

# **Online House Rental Portal**

## **Deployment of Online House Rental in Various Cloud Platforms**

*Project Report Submitted by*

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**Reg. No: AJC17MCA-D008**

*In Partial fulfillment for the award of the degree*

*Of*

**MASTER OF COMPUTER APPLICATIONS (MCA)**  
**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**



**AMAL JYOTHI COLLEGE OF ENGINEERING  
KANJIRAPPALLY**

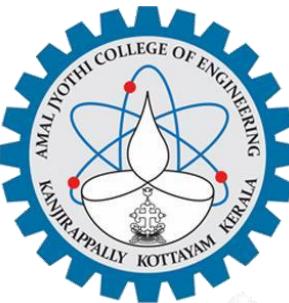
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**2017-2019**

# **AMAL JYOTHI COLLEGE OF ENGINEERING**

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## **DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS**



### **CERTIFICATE**

This is to certify that the project entitled "**Online House Rental Portal**" is a bonafide record of the work done by **Annu Jacob AJC17MCA-D008**, 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 herein 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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Head of the Department

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**Ms. Sruthimol Kurian**

Project Supervisor

**Expert from dept. of Computer Science and Engineering**  
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**External Expert appointed by the university**

## **DECLARATION**

I hereby declare that the project report "**Online House Rental Portal**" is a bonafide work done at Amal Jyothi College of Engineering, towards the partial fulfilment 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.....**

**Annu Jacob**

**KANJIRAPPALLY**

**Reg. No: AJC17MCA-D008**

## **ACKNOWLEDGEMENT**

First and foremost, I thank Almighty God for his gracious guidance through the project. I take this opportunity to express my gratitude to all those who have helped me in completing the project successfully.

It has been said that gratitude is the memory of the heart. I acknowledge my deep sense of gratitude to our manager **Rev. Fr. Dr. Mathew Paikatt** for providing all the infrastructural facilities for us, our Principal **Dr. Z V Lakaparampil** for providing good faculty for guidance.

I take the immense pleasure in expressing my thanks to Head of the Department of Master of Computer Applications, **Fr. Rubin Thottupuram**, for his kind patronages in making this project a successful one. I would like to extend my sincere thanks to our coordinator **Ms. Ginumol Joseph** and my project guide **Ms. Sruthimol Kurian** for their guidance and cooperation, without which this would not have been a success.

I am indebted to my beloved teachers whose cooperation and suggestions throughout the project which helped me a lot. I also thank all my friends and classmates for their interest, dedication and encouragement shown towards the project. I convey hearty thanks to parents for the moral support, suggestion and encouragement to make this venture a success.

**Annu Jacob**

## **ABSTRACT**

“Online House Rental Portal” is a web application which is meant for users who are looking for house in rent and those who want to give their house for rent. This system will consist of three user's admin, house owners, and the people who need a house for rent. The admin will facilitate the registration for house owners who want to give their house for rent and the people who are looking for rental house. The house owners can register their rental house in this site. The interested people will check a rent house in their preference. A security amount will be paid to house owner 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 house in rent and also for the people who want to get nice income for their rental house. This will be also very much helpful for people in abroad coming to their native place and seeking house.

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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.

C2 - Elastic Compute Cloud

S3 - Simple Storage Systems

IAM - Identity Access Management

## INTRODUCTION

“House Rental” is a web application which is meant for users who are looking for house in rent and those who want to give their house for rent. This software is not yet reached in a better level. This system will consist of three users, admin, house owners, and the people who need a house for rent. The admin will facilitate the registration for house owners who want to give their house for rent and the people who are looking for rental house. The interested people will check a rent house in their preference. Security amount will be paid to house owner from user at the time of booking. This will be also very much helpful for people in abroad coming to their native place and seeking house.

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 end-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 schemas

## Bigtable in GCP

Cloud Bigtable is Google's NoSQL Big Data 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, 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 cyberattack 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 an in the East Asia region is named Asia-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.

### Persistent disk

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 filesystem 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 of the navigation bar are 'Search' and 'CONSOLE' buttons, along with a user profile icon and a 'CONTACT SALES' button. Below the navigation bar, a large banner features the text 'Build What's Next' and 'Better software. Faster.' with three bullet points: '✓ 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.'. There are two buttons at the bottom of this section: a dark grey 'GO TO CONSOLE' button and a white 'CONTACT SALES' button. Below this main banner, there are three smaller sections: 'Forrester Research' (mentioning Google Cloud is named 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- Creating a new project

The screenshot shows the Google Cloud Platform dashboard for a project named 'myproject'. At the top, there's a message about credit and trial details, followed by a 'DISMISS' and 'UPGRADE' button. The dashboard has a blue header with the 'Google Cloud Platform' logo and a search bar. Below the header, there are two tabs: 'DASHBOARD' (selected) and 'ACTIVITY'. The left sidebar contains 'Project info' (Project name: myproject, Project ID: zippy-ace-194003, Project number: 1090196698157) and a link to 'Go to project settings'. The main content area is divided into several cards: 'Compute Engine' (CPU utilization chart showing spikes between 8 PM and 8:45 AM), 'Google Cloud Platform status' (All services normal, with a link to the Cloud status dashboard), 'Billing' (Estimated charges: INR ₹0.00 for the period Feb 1 – 6, 2018, with a link to view detailed charges), and 'Error Reporting' (No sign of any errors, with a link to learn how to set up Error Reporting). The 'Resources' section on the left lists 'Compute Engine' (3 instances), 'Cloud Storage' (5 buckets), and 'Cloud SQL' (3 instances).

### Step 3-Creating a new virtual machine instance

#### Compute Engine

The screenshot shows the 'Create an instance' dialog in the Google Cloud Platform Compute Engine interface. The left sidebar lists options like VM instances, Instance groups, Instance templates, Disks, Snapshots, Images, Committed use discounts, Metadata, Health checks, Zones, Operations, Quotas, and Settings. The main form is titled 'Create an instance' and contains fields for Network (set to default), Subnetwork (set to default (10.142.0.0/20)), Primary internal IP (set to internalip (10.142.0.2)), External IP (set to Ephemeral), and IP forwarding (set to Off). There is also a section for Public DNS PTR Record with an 'Enable' checkbox. At the bottom are 'Done' and 'Cancel' buttons, and a note: 'To create another network interface you need to have a new network first.'

The screenshot shows the 'VM instances' list page in the Google Cloud Platform Compute Engine interface. The left sidebar lists options like VM instances, Instance groups, Instance templates, Sole tenant nodes, Disks, Snapshots, Images, TPUs, Committed use discounts, and Marketplace. The main area displays a table of VM instances with columns for Name, Zone, Recommendation, In use by, Internal IP, External IP, and Connect. Two instances are listed: 'highbrowcampaign' (Zone: asia-south1-c, Internal IP: staticinternalip (10.160.0.2) (nic0), External IP: 35.200.155.133, Connect: SSH) and 'rentalproperty' (Zone: asia-south1-c, Internal IP: 10.160.0.3 (nic0), External IP: 35.244.39.46, Connect: SSH). The right side of the screen has a 'Learn' panel with sections for 'Start your project', 'Find existing VM solutions', and 'How-to guides and tutorials'.

### Step 4- Connecting to cloud Secure shell

`sudo -s`

`yum update -y`

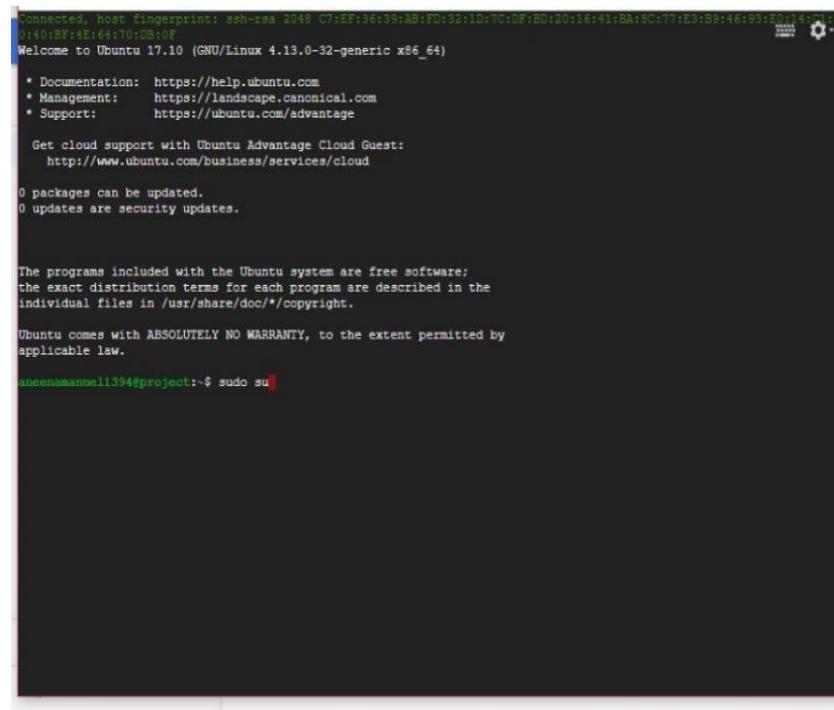
`yum install -y perl`

`yum install -y wget`

Name	Zone	Recommendation	In use by	Internal IP	External IP	Connect
<input checked="" type="checkbox"/> <a href="#">highbrowcampaign</a>	asia-south1-c		stateinternalip (10.160.0.2) (nic0)	35.200.155.133	<a href="#">35.200.155.133</a>	<a href="#">SSH</a> <a href="#">⋮</a>
<input checked="" type="checkbox"/> <a href="#">rentalproperty</a>	asia-south1-c		10.160.0.3 (nic0)	35.244.39.46	<a href="#">35.244.39.46</a>	<a href="#">SSH</a> <a href="#">⋮</a>
<input checked="" type="checkbox"/> <a href="#">rentzentric</a>	asia-south1-c		10.160.0.4 (nic0)	35.244.62.139	<a href="#">35.244.62.139</a>	<a href="#">SSH</a> <a href="#">⋮</a>

### Open shell Terminal

Type sudo -s to get admin permission



```
Connected, host fingerprint: ssh-rsa 2048 C7:EF:39:AB:F0:32:1D:7C:DF:B0:20:16:41:BA:8C:77:E3:B9:46:93:51
0:40:BF:42:e4:70:0B:0F
Welcome to Ubuntu 17.10 (GNU/Linux 4.13.0-32-generic x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage

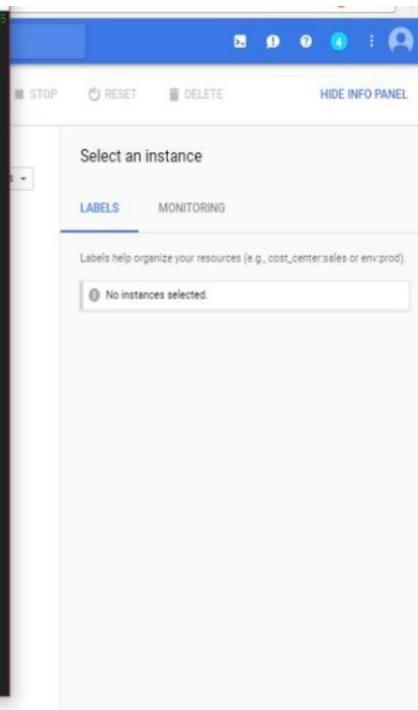
Get cloud support with Ubuntu Advantage Cloud Guest:
 http://www.ubuntu.com/business/services/cloud

0 packages can be updated.
0 updates are security updates.

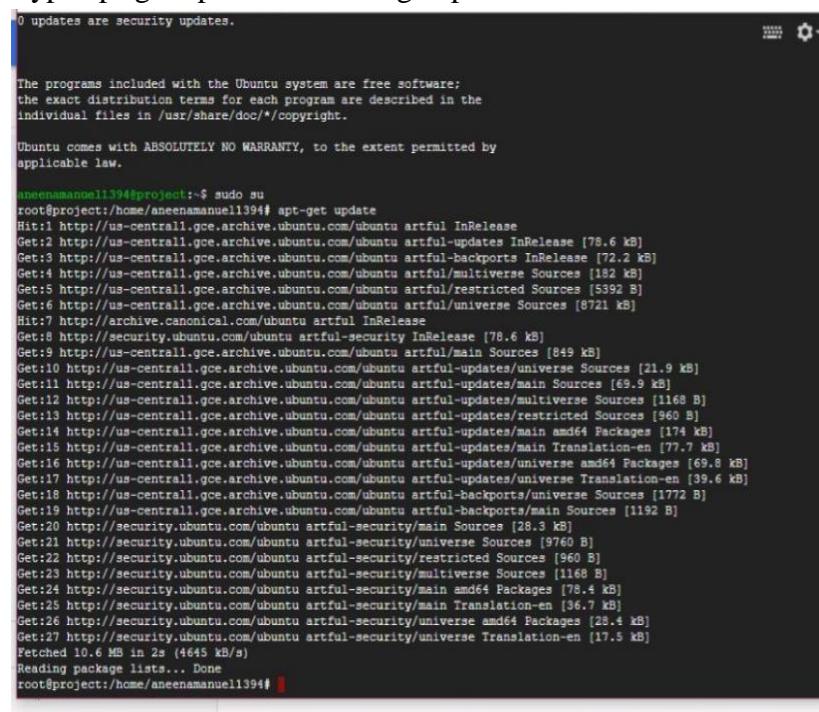
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

aneenammanuel1394@project:~$ sudo su
```



Type apt-get update for Package updation

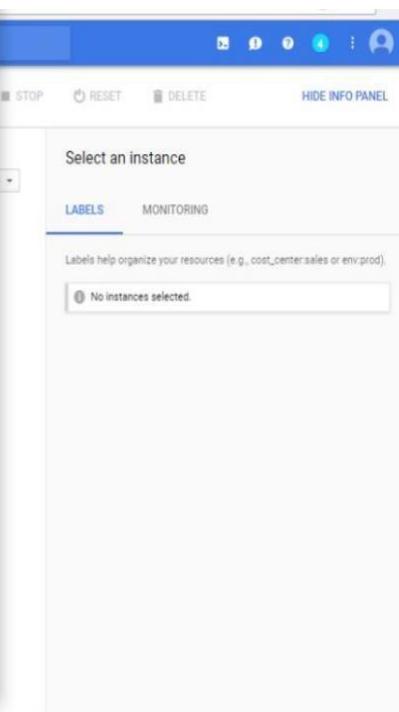


```
0 updates are security updates.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

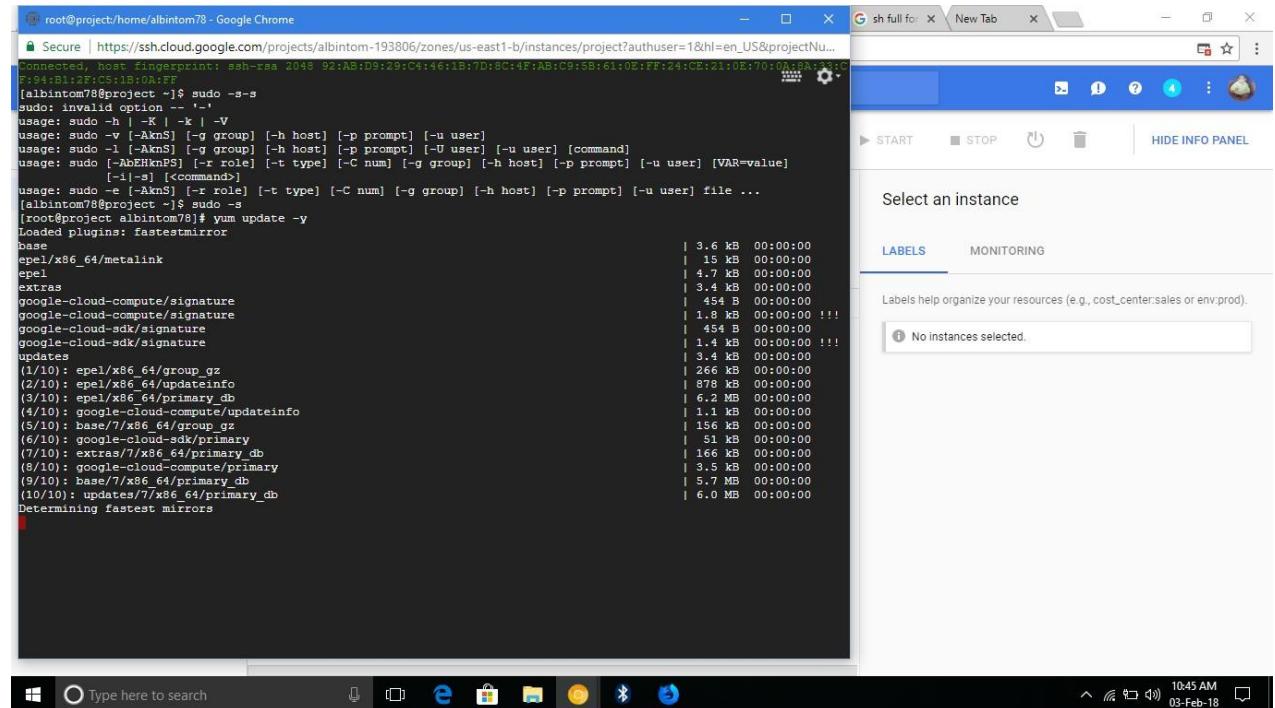
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

aneenammanuel1394@project:~$ sudo su
root@project:/home/aneenammanuel1394# apt-get update
Hit:1 http://us-central1.gce.archive.ubuntu.com/ubuntu artful InRelease
Get:2 http://us-central1.gce.archive.ubuntu.com/ubuntu artful-updates InRelease [78.6 kB]
Get:3 http://us-central1.gce.archive.ubuntu.com/ubuntu artful-backports InRelease [72.2 kB]
Get:4 http://us-central1.gce.archive.ubuntu.com/ubuntu artful/multiverse Sources [182 kB]
Get:5 http://us-central1.gce.archive.ubuntu.com/ubuntu artful/restricted Sources [5392 B]
Get:6 http://us-central1.gce.archive.ubuntu.com/ubuntu artful/universe Sources [8721 kB]
Hit:7 http://archive.canonical.com/ubuntu artful InRelease
Get:8 http://security.ubuntu.com/ubuntu artful-security InRelease [78.6 kB]
Get:9 http://us-central1.gce.archive.ubuntu.com/ubuntu artful/main Sources [849 kB]
Get:10 http://us-central1.gce.archive.ubuntu.com/ubuntu artful-updates/universe Sources [21.9 kB]
Get:11 http://us-central1.gce.archive.ubuntu.com/ubuntu artful-updates/main Sources [69.9 kB]
Get:12 http://us-central1.gce.archive.ubuntu.com/ubuntu artful-updates/multiverse Sources [1168 B]
Get:13 http://us-central1.gce.archive.ubuntu.com/ubuntu artful-updates/restricted Sources [960 B]
Get:14 http://us-central1.gce.archive.ubuntu.com/ubuntu artful-updates/main amd64 Packages [174 kB]
Get:15 http://us-central1.gce.archive.ubuntu.com/ubuntu artful-updates/main Translation-en [77.7 kB]
Get:16 http://us-central1.gce.archive.ubuntu.com/ubuntu artful-updates/universe amd64 Packages [69.8 kB]
Get:17 http://us-central1.gce.archive.ubuntu.com/ubuntu artful-updates/universe Translation-en [39.6 kB]
Get:18 http://us-central1.gce.archive.ubuntu.com/ubuntu artful-backports/universe Sources [1772 B]
Get:19 http://us-central1.gce.archive.ubuntu.com/ubuntu artful-backports/main Sources [1192 B]
Get:20 http://security.ubuntu.com/ubuntu artful-security/main Sources [28.3 kB]
Get:21 http://security.ubuntu.com/ubuntu artful-security/universe Sources [9760 B]
Get:22 http://security.ubuntu.com/ubuntu artful-security/restricted Sources [960 B]
Get:23 http://security.ubuntu.com/ubuntu artful-security/multiverse Sources [1168 B]
Get:24 http://security.ubuntu.com/ubuntu artful-security/main amd64 Packages [78.4 kB]
Get:25 http://security.ubuntu.com/ubuntu artful-security/main Translation-en [36.7 kB]
Get:26 http://security.ubuntu.com/ubuntu artful-security/universe amd64 Packages [28.4 kB]
Get:27 http://security.ubuntu.com/ubuntu artful-security/universe Translation-en [17.5 kB]
Fetched 10.6 MB in 2s (4645 kB/s)
Reading package lists... Done
root@project:/home/aneenammanuel1394#
```

