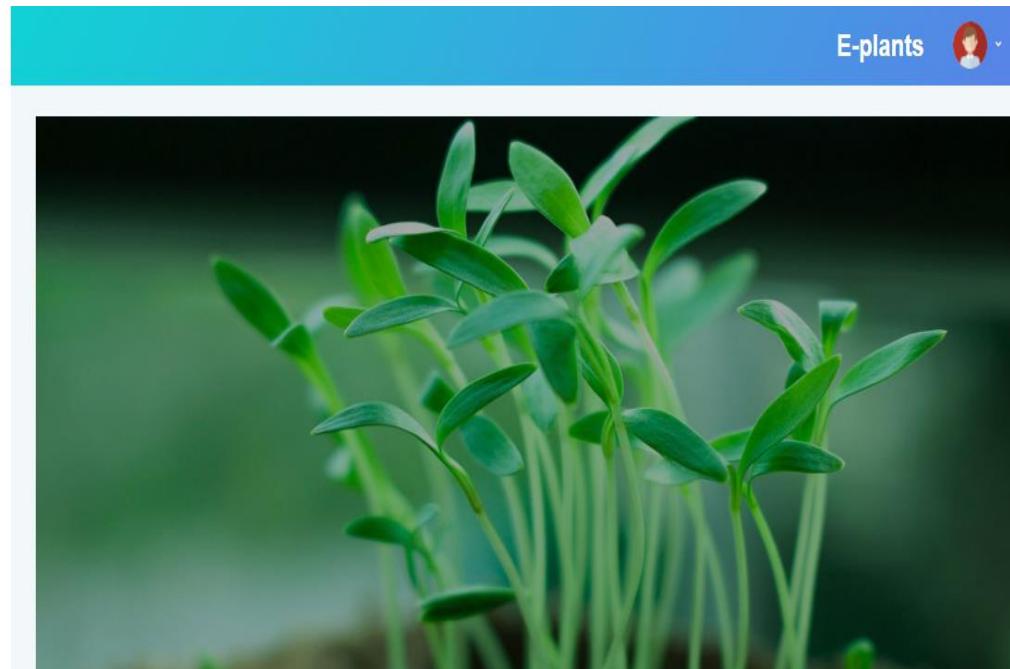
Main Home Page



Admin Home Page

The screenshot shows the admin home page. At the top right is the 'E-plants' logo and a user profile icon. On the left is a sidebar with a red circular icon containing a person icon and the word 'Admin'. Below it are several navigation links: 'View Products', 'Added Lands', 'View Plant Orders', 'View Pesticides Orders', 'View Fertilizer Orders', 'View Land Book', and 'View Users'. The central area features a large image of two hands holding small green plants against a blurred green background.

User Home Page



Manager Add Plants

A screenshot of the Manager Add Plants form. The page has a teal header with the logo "E-plants" and a user icon. The main content area is titled "Add Plants Now". On the left, there is a sidebar with a "Manager" profile icon and a green online status indicator. Below the profile are three categories: "Plants" (under "Add Products"), "Pesticides", and "Fertilizer". Under each category, there are three sub-options: "Plants", "Pesticides", and "Fertilizer". To the right of the sidebar is a form with fields for "Plant Name" (text input placeholder "enter product name here"), "Category" (dropdown placeholder "Choose A Category"), "Image" (file upload button "Choose File" showing "No file chosen"), "Description" (text input placeholder "enter plant description here"), and "Price" (text input placeholder "price"). The background of the page is white.

User View Lands

The screenshot shows the E-plants application interface. On the left, there is a sidebar with a dark background and white text. It contains the E-plants logo at the top, followed by navigation links: HOME >, SEARCH PRODUCTS >, SEARCH LAND >, VIEW PROFILE >, VIEW BOOKED LAND >, CANCEL BOKING >, and LOGOUT >.

On the right, there are four land listing cards, each with a green 'VIEW' button in the top right corner.

Land Details	Price
2-3(ACERE)	₹100000
1-2(ACERE)	₹150000
4-5(ACERE)	₹150000

Search Products

The screenshot shows a web browser window displaying the E-plants product search results for 'crocus'. The URL in the address bar is 127.0.0.1:8000/profile_edittt/24.

The page title is 'E-plants'.

The left sidebar includes links: HOME, VIEW PLANTS, VIEW PESTICIDES, VIEW FERTILIZER, CART, and LOG OUT.

The main content area shows a product card for 'crocus' with the following details:

- ₹90**
- crocus**
- ★★★★★**
- In Stock 10**
- Crocutus** (English plural: crocuses or croci) is a genus of flowering plants in the iris family comprising 90 species of perennials growing from corms. Many are cultivated for their flowers appearing in autumn, winter, or spring.
- Qty** (with a dropdown menu)

Cart page

The screenshot shows a web browser window for the 'cart' page at 127.0.0.1:8000/cart. On the left, there's a sidebar with a logo 'E-PLANTS' and navigation links: HOME >, VIEW PLANTS >, VIEW PESTICIDES >, VIEW FERTILIZER >, VIEW LAND >, and LOGOUT >. The main content area displays a table of items in the cart:

Product	Price	Quantity	Total Price	Action
	₹90	1	₹90	
	₹100	3	₹300	

At the bottom right are two buttons: 'CONTINUE SHOPPING' (green) and 'Buy Now' (black).

Add land details page

The screenshot shows a web browser window for the 'land' page at 127.0.0.1:8000/land. On the left, there's a sidebar with a profile picture for 'Manager' and navigation links: Add Products, Add Category, View Products, View Category, Add Land, View Land, View Orders, and Change Password. The main content area has a blue header 'Add Land For Lease'. It contains a form with the following fields:

- Image: A file input field with 'Choose File' and 'No file chosen'.
- Land Acer: A dropdown menu labeled 'Select'.
- Lease Amount: An input field with placeholder 'enter lamount'.
- Land Owner Address: An input field with placeholder 'enter land owner address'.
- Land Location: A dropdown menu with placeholder 'select district'.