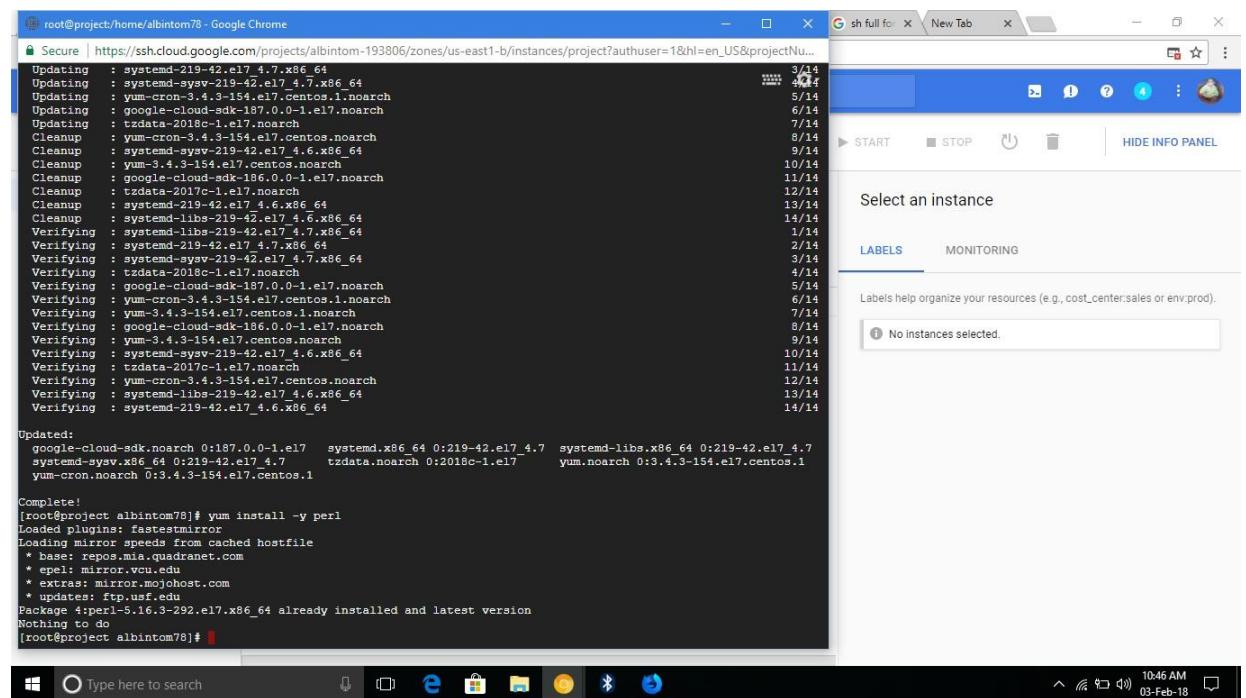


## Installing Packages

**Yum install -y perl**



```
root@project/home/albintom78 - Google Chrome
Secure | https://ssh.cloud.google.com/projects/albintom-193806/zones/us-east1-b/instances/project?authuser=1&hl=en_US&projectNu...
Connected, host fingerprint: ssh-rsa 2048 92:AB:D9:28:C4:46:1B:7D:8C:4F:AB:C9:5B:61:0E:FF:24:CE:21:0E:70:01:8A
[albintom78@project ~]$ sudo -s-s
sudo: invalid option -- '-s'
usage: sudo [-k] [-K] [-k] [-V]
usage: sudo [-v] [-AkNS] [-g group] [-h host] [-p prompt] [-u user]
usage: sudo [-l] [-AkNS] [-g group] [-h host] [-p prompt] [-U user] [-u user] [command]
usage: sudo [-AbEHknPS] [-r role] [-t type] [-C num] [-g group] [-h host] [-p prompt] [-u user] [VAR=value]
[-i|-e] [<command>]
usage: sudo -e [-AkNS] [-r role] [-t type] [-C num] [-g group] [-h host] [-p prompt] [-u user] file ...
[albintom78@project ~]$ sudo -s
[root@project albintom78]# yum update -y
Loaded plugins: fastestmirror
base
epel/x86_64/metalink
epel
extras
google-cloud-compute/signature
google-cloud-compute/signature
google-cloud-sdk/signature
google-cloud-sdk/signature
updates
(1/10): epel/x86_64/group_gz
(2/10): epel/x86_64/updateinfo
(3/10): epel/x86_64/primary_db
(4/10): google-cloud-compute/updateinfo
(5/10): base/7/x86_64/group_gz
(6/10): google-cloud-sdk-primary
(7/10): extras/7/x86_64/primary_db
(8/10): google-cloud-compute/primary
(9/10): base/7/x86_64/primary_db
(10/10): updates/7/x86_64/primary_db
Determining fastest mirrors
| 3.6 kB 00:00:00
| 15 kB 00:00:00
| 4.7 kB 00:00:00
| 3.4 kB 00:00:00
| 454 B 00:00:00
| 1.8 kB 00:00:00 !!!
| 454 B 00:00:00
| 1.4 kB 00:00:00
| 3.4 kB 00:00:00
| 266 kB 00:00:00
| 878 kB 00:00:00
| 6.2 MB 00:00:00
| 1.1 kB 00:00:00
| 156 kB 00:00:00
| 51 kB 00:00:00
| 166 kB 00:00:00
| 3.5 kB 00:00:00
| 5.7 MB 00:00:00
| 6.0 MB 00:00:00
Labels
MONITORING
Labels help organize your resources (e.g., cost_center:sales or env.prod).
No instances selected.
```



```
root@project/home/albintom78 - Google Chrome
Secure | https://ssh.cloud.google.com/projects/albintom-193806/zones/us-east1-b/instances/project?authuser=1&hl=en_US&projectNu...
Updating : systemd-219-42.el7_4.7.x86_64 3/14
Updating : systemd-sysv-219-42.el7_4.7.x86_64 5/14
Updating : yum-cron-3.4.3-154.el7.centos.1.noarch 6/14
Updating : google-cloud-sdk-187.0.0-1.el7.noarch 7/14
Updating : tzdata-2018c-1.el7.noarch 8/14
Cleanup  : yum-cron-3.4.3-154.el7.noarch 9/14
Cleanup  : systemd-sysv-219-42.el7_4.6.x86_64 10/14
Cleanup  : yum-3.4.3-154.el7.centos.noarch 11/14
Cleanup  : google-cloud-sdk-186.0.0-1.el7.noarch 12/14
Cleanup  : tzdata-2017c-1.el7.noarch 13/14
Cleanup  : systemd-219-42.el7_4.6.x86_64 14/14
Cleanup  : systemd-l1bs-219-42.el7_4.6.x86_64 1/14
Verifying : systemd-l1bs-219-42.el7_4.7.x86_64 2/14
Verifying : systemd-sysv-219-42.el7_4.7.x86_64 3/14
Verifying : tzdata-2018c-1.el7.noarch 4/14
Verifying : google-cloud-sdk-187.0.0-1.el7.noarch 5/14
Verifying : yum-cron-3.4.3-154.el7.centos.1.noarch 6/14
Verifying : google-cloud-sdk-186.0.0-1.el7.noarch 7/14
Verifying : yum-3.4.3-154.el7.centos.noarch 8/14
Verifying : systemd-sysv-219-42.el7_4.6.x86_64 10/14
Verifying : tzdata-2017c-1.el7.noarch 11/14
Verifying : yum-cron-3.4.3-154.el7.centos.noarch 12/14
Verifying : systemd-l1bs-219-42.el7_4.6.x86_64 13/14
Verifying : systemd-219-42.el7_4.6.x86_64 14/14
Updated:
 google-cloud-sdk.noarch 0:187.0.0-1.el7    systemd.x86_64 0:219-42.el7_4.7    systemd-libs.x86_64 0:219-42.el7_4.7
 systemd-sysv.x86_64 0:219-42.el7_4.7    tzdata.noarch 0:2018c-1.el7    yum.noarch 0:3.4.3-154.el7.centos.1
 yum-cron.noarch 0:3.4.3-154.el7.centos.1
Complete!
[root@project albintom78]# yum install -y perl
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: repos.mia.quadrant.com
 * epel: mirror.vou.edu
 * extras: mirror.mojohost.com
 * updates: ftp.usf.edu
Package perl-5.16.3-292.el7.x86_64 already installed and latest version
Nothing to do
[root@project albintom78]#
Labels
MONITORING
Labels help organize your resources (e.g., cost_center:sales or env.prod).
No instances selected.
```

### Step 5-Purchase Domain From freenom

The screenshot shows the freenom website's checkout process. At the top, there are navigation links for Services, Partners, About Freenom, Support, Sign in, and English. The main title is "Review & Checkout". Below it is a table showing the purchase details:

Description	Price
Domain Registration - rents.ml	\$0.00USD
<b>Subtotal:</b>	\$0.00USD
<b>Total Due Today:</b>	<b>\$0.00USD</b>

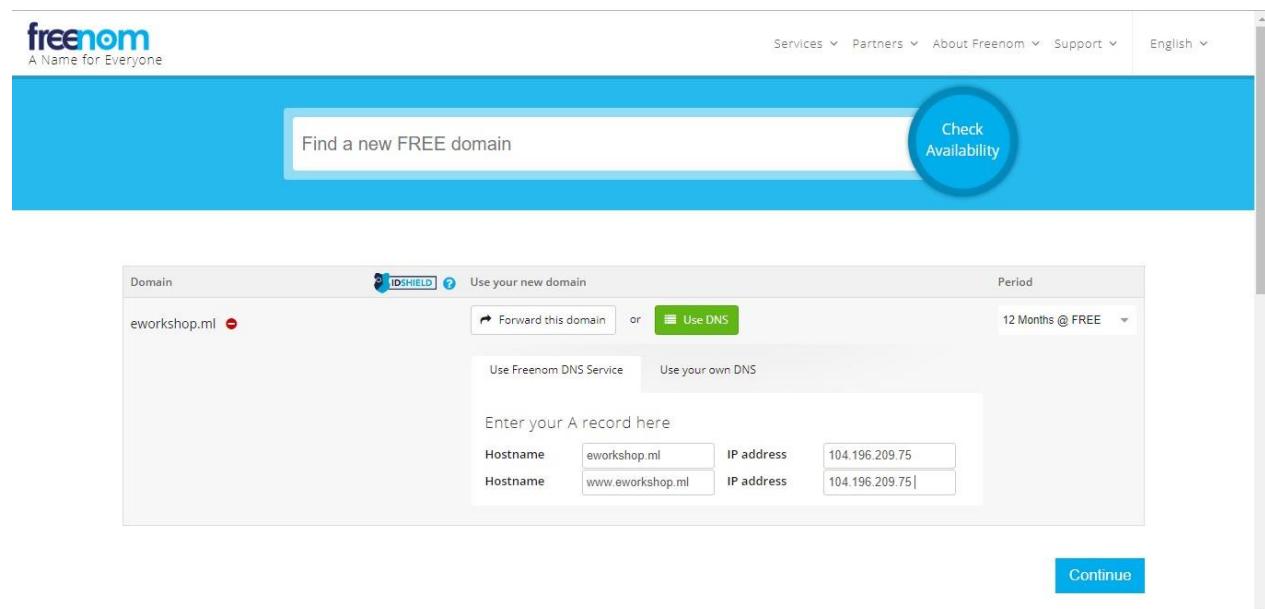
Below the table, there is a message: "Please enter your email address and click verify to continue to the next step" followed by an "Enter Your Email Address" input field. To the right, there are links for "Already Registered? Click here to login" and "Use social sign in" with options for Google and Facebook. A "Privacy - Terms" link is also present.

### Copying External IP from vm instance

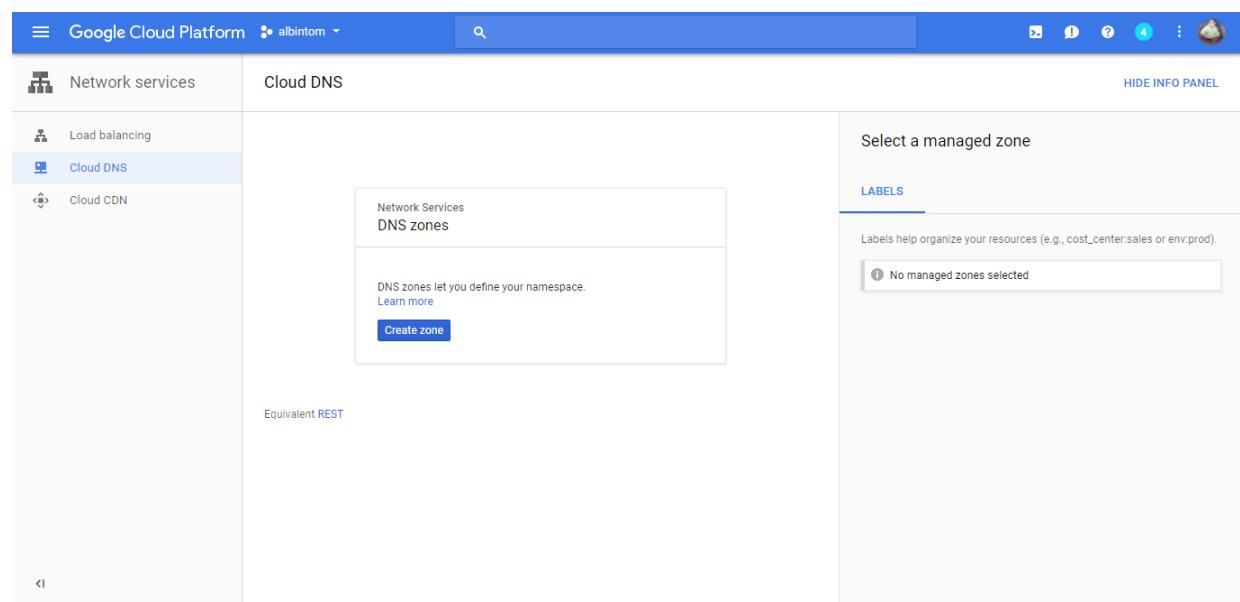
The screenshot shows the Google Cloud Platform Compute Engine interface. The left sidebar is titled "Compute Engine" and includes sections for VM instances, Instance groups, Instance templates, Sole tenant nodes, Disks, Snapshots, Images, TPUs, Committed use discounts, and Marketplace. The main area is titled "VM instances" and shows a list of instances with columns for Name, Zone, Recommendation, In use by, Internal IP, External IP, and Connect. Three instances are listed:

Name	Zone	Recommendation	In use by	Internal IP	External IP	Connect
highbrowcampaign	asia-south1-c			staticinternalip (10.160.0.2) (nic0)	35.200.155.133	SSH
rentalproperty	asia-south1-c			10.160.0.3 (nic0)	35.244.39.46	SSH
rentzentric	asia-south1-c			10.160.0.4 (nic0)	35.244.62.139	SSH

Step 6-Enter host name and ip address in freenom



Step 7-Create cloud DNS Zone



A screenshot of the Google Cloud Platform Cloud DNS interface. On the left, there's a sidebar with 'Network services' and three options: 'Load balancing', 'Cloud DNS' (which is selected and highlighted in blue), and 'Cloud CDN'. The main area is titled 'Create a DNS zone' with a back arrow. It contains fields for 'Zone name' (set to 'workshop'), 'DNS name' (set to 'eworkshop.ml'), and 'DNSSEC' (set to 'On'). Below these are 'Description (Optional)' and 'Create' and 'Cancel' buttons. At the bottom, it says 'Equivalent REST or command line'.

### Step 8-Enter nameserver ip address

A screenshot of the Freenom DNS management interface. At the top, there are tabs for 'Information', 'Upgrade', 'Management Tools', and 'Manage Freenom DNS'. The 'Nameservers' section is highlighted. It contains two radio button options: 'Use default nameservers (Freenom Nameservers)' and 'Use custom nameservers (enter below)', with the second option selected. Below this, there are five input fields labeled 'Nameserver 1' through 'Nameserver 5', each containing a Freenom Cloud Nameserver IP: 'ns-cloud-c1.googledomains.com', 'ns-cloud-c2.googledomains.com', 'ns-cloud-c3.googledomains.com', 'ns-cloud-c4.googledomains.com', and an empty field for 'Nameserver 5'.

The screenshot shows the Google Cloud Platform interface for managing DNS records. The left sidebar lists 'Network services' with 'Cloud DNS' selected. The main pane displays the 'Zone details' for the zone 'rents'. It shows a table of DNS records:

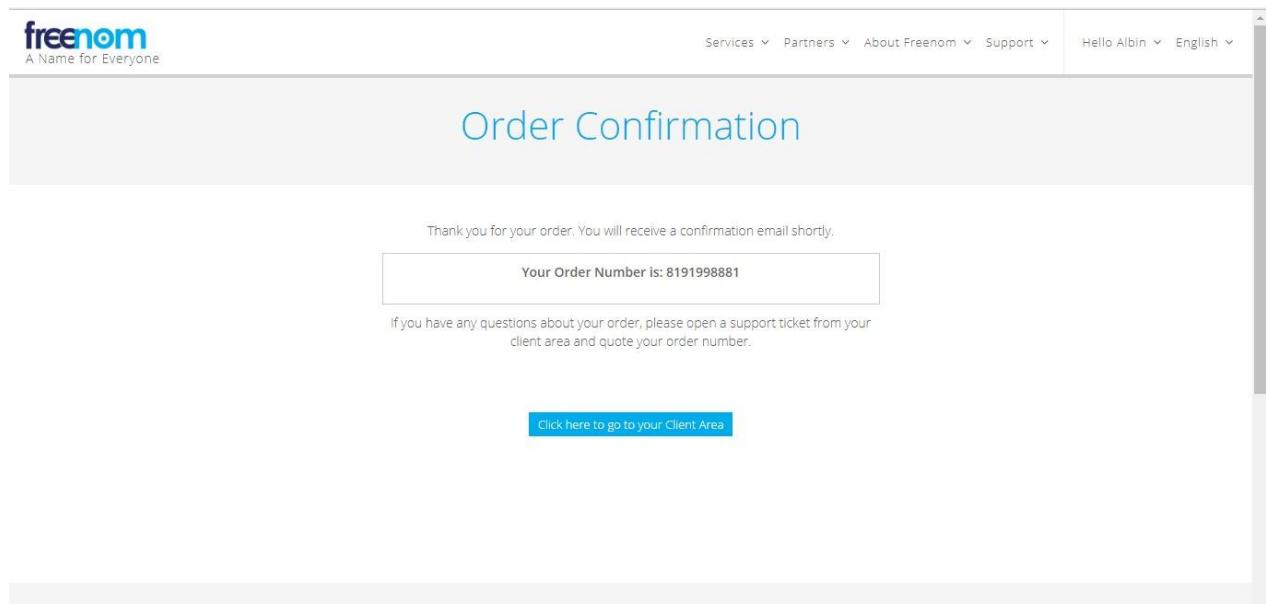
DNS name	Type	TTL (seconds)	Data
rents.ml.	A	300	35.244.39.46
rents.ml.	NS	21600	ns-cloud-c1.google domains.com. ns-cloud-c2.google domains.com. ns-cloud-c3.google domains.com. ns-cloud-c4.google domains.com.
rents.ml.	SOA	21600	ns-cloud-c1.google domains.com. cloud-dns-hostmaster.google.com. 1 21600 3600 259200 300
www.rents.ml.	CNAME	300	www.rents.ml.

We Get our Domain From freenom-.ml

The screenshot shows the freenom domain review and checkout process. At the top, it says 'Review & Checkout'. Below that is a table of charges:

Description	Price
Domain Registration - rents.ml	\$0.00USD
Subtotal:	\$0.00USD
<b>Total Due Today:</b>	<b>\$0.00USD</b>

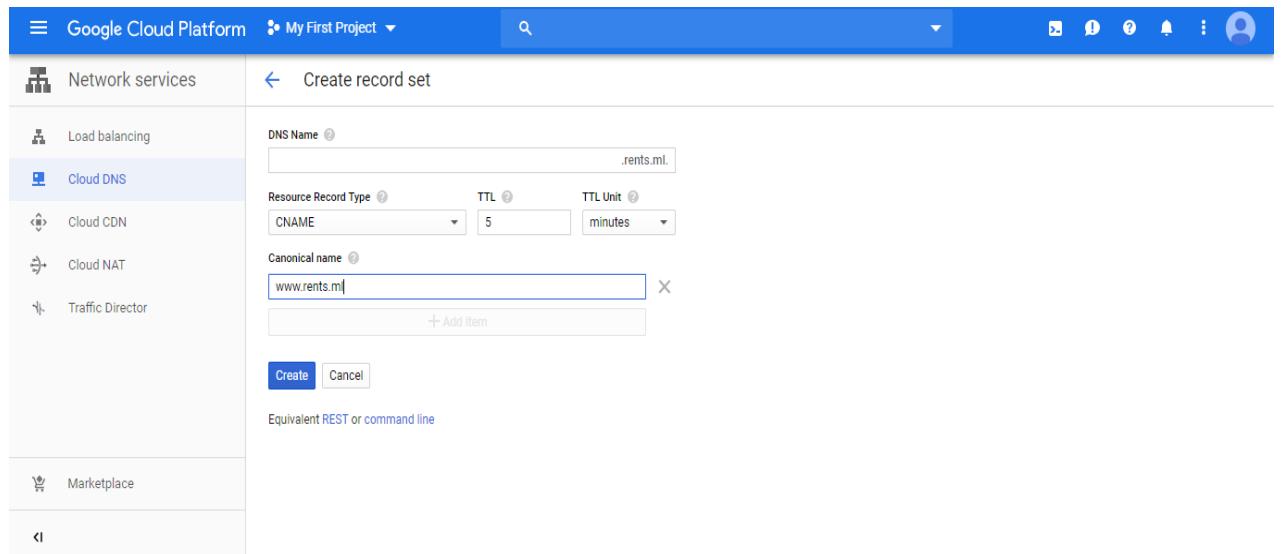
Below the table, there's a note: 'Please enter your email address and click verify to continue to the next step'. A 'Sign in' button is available for users who are already registered. There's also a 'Use social sign in' section with links for Google and Facebook. At the bottom right, there are 'Privacy' and 'Terms' links.



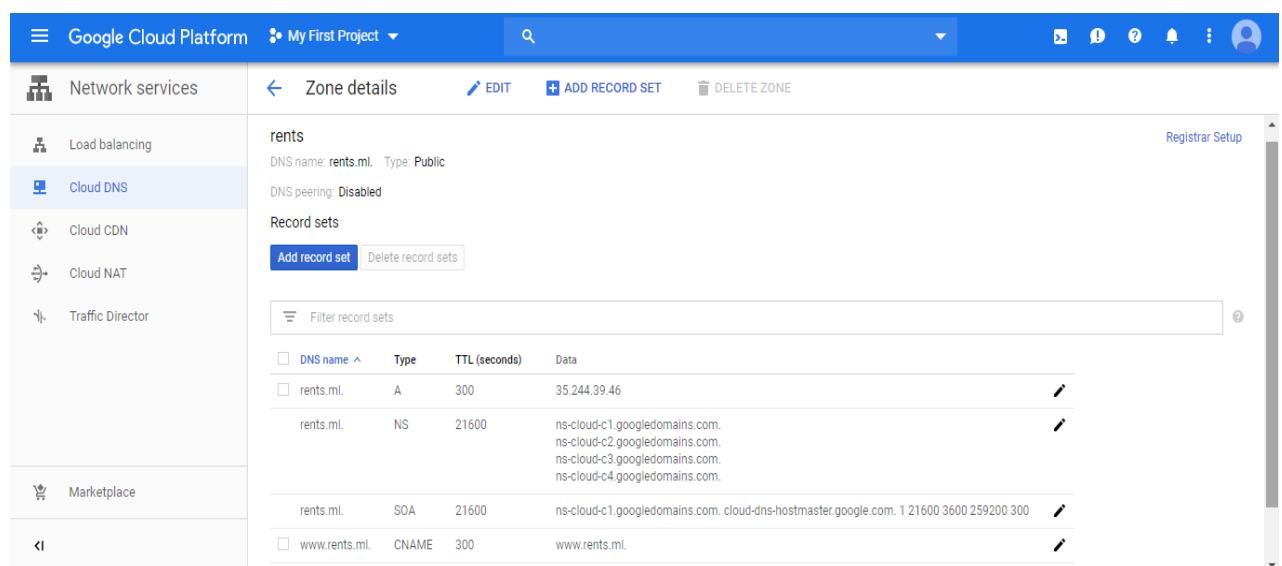
### Step 9-Add Record set in that DNS Zone. Create a recordset as Type A and CNAME

The screenshot shows the Google Cloud Platform Cloud DNS Zone details page for the zone "rents.ml.". The left sidebar lists Network services, Load balancing, Cloud DNS (selected), Cloud CDN, Cloud NAT, and Traffic Director. The main pane shows "Zone details" with options to EDIT, ADD RECORD SET, and DELETE ZONE. It displays the DNS name "rents.ml.", type "Public", and DNS peering status "Disabled". Under "Record sets", there is a table with three entries:

DNS name	Type	TTL (seconds)	Data
rents.ml.	A	300	35.244.39.46
rents.ml.	NS	21600	ns-cloud-c1.google domains.com. ns-cloud-c2.google domains.com. ns-cloud-c3.google domains.com. ns-cloud-c4.google domains.com.
rents.ml.	SOA	21600	ns-cloud-c1.google domains.com. cloud-dns-hostmaster.google.com. 1 21600 3600 259200 300



The screenshot shows the 'Create record set' dialog in the Google Cloud Platform Cloud DNS interface. On the left, a sidebar lists 'Network services' including Load balancing, Cloud DNS (selected), Cloud CDN, Cloud NAT, and Traffic Director. The main area has a title 'Create record set' with a back arrow. It contains fields for 'DNS Name' (.rents.ml.), 'Resource Record Type' (CNAME selected), 'TTL' (5), 'TTL Unit' (minutes), and 'Canonical name' (www.rents.ml). A 'Create' button is at the bottom.



The screenshot shows the 'Zone details' page for the 'rents' zone in the Google Cloud Platform Cloud DNS interface. The sidebar on the left is identical to the previous screenshot. The main area shows the zone name 'rents', its type as 'Public', and its peering status as 'Disabled'. Under 'Record sets', there is a table of existing records:

DNS name	Type	TTL (seconds)	Data
rents.ml.	A	300	35.244.39.46
rents.ml.	NS	21600	ns-cloud-c1.googledomains.com. ns-cloud-c2.googledomains.com. ns-cloud-c3.googledomains.com. ns-cloud-c4.googledomains.com.
rents.ml.	SOA	21600	ns-cloud-c1.googledomains.com. cloud-dns-hostmaster.google.com. 1 21600 3600 259200 300
www.rents.ml.	CNAME	300	www.rents.ml.

## Step 10-

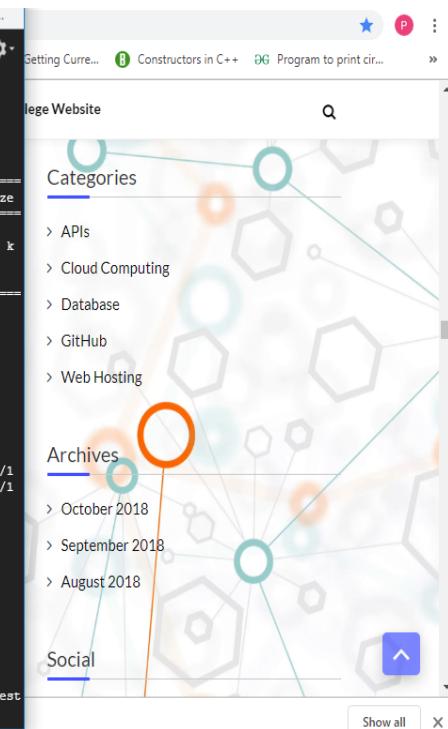
### Installation Of WHM and Cpanel

```
* * extras: mirror.mojohost.com
* * updates: ftp.usf.edu
Package 4:perl-5.16.3-292.el7.x86_64 already installed and latest version
Nothing to do
[root@project albintom78]# yum install -y wget
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: repos.mia.quadranet.com
 * epel: mirror.vcu.edu
 * extras: mirror.mojohost.com
 * updates: ftp.usf.edu
Resolving Dependencies
--> Running transaction check
--> Package wget.x86_64 0:1.14-15.el7_4.1 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

=====
| Package           | Arch   | Version      | Repository | Size |
|-----|-----|-----|-----|-----|
| Installing:      |        |              |            |       |
| wget             | x86_64 | 1.14-15.el7_4.1 | updates    | 547 k |
|-----|-----|-----|-----|-----|
Transaction Summary
=====
| Install 1 Package |          |          |          |          |
Total download size: 547 k
Installed size: 2.0 M
Downloading packages:
wget-1.14-15.el7_4.1.x86_64.rpm
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : wget-1.14-15.el7_4.1.x86_64
  Verifying  : wget-1.14-15.el7_4.1.x86_64
                                                               1/1
                                                               1/1
Installed:
  wget.x86_64 0:1.14-15.el7_4.1

Complete!
[root@project albintom78]# hostname centos.eworkshop.ml
[root@project albintom78]# 
```



The screenshot shows a terminal window on the left and a web-based dashboard on the right. The terminal window displays the same yum command as above, installing wget version 1.14-18.el7\_6.1. The web dashboard on the right has a sidebar with 'Categories' (APIs, Cloud Computing, Database, GitHub, Web Hosting) and 'Archives' (October 2018, September 2018, August 2018). A red circle highlights the 'Archives' section.

```
* * extras: mirror.fileplanet.com
* * updates: repos.lax.quadranet.com
Resolving Dependencies
--> Running transaction check
--> Package wget.x86_64 0:1.14-18.el7_6.1 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

=====
| Package           | Arch   | Version      | Repository | Size |
|-----|-----|-----|-----|-----|
| Installing:      |        |              |            |       |
| wget             | x86_64 | 1.14-18.el7_6.1 | updates    | 547 k |
|-----|-----|-----|-----|-----|
Transaction Summary
=====
| Install 1 Package |          |          |          |          |
Total download size: 547 k
Installed size: 2.0 M
Downloading packages:
wget-1.14-18.el7_6.1.x86_64.rpm
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : wget-1.14-18.el7_6.1.x86_64
  Verifying  : wget-1.14-18.el7_6.1.x86_64
                                                               1/1
                                                               1/1
Installed:
  wget.x86_64 0:1.14-18.el7_6.1

Complete!
[root@rentalproperty parvum5]# hostname centos.rents.ml
[root@rentalproperty parvum5]# systemctl stop NetworkManager.service
[root@rentalproperty parvum5]# systemctl disable NetworkManager.service
Removed symlink /etc/systemd/system/multi-user.target.wants/NetworkManager.service.
Removed symlink /etc/systemd/system/dbus-org.freedesktop.NetworkManager.service.
Removed symlink /etc/systemd/system/dbus-org.freedesktop.nm-dispatcher.service.
Removed symlink /etc/systemd/system/network-online.target.wants/NetworkManager-wait-online.service.
[root@rentalproperty parvum5]# cd /home && curl -o latest -L https://securedownloads.cPanel.net/latest && sh latest
passwd: 
```

## Step 11

Config: Firewall Rules-tcp: 2087 WHM

Google Cloud Platform - My First Project

VPC network

Create a firewall rule

Priority can be 0 - 65535 Check priority or other firewall rules

1000

Direction of traffic: Ingress

Action on match: Allow

Targets: Specified service account

Service account scope: In this project

Target service account: No service account

Source filter: Service account

Service account scope: In this project

Google Cloud Platform - My First Project

VPC network

Create a firewall rule

Service account scope: In this project

Source service account: No service account

Second source filter: None

Protocols and ports: Specified protocols and ports

tcp: 2087,2083

udp: all

Other protocols: protocols, comma separated, e.g. ah, sctp

Create Cancel

Equivalent REST or command line

The screenshot shows the Google Cloud Platform interface for managing VPC networks. On the left, a sidebar lists options like VPC networks, External IP addresses, Firewall rules, Routes, VPC network peering, Shared VPC, and Serverless VPC access. The 'Firewall rules' section is selected. At the top right, there are buttons for 'CREATE FIREWALL RULE', 'REFRESH', and 'DELETE'. Below the sidebar, a note states: 'Firewall rules control incoming or outgoing traffic to an instance. By default, incoming traffic from outside your network is blocked. Learn more' and 'Note: App Engine firewalls are managed here.' A search bar and a 'Columns' dropdown are also present.

Name	Type	Targets	Filters	Protocols / ports	Action	Priority	Network
default-allow-htp	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
rentswhm	Ingress	Apply to all	IP ranges: 0.0.0.0/0	tcp:2087,2083	Allow	1000	default
rulewhm	Ingress	Apply to all	IP ranges: 0.0.0.0/0	tcp:2087,2083	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

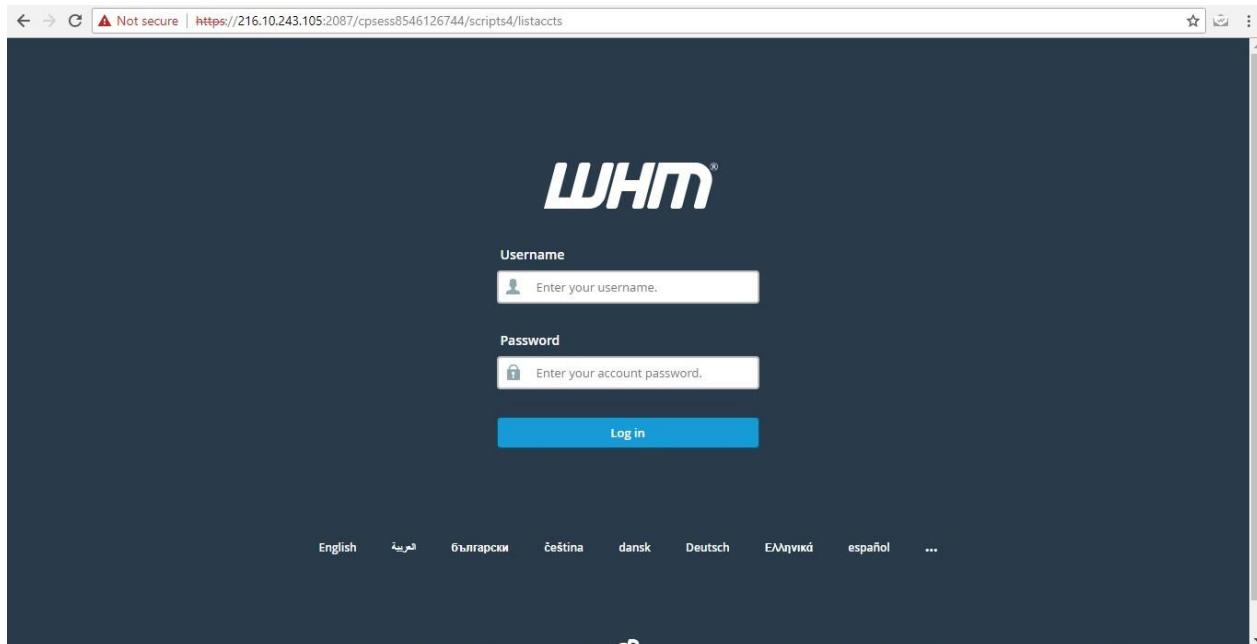
## Successfully install whm and cpanel

```

root@centos/home/albintom78 - Google Chrome
Secure | https://ssh.cloud.google.com/projects/albintom-193806/zones/us-east1-b/instances/project?authuser=1&hl=en_US&projectNumber=1068734311409
2018-02-03 06:47:31.1146 [INFO]: 4. Enter your root password in the Password text box
2018-02-03 06:47:31.1146 [INFO]:
2018-02-03 06:47:31.1146 [INFO]: 5. Click the Login button
2018-02-03 06:47:31.1146 [INFO]:
2018-02-03 06:47:31.1146 [INFO]: Visit https://go.cpanel.net/whmfirst for more information about first-time configuration of your server.
2018-02-03 06:47:31.1146 [INFO]:
2018-02-03 06:47:31.1146 [INFO]: Visit http://support.cpanel.net or https://go.cpanel.net/whmfaq for additional support
2018-02-03 06:47:31.1146 [INFO]:
2018-02-03 06:47:31.1146 [INFO]: Thank you for installing cPanel & WHM 11.68!
[root@project home]# Connected, host fingerprints: ssh-rsa 2048 92:AB:D9:29:C4:46:1B:7D:8C:4F:AB:C9:5B:61:0E:FF:24:CE:21:0E:70:0A:8A:33:CF:94:B1:2F:CB:1B:0A:FF
Last login: Sat Feb  3 05:13:58 2018 from 173.194.93.35
[albintom78@centos ~]$ passwd
-bash: passwd: command not found
[albintom78@centos ~]$ passwd
Changing password for user albintom78.
Changing password for albintom78.
(current) UNIX password:
passwd: Authentication token manipulation error
[albintom78@centos ~]$ sudo-s
-bash: sudo-s: command not found
[albintom78@centos ~]$ passwd
Changing password for user albintom78.
Changing password for albintom78.
(current) UNIX password:
passwd: Authentication token manipulation error
[albintom78@centos ~]$ sudo-s
-bash: sudo-s: command not found
[albintom78@centos ~]$ sudo -s
[root@centos albintom78]# passwd
Changing password for user root.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[root@centos albintom78]#

```

## Login to WHM using Instance Ext.IP:2087



CENTOS 7.6 kvm [centos] v78.0.24 Load Averages: 0.01 0.05 0.39

**WHM** News Change Log Log Out (root) You must reboot the server to enable quotas.

View: Default Classic

**Trial License**

This copy of cPanel & WHM is for trial use and will expire at the end of the trial period. Upgrade to a paid copy of cPanel & WHM to use the software after that period. When you purchase a license, you must provide the following information:

1. License Type: VPS
2. IP Address: 35.244.39.46

[Purchase a License](#)

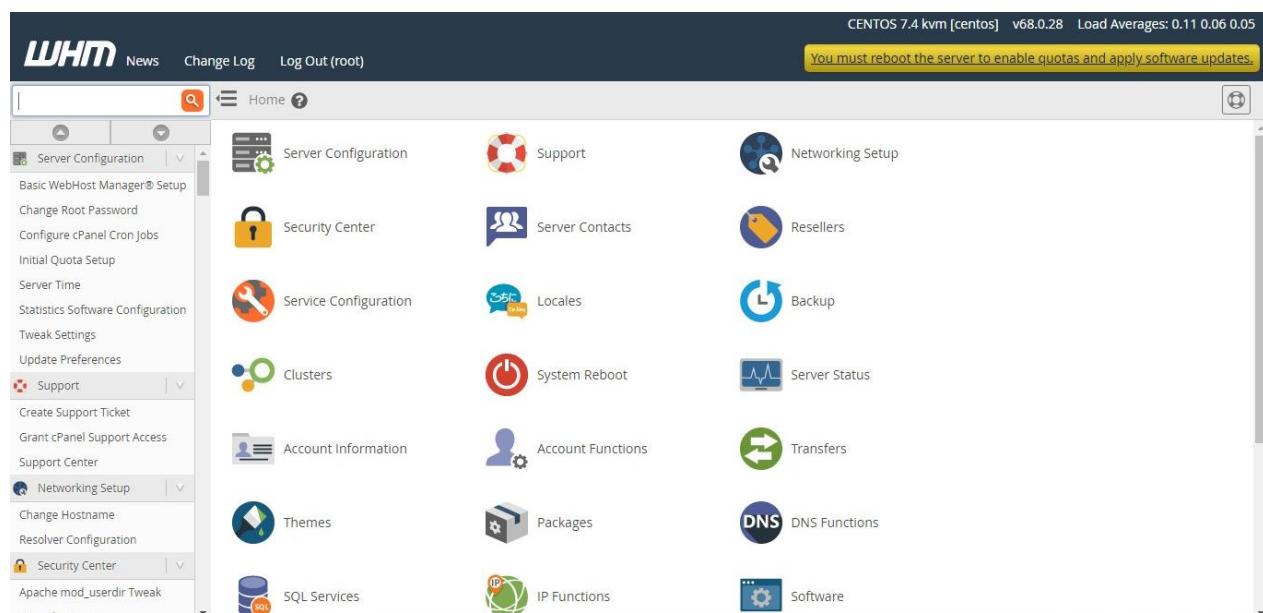
**Important Next Steps**

**Provide Contact Information**  Add your contact information. This lets cPanel & WHM notify you about problems and status updates.

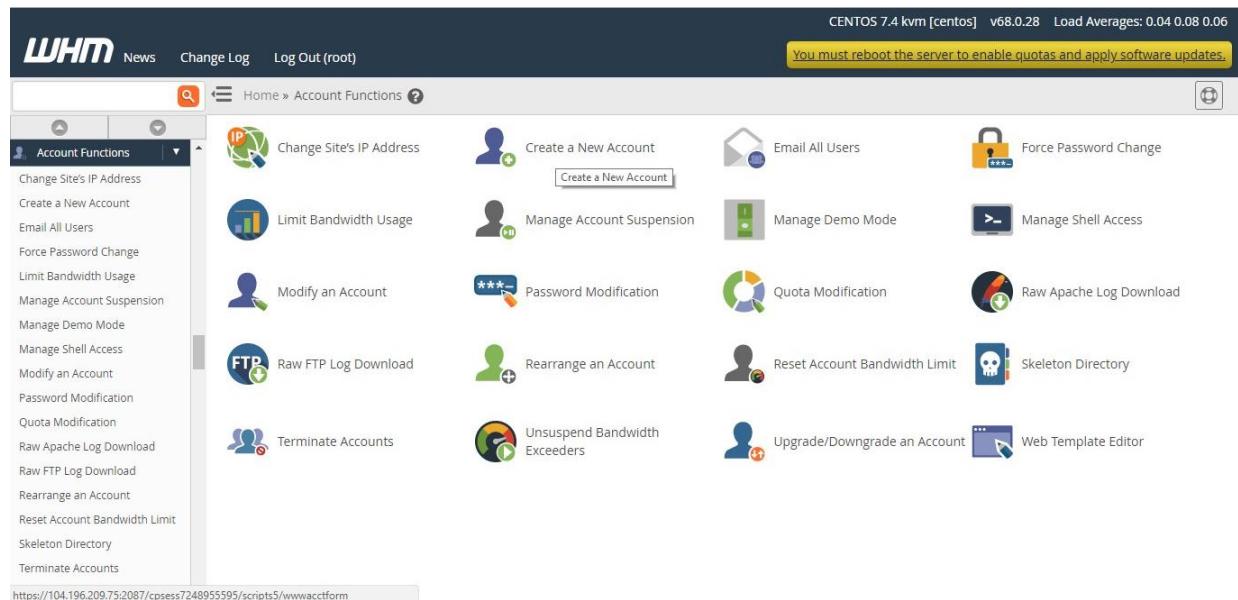
**Customize Nameservers**  Optionally, update your nameserver configuration. The system selects default nameservers during installation, but you can customize them before you create domains.

**Customize Ethernet Device**  Select or enter the Ethernet device that the system will add new IP addresses to.

[Dismiss](#)



Once you access the WHM panel, you can Create a new cPanel Account



## cPanel Account creation with your registered domain name

**Domain Information**

- Domain: rents.ml
- Username: rents
- Password: ..... (masked)
- Re-type Password: ..... (masked)
- Strength (Why?): Strong (71/100) / Password Generator
- Email: jacobannu555@gmail.com

**Package**

Choose a Package: default

**Choose a Package**: default

**Select Options Manually**

**Settings**

- CGI Access:
- cPanel Theme: paper\_lantern
- Locale: English

**Reseller Settings**

- Make the account a reseller
- Make the account own itself (i.e., the user can modify the account)

You must reboot the server to enable quotas and apply software updates.

CENTOS 7.4 kvm [centos] v68.0.28 Load Averages: 0.10 0.08 0.06  
You must reboot the server to enable quotas and apply software updates.

**Create a New Account**

- Email All Users
- Force Password Change
- Limit Bandwidth Usage
- Manage Account Suspension
- Manage Demo Mode
- Manage Shell Access
- Modify an Account
- Password Modification
- Quota Modification
- Raw Apache Log Download
- Raw FTP Log Download
- Rearrange an Account
- Reset Account Bandwidth Limit
- Skeleton Directory
- Terminate Accounts
- Unsuspend Bandwidth Exceeders
- Upgrade/Downgrade an Account
- Web Template Editor

**Home » Account Functions » Create a New Account**

Enable [SPF](#) on this account. (v=spf1 +a +mx +ip4:104.196.209.75 ~all)

Use the nameservers specified at the Domain's Registrar. (ignore locally specified nameservers.)

Overwrite any existing DNS zones for the account.

**Nameservers:** ns-cloud-b1.googledomains.com  
ns-cloud-b2.googledomains.com  
ns-cloud-b3.googledomains.com  
ns-cloud-b4.googledomains.com

**Mail Routing Settings**

- Automatically Detect Configuration (recommended) [more »](#)
- Local Mail Exchanger [more »](#)
- Backup Mail Exchanger [more »](#)
- Remote Mail Exchanger [more »](#)

CENTOS 7.4 kvm [centos] v68.0.28 Load Averages: 0.02 0.06 0.05  
You must reboot the server to enable quotas and apply software updates.

**Create a New Account**

Account Creation Status: ok (Account Creation Ok)

Checking input data.....Done ✓

Validating system setup.....Done ✓

...Done ✓

Validating IP.....Done ✓

Validating Username.....Done ✓

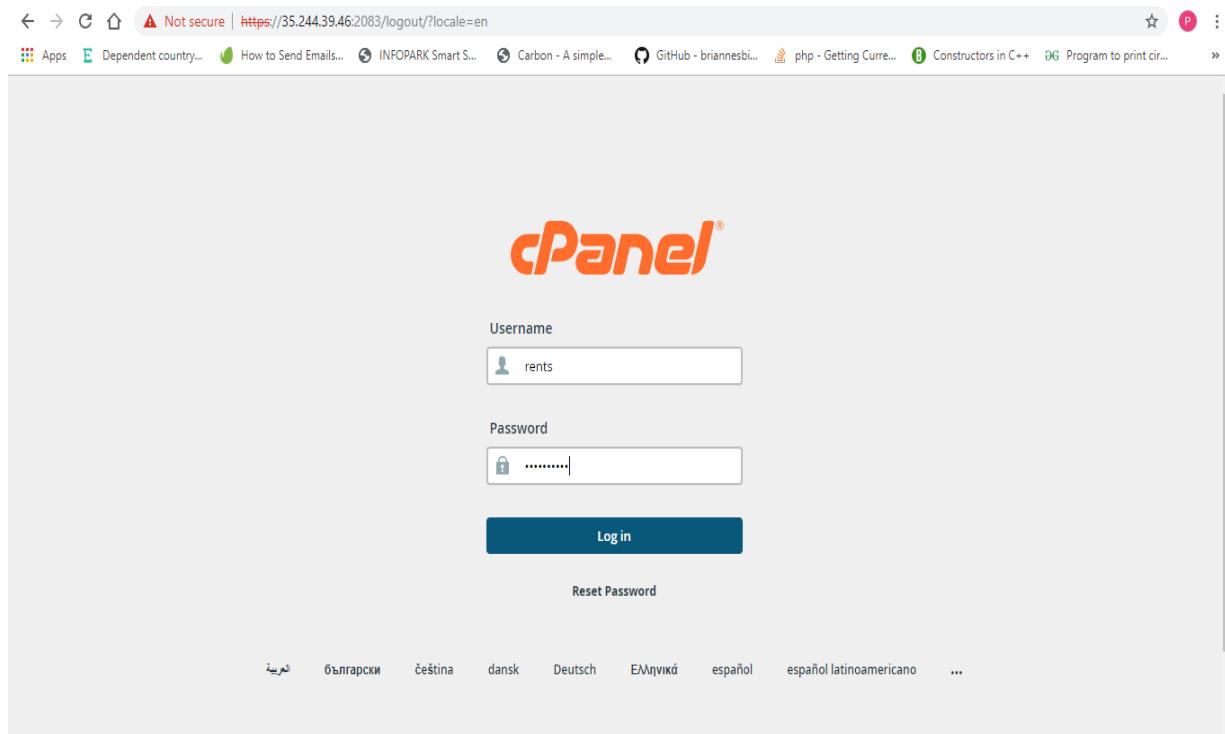
Validating Contact Email.....Done ✓

Checking for database conflicts.....Done ✓

WHM 12.6.0 (c) 2018 cPanel, Inc....

Dns Zone check is enabled.  
+-----+  
| New Account Info |  
+-----+  
| Domain: eworkshop.ml |  
| Ip: 104.196.209.75 (n) |  
| HasCgi: y |

<https://104.196.209.75:2087/cpsess724895595/scripts/wwwaccform>

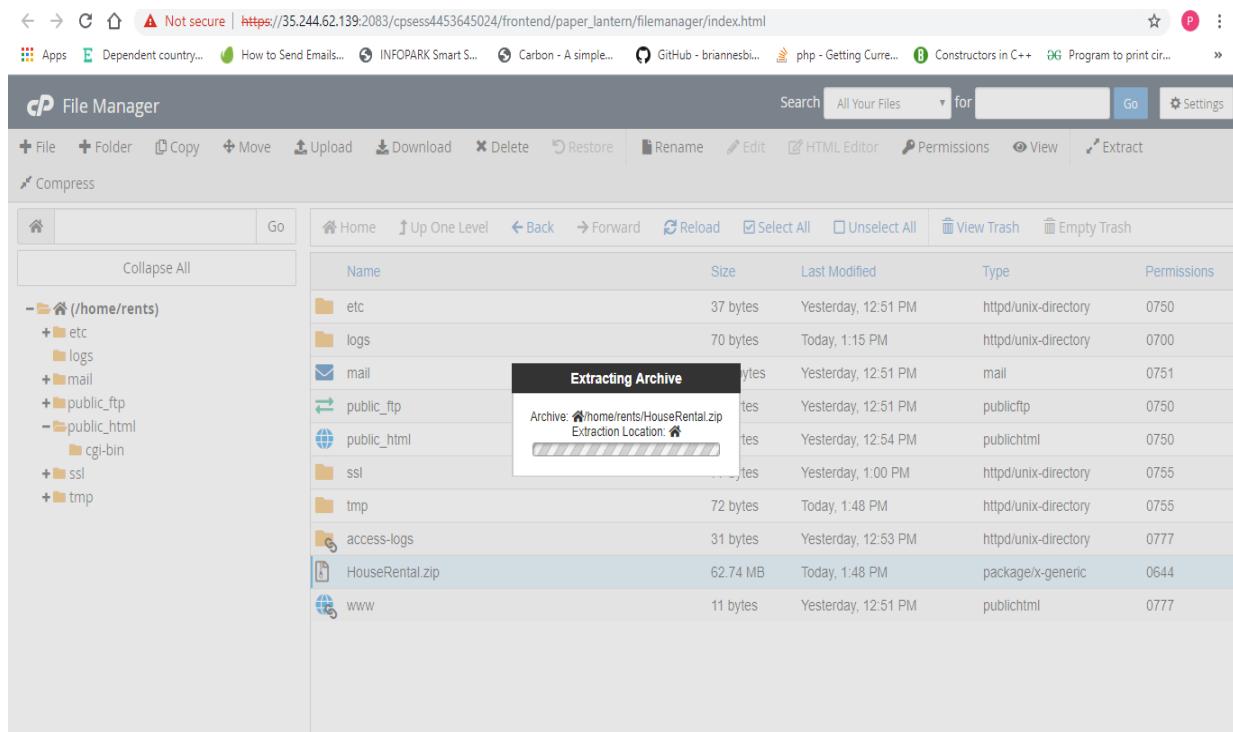


## Select File Manager Upload Project in Public HTML

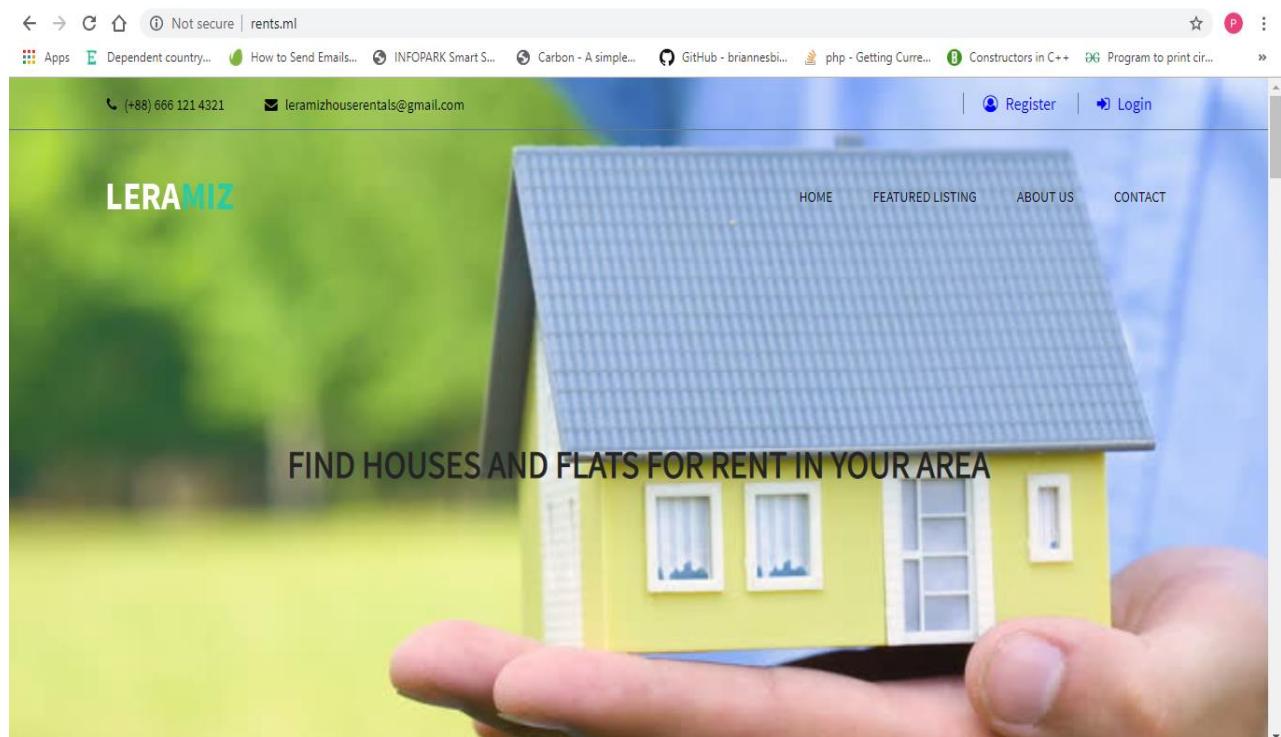
Open Public\_html folder to store your project files.

The screenshot shows a file upload interface titled "File Upload". At the top, there is a message: "Select the file you want to upload to "/home/rents". Below this, a blue bar indicates the maximum file size allowed for upload is infinity. There is an unchecked checkbox for "Overwrite existing files". The main area contains a dashed box for dropping files, with the text "Drop files here to start uploading" and an "or" link below it. A "Select File" button is also present. A progress bar for a file named "HouseRental.zip" is shown, indicating it is at 55% completion, 34.80 MB / 62.74 MB. A small "x" icon is next to the progress bar. At the bottom right, there is a link to "Go Back to "/home/rents".

This screenshot shows the same file upload interface as the previous one, but the progress bar for "HouseRental.zip" is now at 100%, indicating the upload is complete at 62.74 MB. The rest of the interface, including the message, file selection options, and back-link, remains the same.



## Successfully Hosted Project



## Connect Database go to mysql database

The screenshot shows the cPanel interface for a user named 'rents'. The 'DATABASES' section is highlighted, displaying links to phpMyAdmin, MySQL® Databases, MySQL® Database Wizard, and Remote MySQL®. On the right side, there's a sidebar with various system information: Primary Domain (rents.ml), Shared IP Address (35.244.39.46), Home Directory (/home/rents), Last Login IP Address (27.97.191.218), Theme (paper\_lantern), and Server Information. Below the sidebar is a 'STATISTICS' section showing Disk Usage (279.5 MB / ∞) and MySQL® Disk Usage (0 bytes / ∞).

## Create New Database

The screenshot shows the 'MySQL® Databases' page in cPanel. A yellow banner at the top states: "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. A sub-headline explains: "Manage large amounts of information over the web easily. MySQL databases are necessary to run many web-based applications, such as bulletin boards, content management systems, and online shopping carts. For more information, read the [documentation](#)." A link 'Jump to MySQL Users' is also present. The main area features a 'Create New Database' form where the user has typed 'rents\_houserental' into the 'New Database:' input field. A blue 'Create Database' button is below the input field. At the bottom, a table titled 'Current Databases' lists existing databases with columns for Database, Size, Privileged Users, and Actions.

The screenshot shows the cPanel interface for managing MySQL databases. A green success message at the top states: "Added the database 'rents\_houserental'." Below this, there is a "Go Back" link. At the bottom of the page, there is footer information including the cPanel logo (78.0.24), Home, Trademarks, Privacy Policy, and Documentation links.

## Create New User and Password

The screenshot shows the cPanel interface for managing MySQL users. The "Add New User" form is displayed, with the following fields filled in:

- Username: rents\_user
- Password: (obscured)
- Password (Again): (obscured)
- Strength: Strong (71/100)

A "Create User" button is visible below the form. Below the form, there is a section titled "Add User To Database" with a "User" input field.

The screenshot shows the MySQL Databases section of the cPanel interface. A green success message at the top states: "You have successfully created a MySQL user named 'rents\_user'". Below this, there is a "Go Back" button.

## Set Connection Page

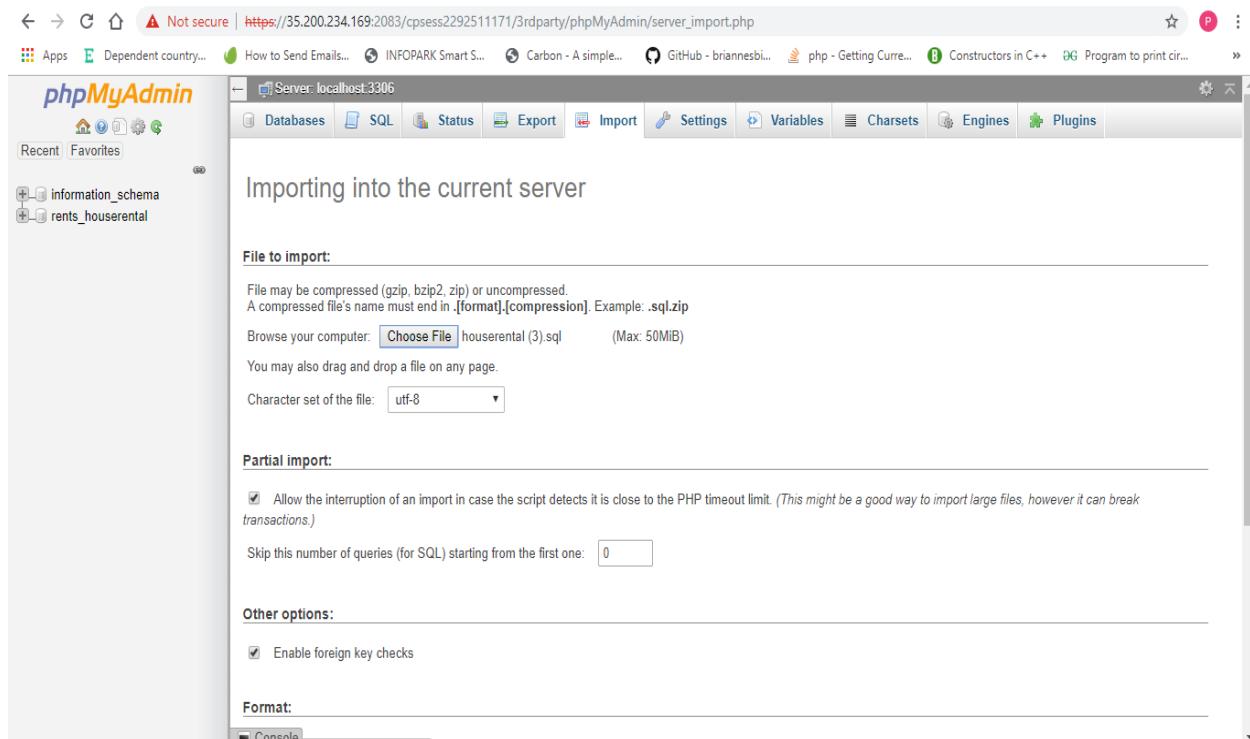
The screenshot shows a file editor window displaying the contents of a .env file. The file contains environment variables for a Laravel application, including database, Redis, and mail configurations. A green success message at the bottom right of the editor window says: "Success!"

```

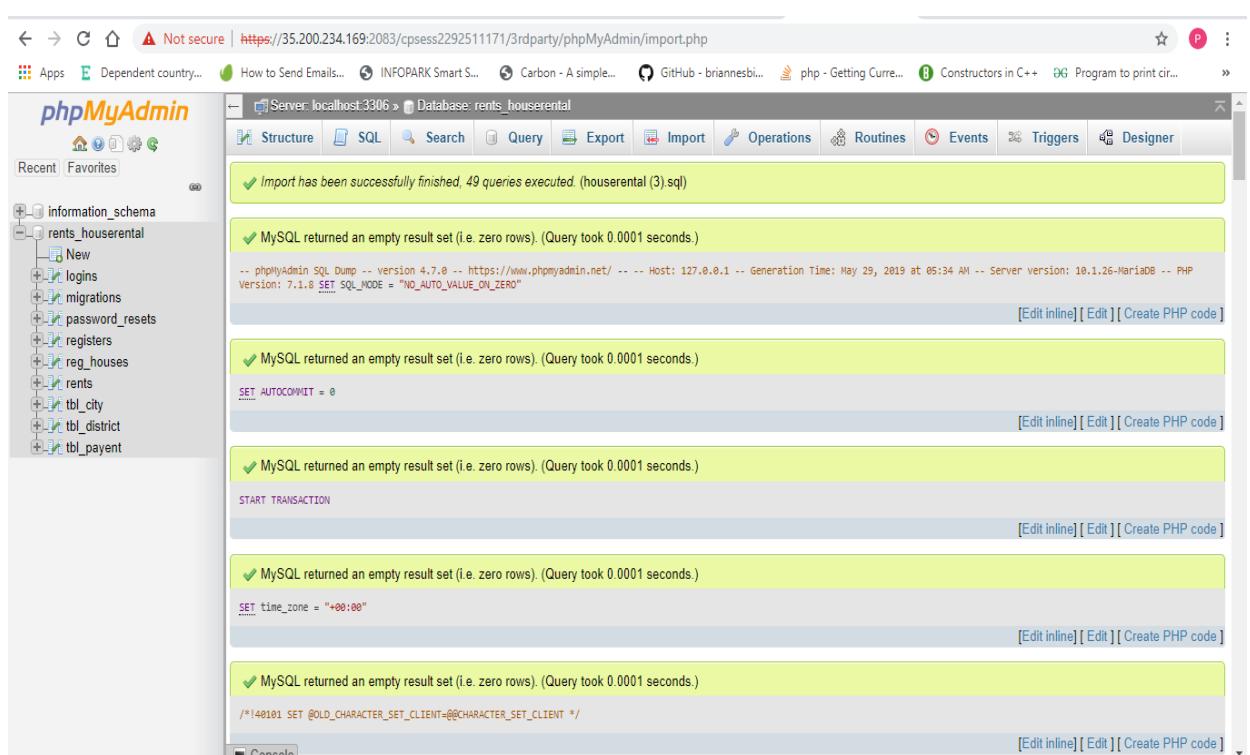
1 APP_NAME=HouseRental
2 APP_ENV=local
3 APP_KEY=bases64:6PMXmy+FeKxo/+pCEj9025xpvvN13N4tXISqdDr0rZl=
4 APP_DEBUG=true
5 APP_URL=http://localhost:8000
6
7 LOG_CHANNEL=stack
8
9 DB_CONNECTION=mysql
10 DB_HOST=127.0.0.1
11 DB_PORT=3306
12 DB_DATABASE=rents_house rental
13 DB_USERNAME=user
14 DB_PASSWORD=annu123!@#
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=annujacobnadooparambil@gmail.com
30 MAIL_PASSWORD=rejiannu115
31 MAIL_ENCRYPTION=ssl
32
33 AWS_ACCESS_KEY_ID=
34 AWS_SECRET_ACCESS_KEY=

```

## Upload Database File in Php Myadmin



The screenshot shows the 'Importing into the current server' page in phpMyAdmin. In the 'File to import:' section, there is a 'Choose File' button with the path 'houserental (3).sql' selected. The file type is listed as '(Max: 50MB)'. Below the file input, there is a dropdown for 'Character set of the file' set to 'utf-8'. Under 'Partial import:', there is a checked checkbox for 'Allow the interruption of an import in case the script detects it is close to the PHP timeout limit.' A text input field for 'Skip this number of queries (for SQL) starting from the first one' contains the value '0'. In the 'Other options:' section, there is a checked checkbox for 'Enable foreign key checks'. The 'Format:' dropdown is set to 'Console'.

The screenshot shows the 'Import' tab of the phpMyAdmin interface after a successful import. The message 'Import has been successfully finished. 49 queries executed. (houserental (3).sql)' is displayed. Below it, several green status messages indicate that MySQL returned empty result sets for various queries. The queries include setting SQL mode, starting a transaction, setting time zone, and executing a comment block. Each message includes a 'Edit inline' and 'Create PHP code' link.

The screenshot shows the phpMyAdmin interface for the 'rents\_houserental' database. The left sidebar lists the database schema with tables: information\_schema, rents\_houserental (containing logins, migrations, password\_resets, registers, reg\_houses, rents, tbl\_city, tbl\_district, and tbl\_payent), and New. The main area displays the table structure for rents\_houserental:

Table	Action	Rows	Type	Collation	Size	Overhead
logins	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	38	InnoDB	utf8mb4_unicode_ci	16 Kib	-
migrations	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	7	InnoDB	utf8mb4_unicode_ci	16 Kib	-
password_resets	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	2	InnoDB	utf8mb4_unicode_ci	16 Kib	-
registers	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	22	InnoDB	utf8mb4_unicode_ci	16 Kib	-
reg_houses	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	10	InnoDB	utf8mb4_unicode_ci	32 Kib	-
rents	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	8	InnoDB	utf8mb4_unicode_ci	48 Kib	-
tbl_city	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	14	InnoDB	utf8mb4_unicode_ci	32 Kib	-
tbl_district	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	6	InnoDB	utf8mb4_unicode_ci	16 Kib	-
tbl_payent	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	4	InnoDB	latin1_swedish_ci	16 Kib	-
Sum		103	MyISAM	latin1_swedish_ci	208 Kib	0 B

Below the table list, there are buttons for 'Check all' and 'With selected'. A 'Create table' form is visible at the bottom left, with 'Name:' set to '4' and 'Number of columns:' set to '4'. A 'Console' tab is also present.

### P1.1.3 Google AppEngine

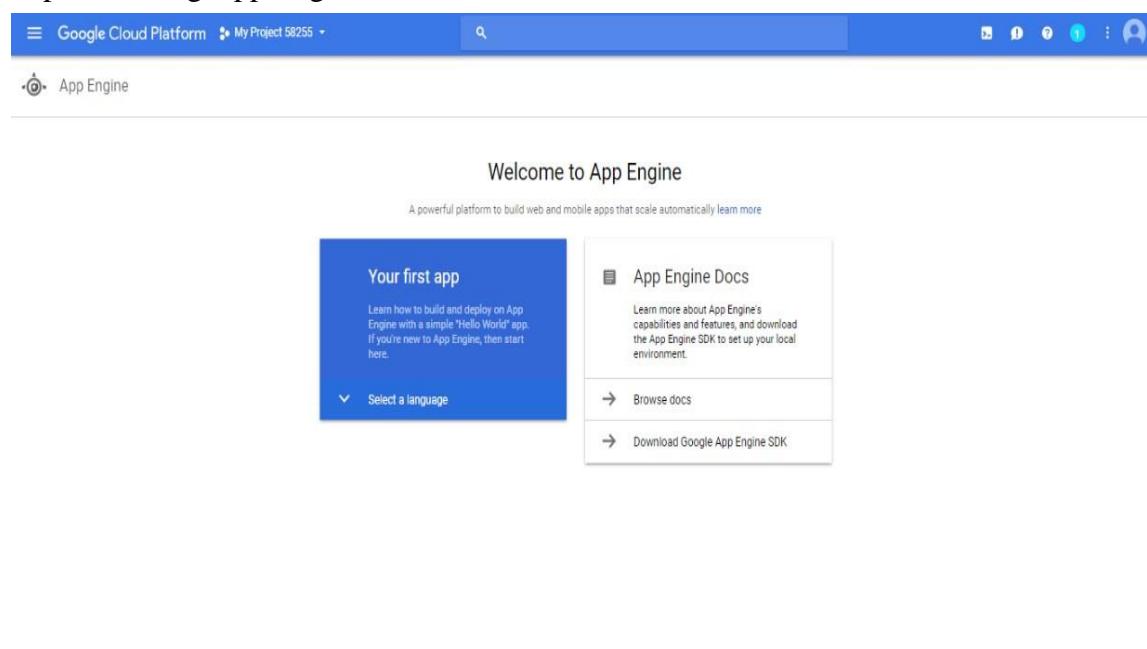
Google App Engine is a Platform as a Service (PaaS) product that provides Web app developers and enterprises with access to Google's scalable hosting and tier 1 Internet service.

Google App Engine is Google's platform as a service offering that allows developers and businesses to build and run applications using Google's advanced infrastructure. These applications are required to be written in one of a few supported languages, namely: Java, Python, PHP and Go. It also requires the use of Google query language and that the database used is Google Big Table. Applications must abide by these standards, so applications either must be developed with GAE in mind or else modified to meet the requirements.

GAE is a platform, so it provides all of the required elements to run and host Web applications, be it on mobile or Web. Without this all-in feature, developers would have to source their own servers, database software and the APIs that would make all of them work properly together, not to mention the entire configuration that must be done. GAE takes this burden off the developers so they can concentrate on the app front end and functionality, driving better user experience.

Advantages of GAE include:

- Readily available servers with no configuration requirement
- Power scaling function all the way down to "free" when resource usage is minimal
- Automated cloud computing tools
- Step 1- Starting App Engine



- Step 2- Choosing language(Php)

Welcome to App Engine

A powerful platform to build web and mobile apps that scale automatically learn more

Your first app

Learn how to build and deploy on App Engine with a simple "Hello World" app. If you're new to App Engine, then start here.

Node.js Java Python PHP

Go Ruby .NET

App Engine Docs

Learn more about App Engine's capabilities and features, and download the App Engine SDK to set up your local environment.

→ Browse docs  
→ Download Google App Engine SDK

Activate Windows

- Step 3- Choosing the region

App Engine Your first app with PHP

1 Select a location 2 Deploy

In which region would you like to serve your app?

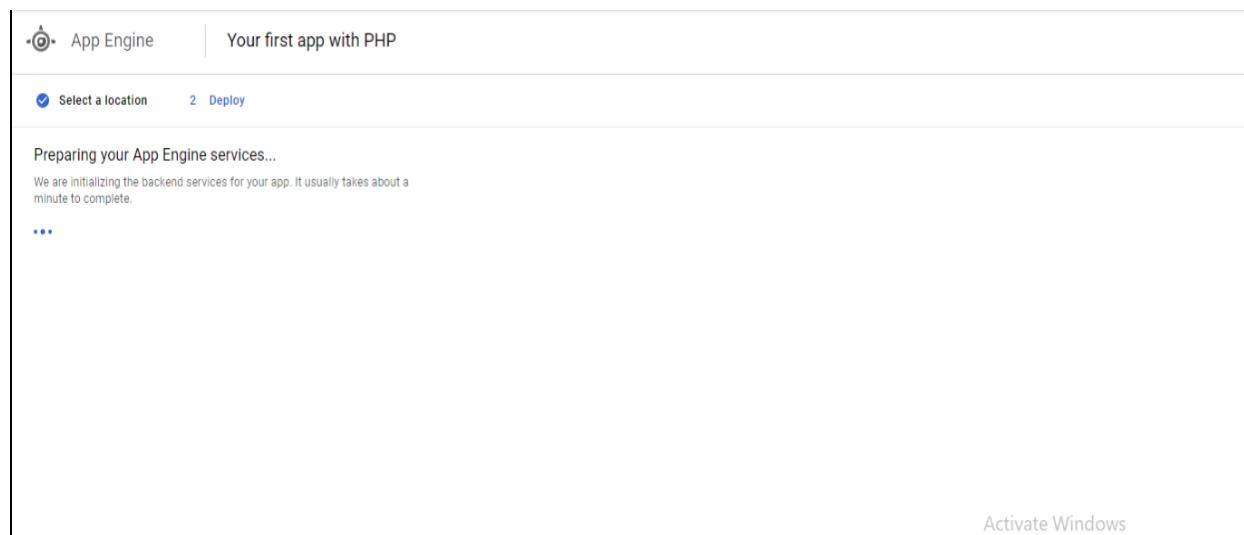
Your app will be served from the selected region. Anyone can use your app, but users closer to the selected region will have lower latency. You can't change the region for this project later.

Map data ©2018 | Terms of Use

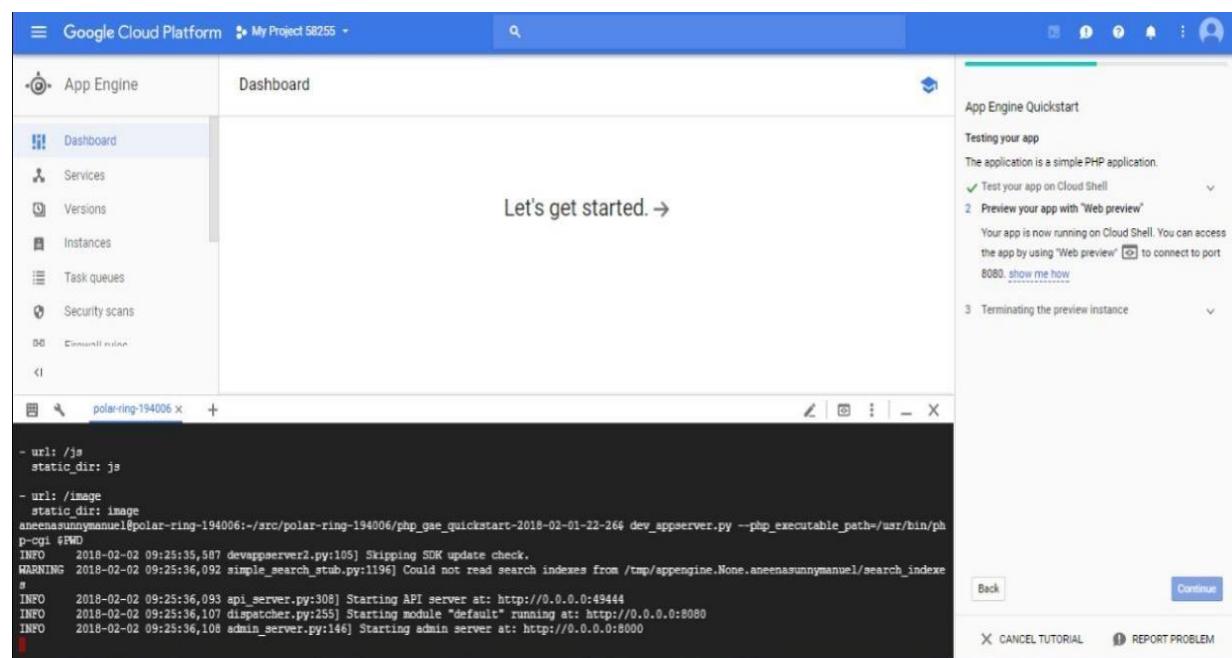
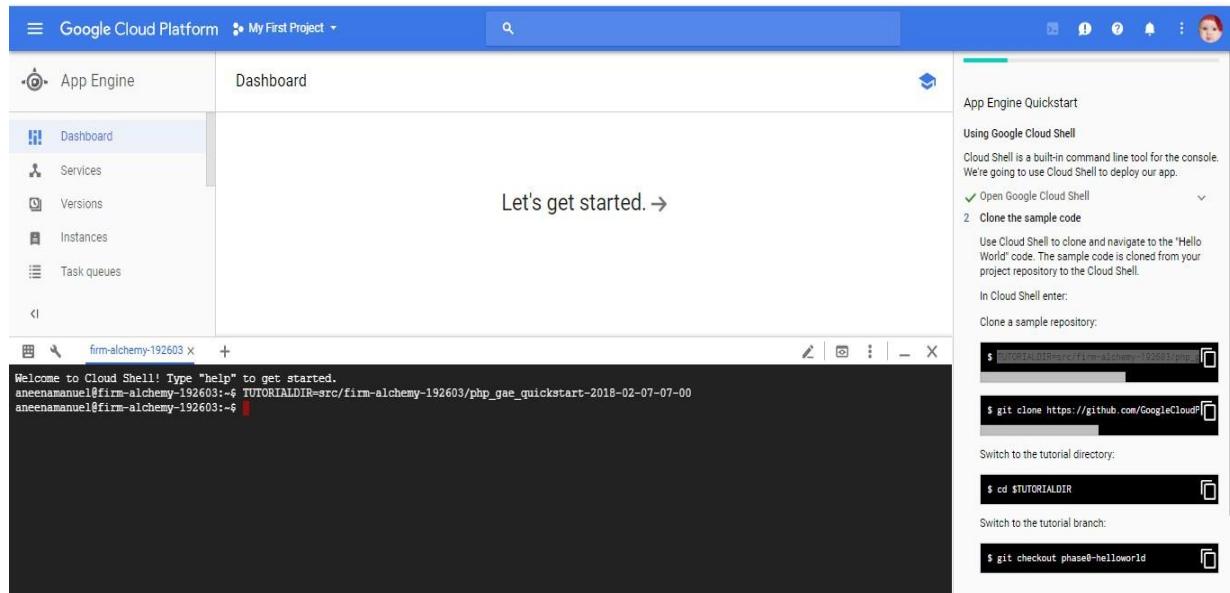
Select a region

us-central

Next



The screenshot shows the Google App Engine interface for deploying a PHP application. At the top, it says "App Engine" and "Your first app with PHP". Below that, there are two tabs: "Select a location" (which is selected) and "Deploy". A message says "Let's get started. →" followed by "Follow the interactive tutorial to deploy your first app". To the right, there is a sidebar titled "App Engine Quickstart" with sections for "Introduction" and "Build and run your 'Hello, world!' app". The "Introduction" section says, "This tutorial shows you how to deploy a sample PHP application to Google App Engine using the gcloud command." The "Build and run your 'Hello, world!' app" section says, "You will learn how to run your app using Google Cloud Shell, right in your browser. At the end you'll deploy your app to the web using the gcloud command." There is also a "After the app..." section. At the bottom of the sidebar, it says "Learn more about PHP and the PHP logo at [php.net](#)". At the very bottom, there are buttons for "Continue", "CANCEL TUTORIAL", and "REPORT PROBLEM".



The screenshot shows the Google Cloud Platform App Engine dashboard. On the left, there's a sidebar with options like Dashboard, Services, Versions, Instances, Task queues, Security scans, and Circles. The main area has a "Let's get started." button. To the right, there's a "App Engine Quickstart" section with steps for deploying with Cloud Shell, visiting the app, and viewing its status. A terminal window at the bottom shows deployment logs:

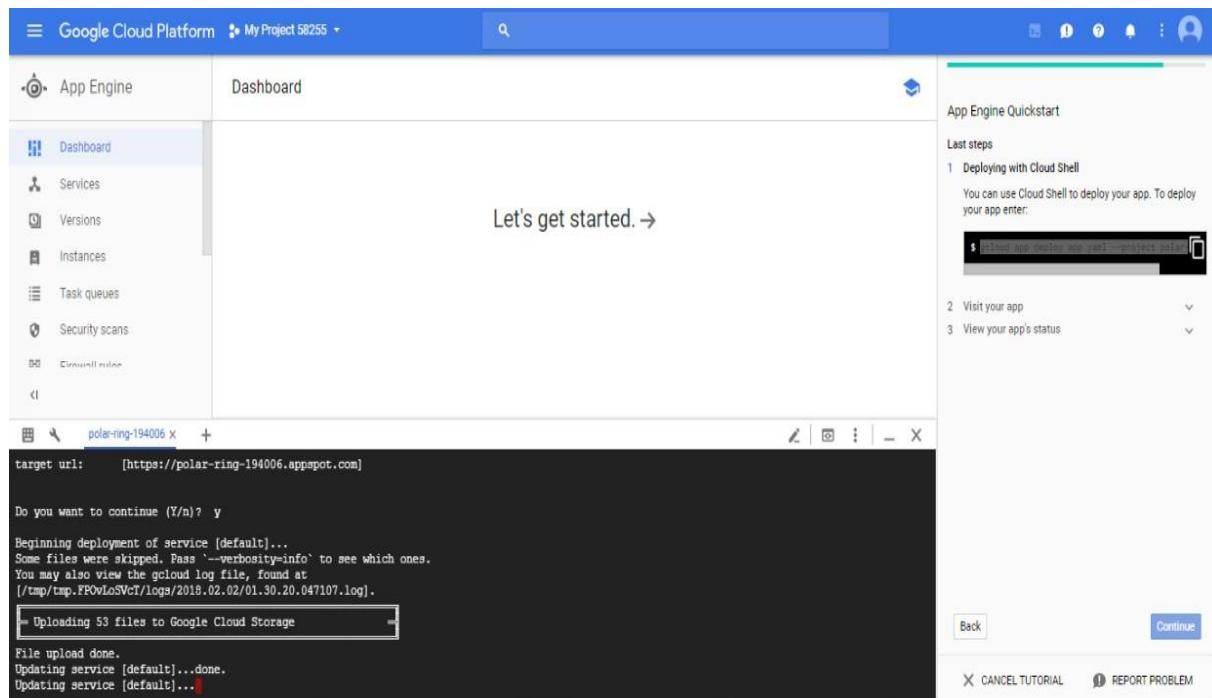
```
p-ogi $CMD
INFO 2018-02-02 09:25:35,587 devappserver2.py:105) Skipping SDK update check.
WARNING 2018-02-02 09:25:36,092 simple_search_stub.py:1196) Could not read search indexes from /tmp/appengine.None.anneenasunnymanuel/search_indexes
INFO 2018-02-02 09:25:36,093 api_server.py:308) Starting API server at: http://0.0.0.0:49444
INFO 2018-02-02 09:25:36,107 dispatcher.py:255) Starting module "default" running at: http://0.0.0.0:8080
INFO 2018-02-02 09:25:36,108 admin_server.py:146) Starting admin server at: http://0.0.0.0:8000
INFO 2018-02-02 09:27:44,903 module.py:835) default: "GET /?authuser=0 HTTP/1.0" 200 4731
INFO 2018-02-02 09:27:46,165 module.py:835) default: "GET /LOGO1.png HTTP/1.0" 404 -
INFO 2018-02-02 09:27:46,167 module.py:835) default: "GET /d6.png HTTP/1.0" 404 -
INFO 2018-02-02 09:27:47,731 module.py:835) default: "GET /favicon.ico HTTP/1.0" 404 -
~CINFO 2018-02-02 09:29:43,355 shutdown.py:45) Shutting down...
INFO 2018-02-02 09:29:43,355 api_server.py:971) Applying all pending transactions and saving the datastore
INFO 2018-02-02 09:29:43,356 api_server.py:974) Saving search indexes
anneenasunnymanuel1@polar-ring-194006:/src/polar-ring-194006/php_gae_quickstart-2018-02-01-22-26$
```

This screenshot is similar to the one above, showing the App Engine dashboard and quickstart guide. The terminal window now shows the deployment command being run:

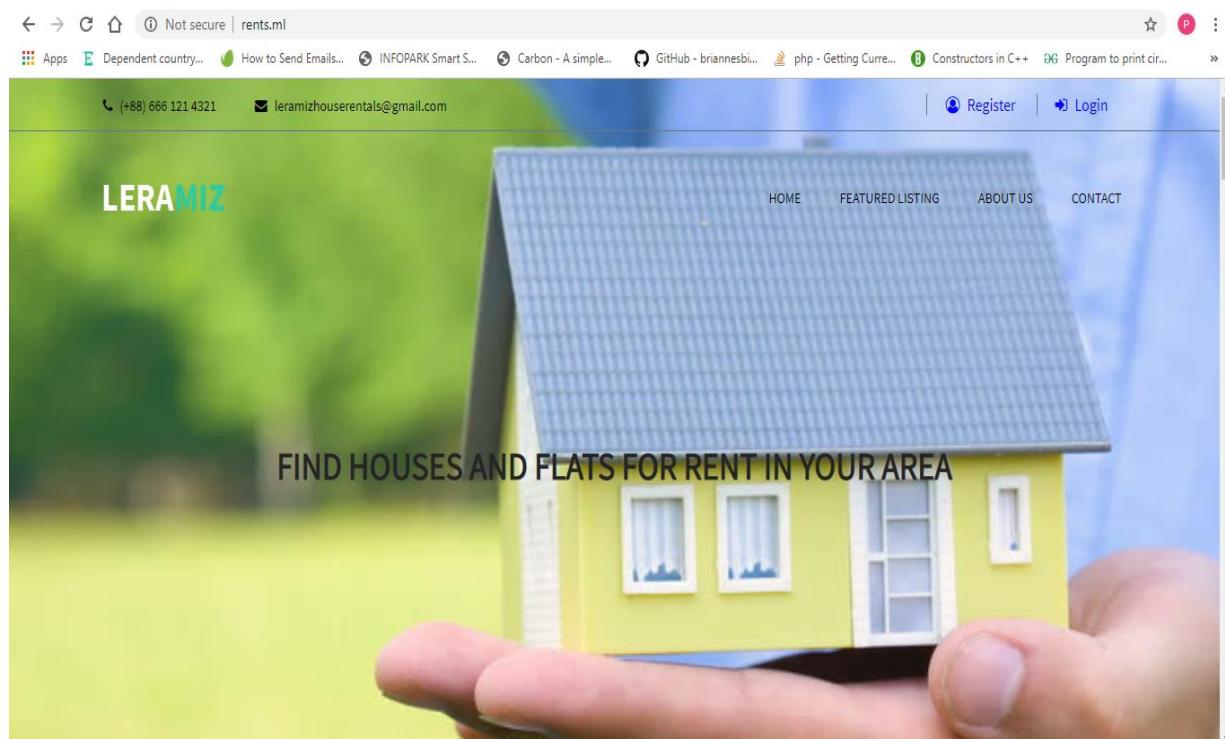
```
INFO 2018-02-02 09:29:43,355 api_server.py:971) Applying all pending transactions and saving the datastore
INFO 2018-02-02 09:29:43,356 api_server.py:974) Saving search indexes
anneenasunnymanuel1@polar-ring-194006:/src/polar-ring-194006/php_gae_quickstart-2018-02-01-22-26$ gcloud app deploy app.yaml --project polar-ring-194006
Services to deploy:
```

Below the terminal, a message asks if the user wants to continue:

Do you want to continue (Y/n)?



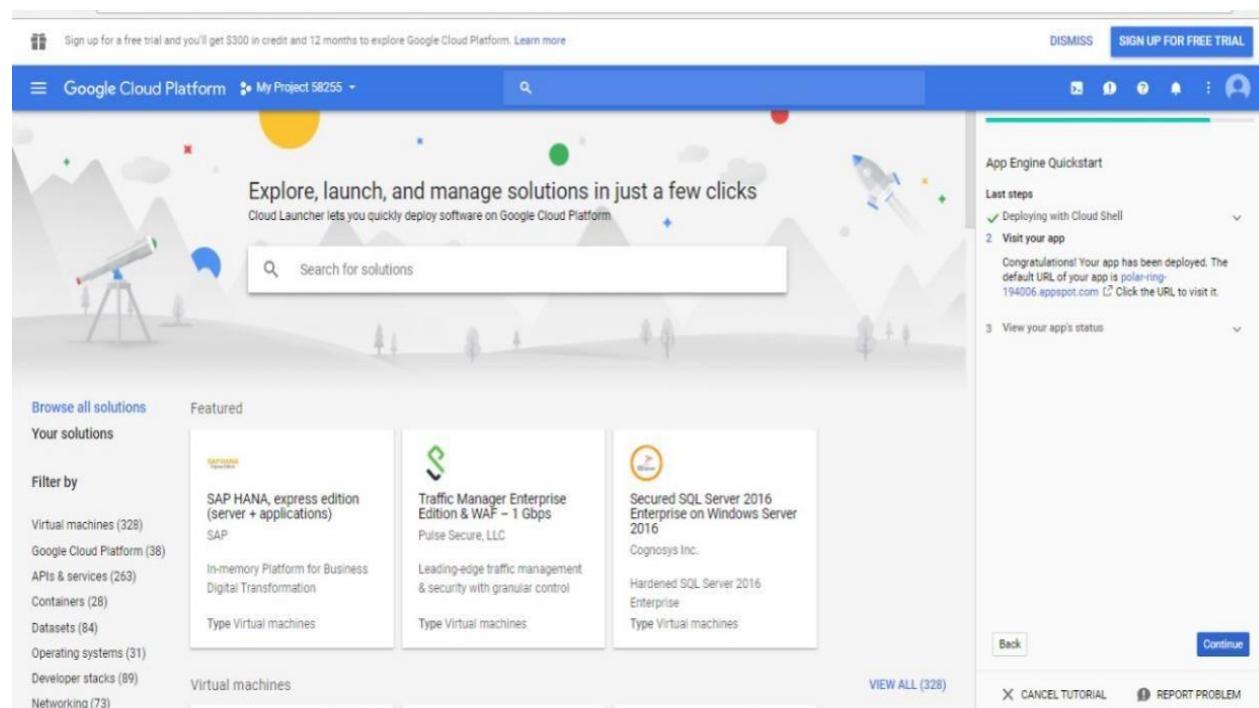
Website successfully hosted in Google App Engine



### P1.1.4 Cloud Launcher

Google Cloud Launcher lets you quickly deploy functional software packages that run on Google Cloud Platform. Even if you are unfamiliar with services like Compute Engine or Cloud Storage, you can easily start up a familiar software package without having to manually configure the software, virtual machine instances, storage, or network settings. Deploy a software package now, and scale that deployment later when your applications require additional capacity. Google Cloud Platform updates the images for these software packages to fix critical issues and vulnerabilities but doesn't update software that you have already deployed.

#### Move to Cloud Launcher



## P1.1.5 Web Host Management Tools

### P1.1.5.1 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, that 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 user names.
- Hop between every cPanel on your account and access/change anything that does not require SQL access.

#### **P1.1.5.1 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 CloudLinux OS. cPanel 11.30 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 WordPress.

Some of the great features that cPanel includes are:

- Email: Within cPanel you can create new email accounts, view/modify your existing accounts, modify your MX records, change email passwords, set up mail box quotas and much more.
- Domains: Under the domains section of cPanel, you can configure new domains to your account, set up parked domains, create subdomains, setup redirects, and much more.
- File Management: In the files section of cPanel, you can back up your cpanel account, access/modify files stored in your account, review your disk usage, and create/manage FTP accounts
- Databases: Here you can create new databases, set up remote access to MySQL, access the databases using phpMyAdmin, and much more

cPanel is very user friendly and is quite robust. There's numerous tools within cPanel to handle a wide variety of tasks. It contains a full help menu that is easy to use.

### P1.1.5.3 Plesk Panel

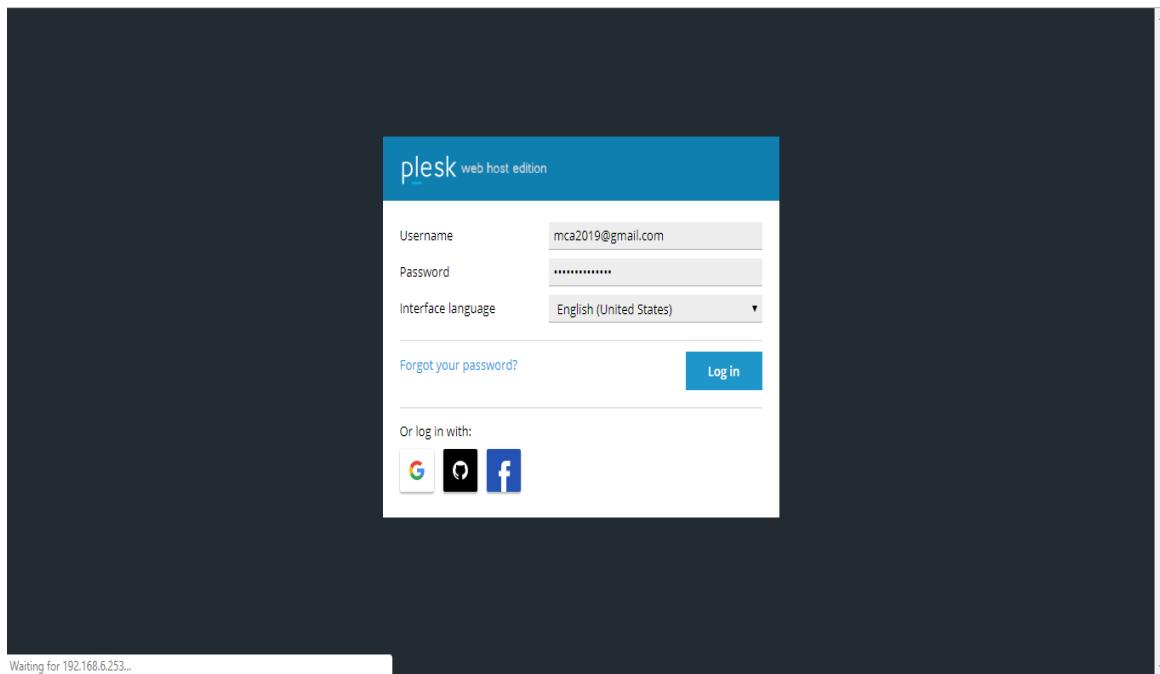
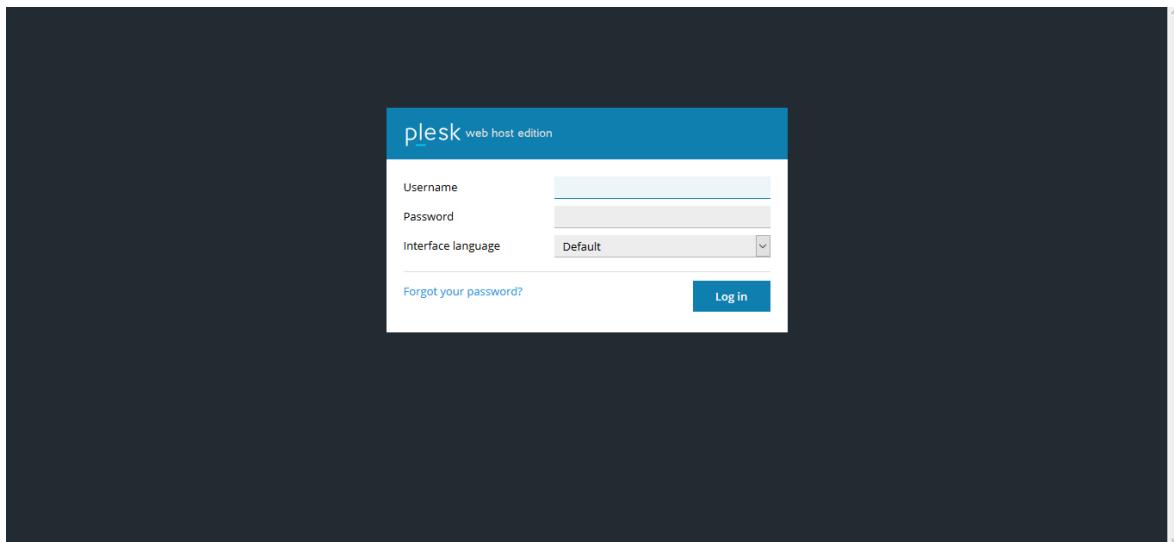
Plesk is the leading WebOps hosting platform to run, automate and grow applications, websites and hosting businesses. Being the only OS-agnostic platform, Plesk is running on more than 380,000 servers, automating 11M+ websites and 19M mailboxes. Available in more than 32 languages across 140 countries, 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 provides access to even more relevant features targeted at specific audiences but also allows service providers of any size to generate unique upsell 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. The relentless 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.

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)



## Specify Plesk panel settings

The screenshot shows the Plesk web host edition interface. At the top, it says "Logged in as mcaproject Webspace All webspaces". The left sidebar includes links for Websites & Domains, Mail, Files, Databases, File Sharing, Statistics, My Profile, WordPress, and SEO Toolkit. The main content area displays "Websites & Domains" with a sub-section for "aesaptitude.tk". It shows the website at "httpdocs/" with IP address 192.168.6.253 and system user administrator1. There are buttons for Hosting Settings, Open, Preview, Suspend, Disable, and Description. Below this, there are three options: "Install WordPress", "Install an Application", and "Create a Custom Website". The "SEO Toolkit" section indicates a scan has not been performed yet. At the bottom, there are links for Web Hosting Access, FTP Access, Hosting Settings, and Node.js.

## Create a new domain for hosting

The screenshot shows the freenom website. The header includes the logo "freenom A Name for Everyone", navigation links for Services, Partners, About Freenom, Support, and a login message "Hello Parvathy English". The main content area is titled "Review & Checkout". A table summarizes the purchase details:

Description	Price
Domain Registration - rents.tk	\$0.00USD
Subtotal:	\$0.00USD
<b>Total Due Today:</b>	<b>\$0.00USD</b>

Below the table, a section titled "Your Details" contains a checkbox for "Lock profile. Updates to your details will affect your profile information." and a field for "First Name" with "Parvathy" entered. A "Privacy - Terms" link is also visible.

## Register glue records

Domain Name: rents.tk

An unexpected error occurred

From here you can create and manage custom nameservers for your domain (eg. NS1.yourdomain.com, NS2.yourdomain.com...).

hostname	IP Address
.RENTS.TK	192.168.6.253

[« Back](#)

**+**

**freenom**  
A Name for Everyone

Services ▾ Partners ▾ About Freenom ▾ Support ▾ Hello Annu ▾ English ▾

## Register glue records

Domain Name: rents.ga

The nameserver was successfully registered

From here you can create and manage custom nameservers for your domain (eg. NS1.yourdomain.com, NS2.yourdomain.com...).

hostname	IP Address
WWW.RENTS.GA	192.168.6.253
.RENTS.GA	

[« Back](#)

**✖️** **➕**

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Services ▾ Partners ▾ About Freenom ▾ Support ▾ Hello Annu ▾ English ▾

## DNS MANAGEMENT for rents.ga

[« Back to domain details](#)

No records to display.

Add Records

Name	Type	TTL	Target
	A	3600	192.168.6.253

[+ More Records](#) [Save Changes](#)

**freenom**  
A Name for Everyone

Services ▾ Partners ▾ About Freenom ▾ Support ▾ Hello Annu ▾ English ▾

## DNS MANAGEMENT for rents.ga

[« Back to domain details](#)

No records to display.

Add Records

Name	Type	TTL	Target	
	A	3600	192.168.6.253	<a href="#">Delete</a>
www	CNAME	3600	<a href="#">rents.ga</a>	<a href="#">Delete</a>

[+ More Records](#) [Save Changes](#)

The screenshot shows the freenom DNS Management interface. At the top, there's a navigation bar with links for Services, Partners, About Freenom, Support, Hello Annu, and English. Below the header, the main title is "DNS MANAGEMENT for rents.ga". A blue button at the top left says "< Back to domain details". Below this, two success messages are displayed: "Record added successfully" and "Record added successfully". The main content area is titled "Modify Records" and contains a table with two rows of DNS records:

Name	Type	TTL	Target	Action
	A	3600	192.168.6.253	<button>Delete</button>
WWW	CNAME	3600	rents.ga	<button>Delete</button>

At the bottom right of the table, there's a "Save Changes" button.

## Create webspace

The screenshot shows the Plesk web host edition interface. The left sidebar includes links for Websites & Domains, Mail, Files, Databases, File Sharing, Statistics, My Profile, WordPress, and SEO Toolkit. The main content area is titled "Adding New Domain Name" and displays the following fields:

- Domain name: www.rents.ga
- Location of the website's files: Create a new webspace
- Webspace settings:
  - IP address: 192.168.6.253 (shared)
  - Username: rents
  - Password: [redacted] (Strong)
  - Repeat password: [redacted]
- Secure with an SSL/TLS Certificate:
  - Secure the domain with Let's Encrypt (checkbox)
  - 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](#).
- Your Files to Copy to Hosting

Websites & Domains

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

**Information:** The domain [rents.ga](#) was successfully created.

+ Add Domain + Add Subdomain + Add Domain Alias

**aesaptitude.tk**

Website at [htdocs/](#) 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 an Application Create your site by installing a web app, such as Joomla or Drupal.
- Create a Custom Website Upload your web content and add databases.

Install WordPress Install Apps 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

### Upload project file

File Manager for rents.ga ...

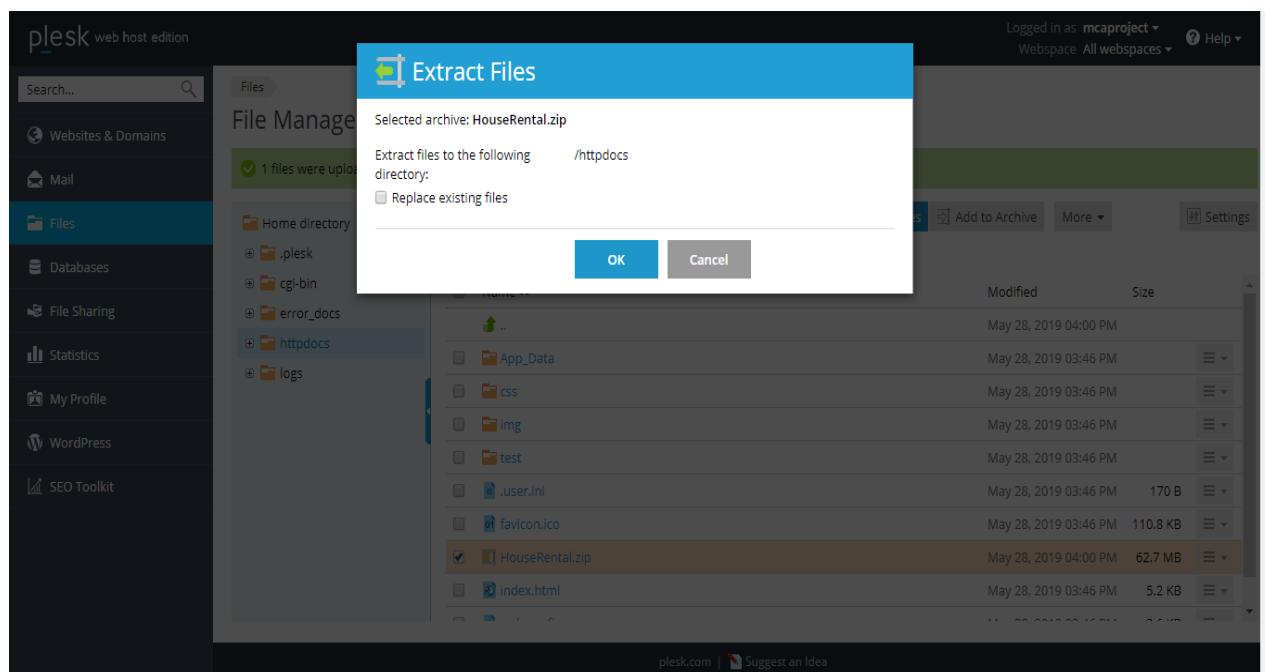
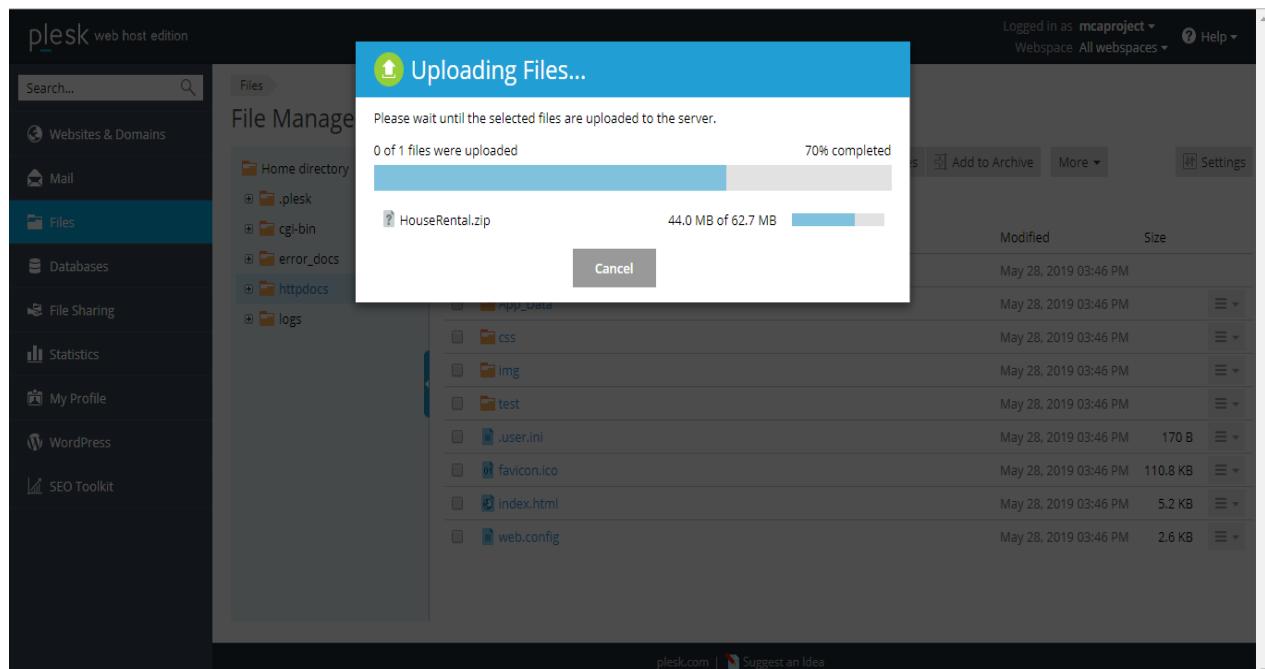
Files

Home directory

Upload New Copy Move Remove Extract Files Add to Archive More Settings

Name	Modified	Size
..	May 28, 2019 03:46 PM	
App_Data	May 28, 2019 03:46 PM	
css	May 28, 2019 03:46 PM	
img	May 28, 2019 03:46 PM	
test	May 28, 2019 03:46 PM	
.user.ini	May 28, 2019 03:46 PM	170 B
favicon.ico	May 28, 2019 03:46 PM	110.8 KB
index.html	May 28, 2019 03:46 PM	5.2 KB
web.config	May 28, 2019 03:46 PM	2.6 KB

plesk.com | Suggest an Idea



## Add Database to the project

The screenshot shows the Plesk control panel for the 'rents.ga' webspace. The left sidebar is dark with various icons and labels: Websites & Domains, Mail, Files, Databases (which is highlighted in blue), File Sharing, Statistics, My Profile, WordPress, and SEO Toolkit. The main content area has a white background with the title 'Databases for rents.ga'. Below it, a message says 'Here you can create new or manage existing databases.' A blue 'Add Database' button is centered. To the right, there's a sidebar with 'User Management' and 'Backup Manager' options. At the bottom, the URL 'https://192.168.6.253:8443/smb/database/create' is shown in the address bar, along with the plesk.com logo and a 'Suggest an Idea' link.

This screenshot shows the 'Create New Database' dialog box. The left sidebar is identical to the previous one. The main form has a 'General' tab selected. It contains the following fields:

- Database name \***: admin\_rents
- Database server**: localhost:3306 (default for MySQL, v5.7.25)
- Related site**: No related sites
- Users** section:
  - Create a default database user. Plesk will access the database on behalf of this user. If no database users are assigned to the database, it is not accessible.
  - Create a database user
  - Database user name \***: house
  - New password \***: ..... (password strength meter: Strong)
  - Confirm password \***: .....
  - User has access to all databases within the selected subscription
- Access control**:
  - Allow local connections only
  - Allow remote connections from any host
  - Allow remote connections from

At the bottom, a note says: 'Please contact your hosting provider and make sure that the option you specified above will comply with the current firewall rules for incoming access to MySQL.' There are 'OK' and 'Cancel' buttons at the bottom right.

**plesk web host edition**

Logged in as **mcaproject** • Webspace All webspaces • Help ▾

**Databases for rents.ga** ...

Here you can create new or manage existing databases.

**Information:** The database **admin\_rents** was created.

**Add Database**

**admin\_rents** Assign this database to a site

Host: localhost:3306 (MySQL) Users: house Tables: 0 Size: 0 B

**Show Less**

**phpMyAdmin** Connection Info Copy

Export Dump Import Dump Check and Repair

Move to Webspace Remove Database

plesk.com | Suggest an Idea

**phpMyAdmin**

Recent | Favorites

Server: localhost:3306 > Database: admin\_rents

No tables found in database.

Create table

Name: Number of columns: 4

Go

Console

**phpMyAdmin**

Server: localhost:3306 » Database: admin\_rents

Structure SQL Search Export Import Operations Routines Events Triggers Designer

Importing into the database "admin\_rents"

**File to import:**  
File may be compressed (gzip, zip) or uncompressed.  
A compressed file's name must end in [.format][.compression]. Example: .sql.zip  
Browse your computer: Choose File houserental (3).sql (Max: 2.048MB)  
You may also drag and drop a file on any page.  
Character set of the file: utf-8

**Partial import:**  
 Allow the interruption of an import in case the script detects it is close to the PHP timeout limit. (This might be a good way to import large files, however it can break transactions.)  
Skip this number of queries (for SQL) starting from the first one: 0

**Other options:**  
 Enable foreign key checks

Console

houserental (3).sql Show all X

**phpMyAdmin**

Server: localhost:3306 » Database: admin\_rents

Structure SQL Search Export Import Operations Routines Events Triggers Designer

Import has been successfully finished, 49 queries executed (houserental (3).sql)

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0003 seconds.)

```
-- phpMyAdmin SQL Dump -- version 4.7.0 -- https://www.phpmyadmin.net/ -- Host: 127.0.0.1 -- Generation Time: May 29, 2019 at 05:34 AM -- Server version: 10.1.26-MariaDB -- PHP Version: 7.1.8 SET SQL_MODE = "NO_AUTO_VALUE_ON_ZERO"
```

[Edit inline] [Edit] [Create PHP code]

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0004 seconds.)

```
SET AUTOCOMMIT = 0
```

[Edit inline] [Edit] [Create PHP code]

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0004 seconds.)

```
START TRANSACTION
```

[Edit inline] [Edit] [Create PHP code]

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0004 seconds.)

```
SET time_zone = "+00:00"
```

[Edit inline] [Edit] [Create PHP code]

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0004 seconds.)

Console

houserental (3).sql Show all X

Site Hosted



## P1.2 Amazon Web Services Cloud (AWS)

### 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 region across the worlds.

### 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 professionals stored 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 official AWS website homepage. At the top right, there is a prominent yellow button labeled "Create an AWS Account". The main banner features the text "AWS Innovate Special Edition" and "Watch sessions delivered by experts on AWS services 22 February 2018". Below the banner, there are four promotional cards: "MACHINE LEARNING ON AWS", "INTRODUCING AMAZON TRANSCRIBE", "AMAZON AURORA", and "AWS TECHCHAT". Each card has a small icon and a brief description.

## Step 2-Creating an AWS account

The screenshot shows the "Create an AWS account" page. The page title is "Create an AWS account". It contains several input fields: "Email address" (with an error message "\*Email is a required field"), "Password", "Confirm password", and "AWS account name". Below these fields is a "Continue" button. At the bottom of the page, there is a link "Sign in to an existing AWS account" and some small text about AWS account terms and conditions.

### Step 3-Selecting basic plan

**Select a Support Plan**

AWS offers a selection of support plans to meet your needs. Choose the support plan that best aligns with your AWS usage. [Learn more](#)

Basic Plan	Developer Plan	Business Plan
<b>Free</b>	From \$29/month	From \$100/month
<ul style="list-style-type: none"> <li>Included with all accounts</li> <li>24/7 self-service access to forums and resources</li> <li>Best practice checks to help improve security and performance</li> <li>Access to health status and notifications</li> </ul>	<ul style="list-style-type: none"> <li>For early adoption, testing and development</li> <li>Email access to AWS Support during business hours</li> <li>1 primary contact can open an unlimited number of support cases</li> <li>12-hour response time for nonproduction systems</li> </ul>	<ul style="list-style-type: none"> <li>For production workloads &amp; business-critical dependencies</li> <li>24/7 chat, phone, and email access to AWS Support</li> <li>Unlimited contacts can open an unlimited number of support cases</li> <li>1-hour response time for production systems</li> </ul>

### Step 4-Log on to the AWS account

Secure | <https://aws.amazon.com/aispl/registration-confirmation/>

Menu **aws** Contact Sales Products Solutions Pricing Getting Started More English My Account Complete Sign Up

My role is: Student

I am interested in: Websites and Web Apps

Submit

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 Home page. In the 'Build a solution' section, there are six quick-start options: 'Launch a virtual machine', 'Build a web app', 'Host a static website', 'Connect an IoT device', 'Start a development project', and 'Register a domain'. The 'Helpful tips' sidebar includes links to 'Manage your costs', 'Create an organization', and 'Explore AWS'.

## Step 6-Creating a bucket

The screenshot shows the Amazon S3 Home page. It features a search bar, a 'Create bucket' button, and statistics for buckets and regions. Below, three steps are outlined: 'Create a new bucket' (with an icon of a bucket and cloud), 'Upload your data' (with an icon of a bucket and upload arrow), and 'Set up your permissions' (with an icon of two people and a plus sign).

## 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.

### P1.2.4.2 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 databases. 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 ElastiCache.

## 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.

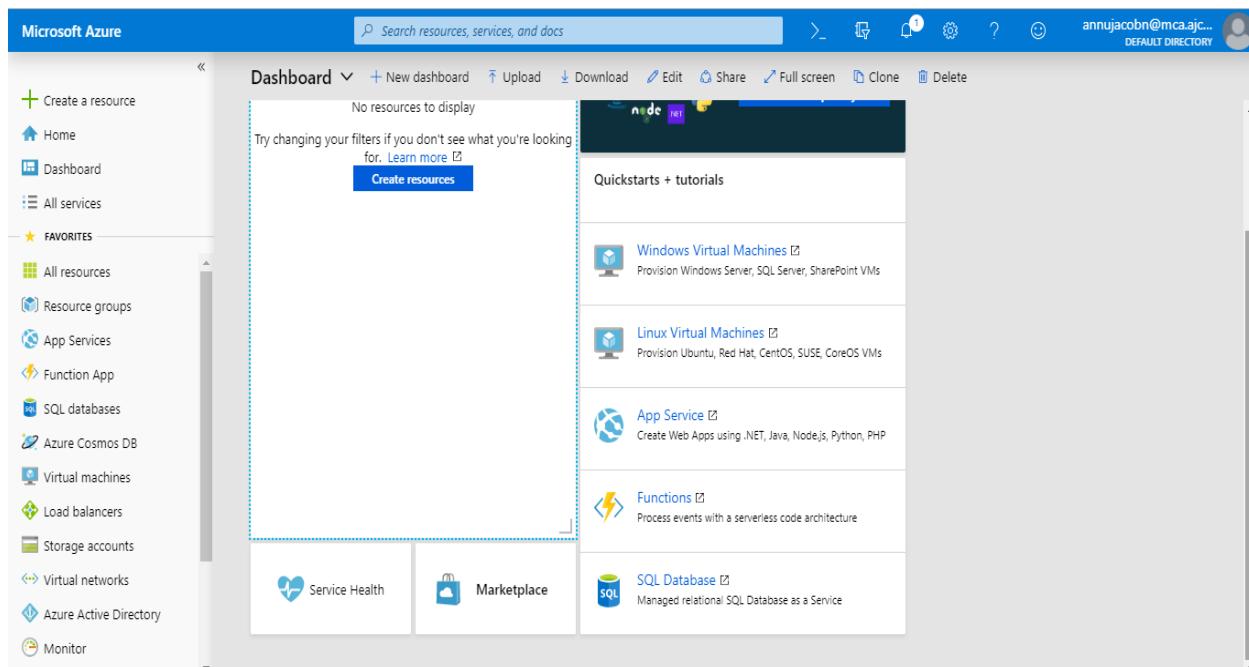
The Windows Azure platform is considered a platform as a service, which is an imperative component of a cloud computing platform. It consists of various on-demand services hosted in Microsoft's data centers and is commoditized through three product brands. The services and applications developed using 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



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

**Create a resource group**

**SUMMARY**

**BASICS**

Subscription	Azure for Students
Resource group	annu
Region	(Asia Pacific) Southeast Asia

No resource groups to display

Create resource group

- 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)

**Resource groups**

**Subscriptions: Azure for Students**

NAME	SUBSCRIPTION	LOCATION
annu	Azure for Students	Southeast Asia

**Web App**

Subscription: Azure for Students

Resource Group: annu

Name: houserental.azurewebsites.net

Publish: Code

Runtime stack: PHP 7.2

Operating System: Linux

Location: South India

[Create app service](#)

DETAILS	Value
Subscription	6376901e-eb80-400d-8865-461a796885b6
Resource Group	annu
Name	houserental
Publish	Code
Runtime stack	PHP 7.2
APP SERVICE PLAN	
Name	ASP-annu-b64b
Operating System	Linux
Location	South India
SKU	Premium V2
Size	Small
ACU	210 total ACU
Memory	3.5 GB memory

[Create](#) [Previous](#) Download a template for automation

**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	<a href="#">Operation details</a>
ASP-annu-b64b	Microsoft.Web/ser...	OK	<a href="#">Operation details</a>

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](#)

**houserental** App Service

Resource group (change) annu

Status Running

Location South India

Subscription (change) Azure for Students

Subscription ID 6376901e-eb80-400d-8865-461a796885b6

Tags (change) Click here to add tags

URL <https://houserental.azurewebsites.net>

App Service Plan ASP-annu-b64b (P1v2: 1)

FTP/deployment username No FTP/deployment user set

FTP hostname <ftp://waws-prod-ma1-007.ftp.azurewebsites.windows.net>

FTPS hostname <ftps://waws-prod-ma1-007.ftp.azurewebsites.windows.net>

**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.

The screenshot shows the Microsoft Azure Deployment Center for the 'houserental' App Service. The left sidebar lists various services like Home, Dashboard, and App Services. The main area shows the 'Deployment Center' blade with a progress bar at step 1. It includes sections for 'SOURCE CONTROL' (Azure Repos, GitHub, Bitbucket, Local Git), 'BUILD PROVIDER' (selected), 'CONFIGURE', and 'SUMMARY'. A 'Change Account' button is available.

The screenshot shows the Microsoft Azure Deployment Center for the 'houserental' App Service. The left sidebar lists various services like Home, Dashboard, and App Services. The main area shows the 'Deployment Center' blade with a completed progress bar (all four steps marked with green checkmarks). It includes sections for 'SOURCE CONTROL' (Repository: https://github.com/annujacob000/RentalProperty, Branch: master), 'BUILD PROVIDER' (Provider: Azure Pipelines (Preview), New Account: Yes, Account: jacobannu, Location: MA, Web Application, Framework: PHP, Framework version: 7.2), 'CONFIGURE', and 'SUMMARY'. A 'Finish' button is visible.

Microsoft Azure

Search resources, services, and docs

houserental - Deployment Center

OVERVIEW

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Security

Deployment

Quickstart

Deployment slots

Deployment Center

Settings

Configuration

Authentication / Authorizati...

Application Insights

SOURCE CONTROL

Repository: https://github.com/annujacob000/RentalProperty

Branch: master

BUILD PROVIDER

Provider: Azure Pipelines (Preview)

New Account: Yes

Account: jacobannu

Location: MA

Framework: PHP

Framework version: 7.2

Back

Finish

https://houserental.azurewebsites.net

Home

Aboutus

Register

Login

**Project Details:**

- Subscription: Azure for Students
- Resource Group: annu
- Name: propertyrental

**Instance Details:**

- Name: propertyrental.azurewebsites.net
- Publish: Docker Image
- Operating System: Linux
- Location: South India

**App Service Plan:** (Collapsed)

## Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to [nginx.org](http://nginx.org).  
Commercial support is available at [nginx.com](http://nginx.com).

*Thank you for using nginx.*

### 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 set up, 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.

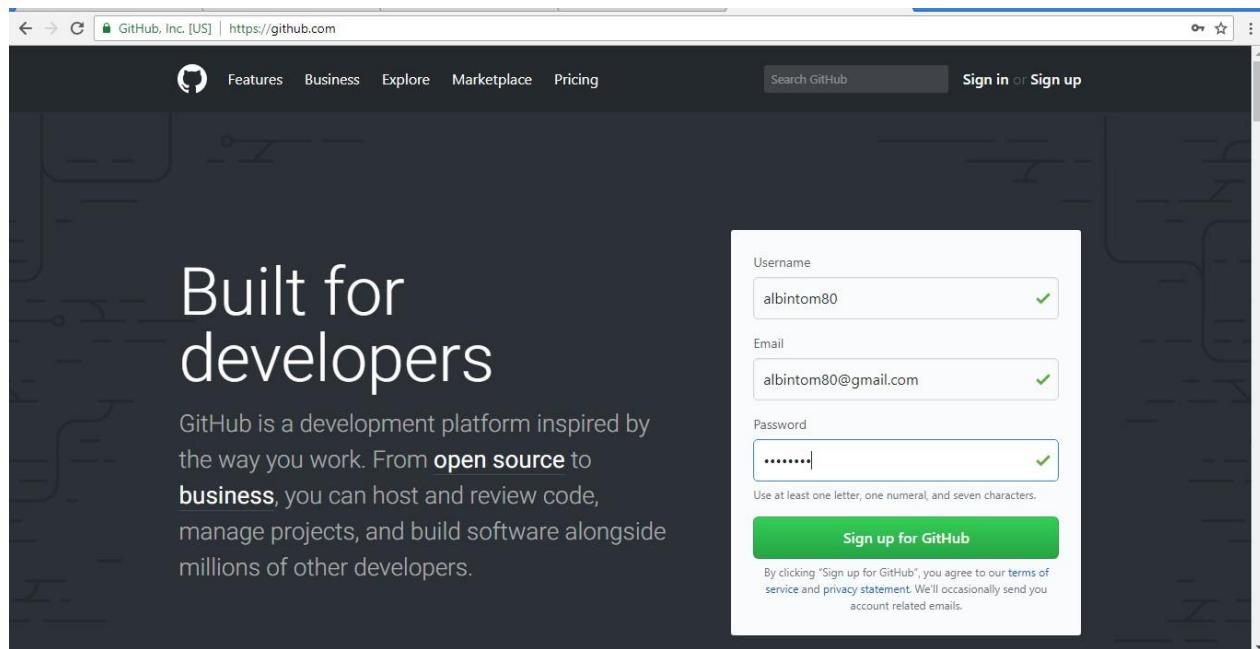
GitHub facilitates social coding by providing a web interface to the Git code repository and management tools for collaboration. GitHub can be thought of as a serious social networking site for software developers. Members can follow each other, rate each other's work, receive updates for specific projects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

### GitHub products and features

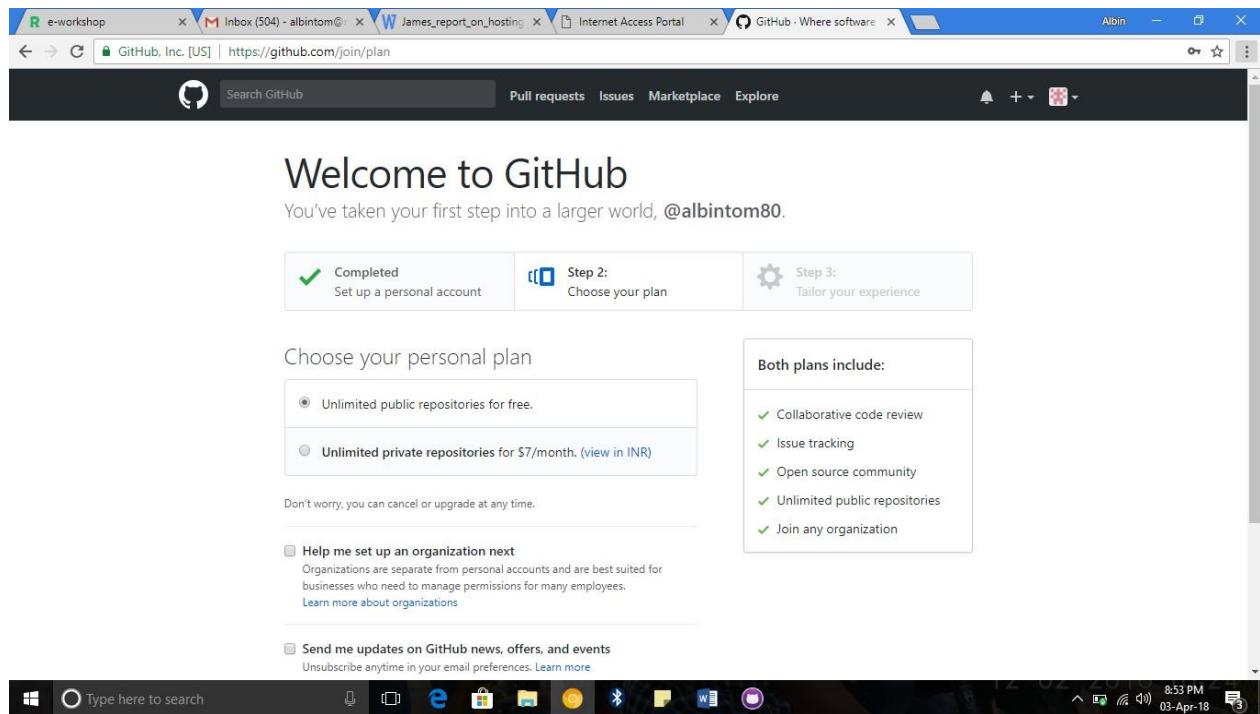
GitHub offers an on-premises version in addition to the well-known SaaS product. GitHub Enterprise supports integrated development environments and continuous integration tool integration, as well as a litany of third-party apps and services. It offers increased security and auditability than the SaaS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

## P2.2 Working with Git

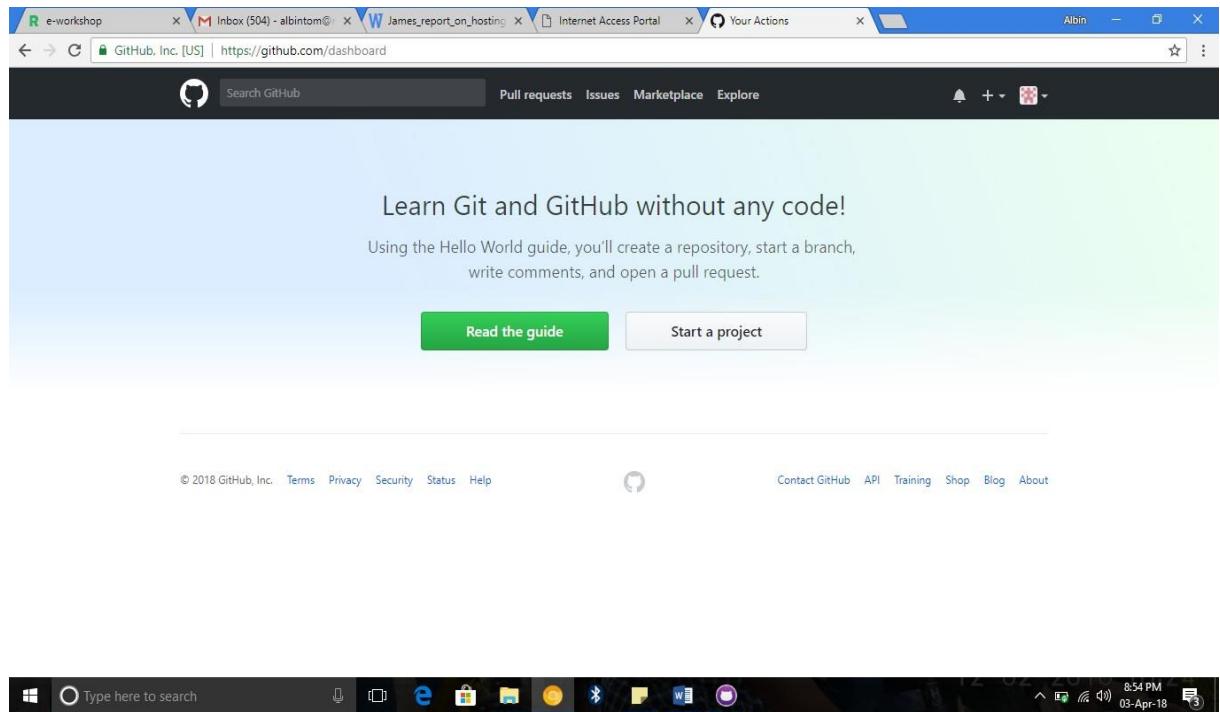
Sign in to GitHub



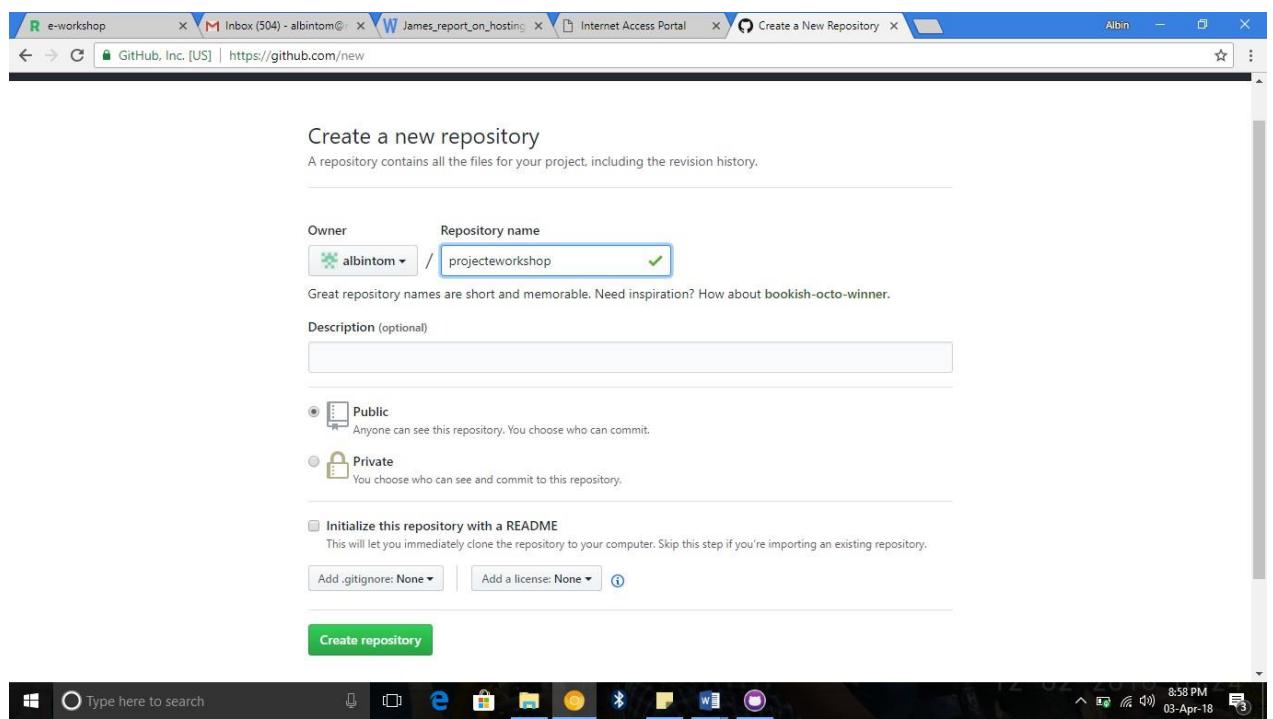
Once successfully sign in, set up personal account, choose your plan.



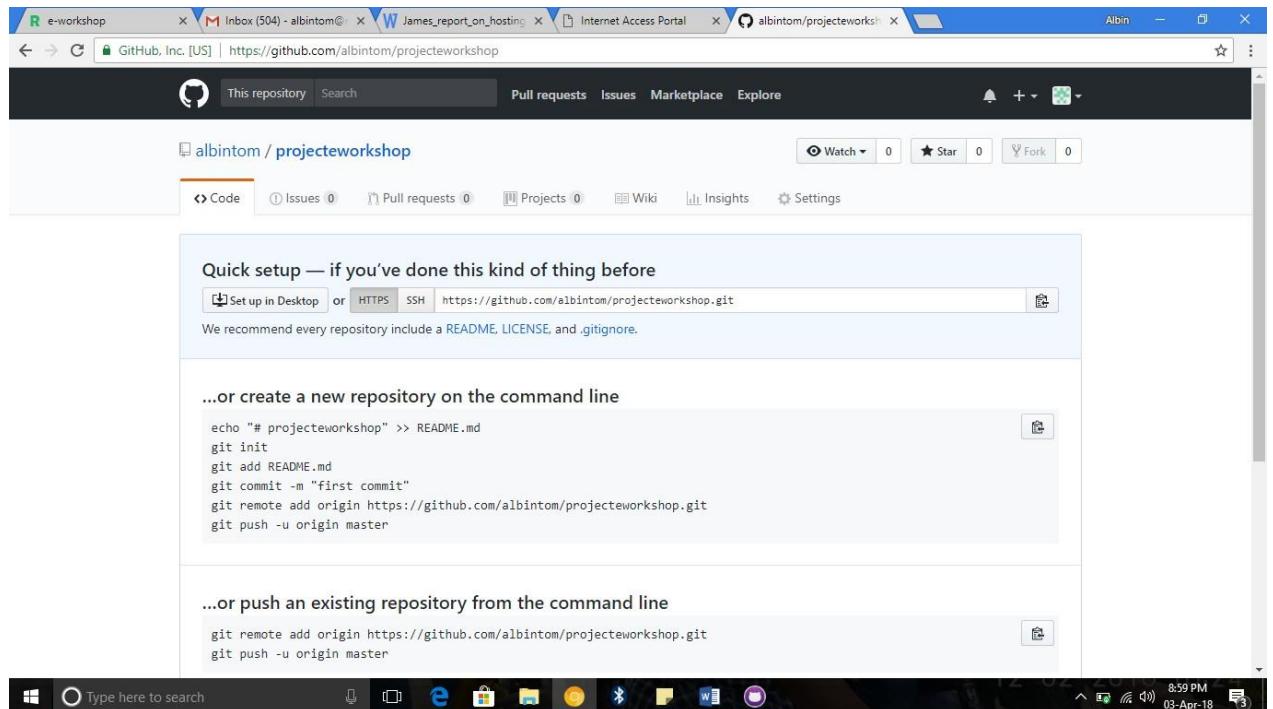
Once the account configuration is completed, you can access the home page



## Create a repository in GitHub



Once repository is completed, you can setup the repository



## **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 an 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 DoubleClick, 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](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](https://s3.amazonaws.com/drivers.mongodb.org/php/php_mongo-1.6.8.zip)

3. 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

4. Add the following line to your php.ini extension=php\_mongo.dll

5. 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

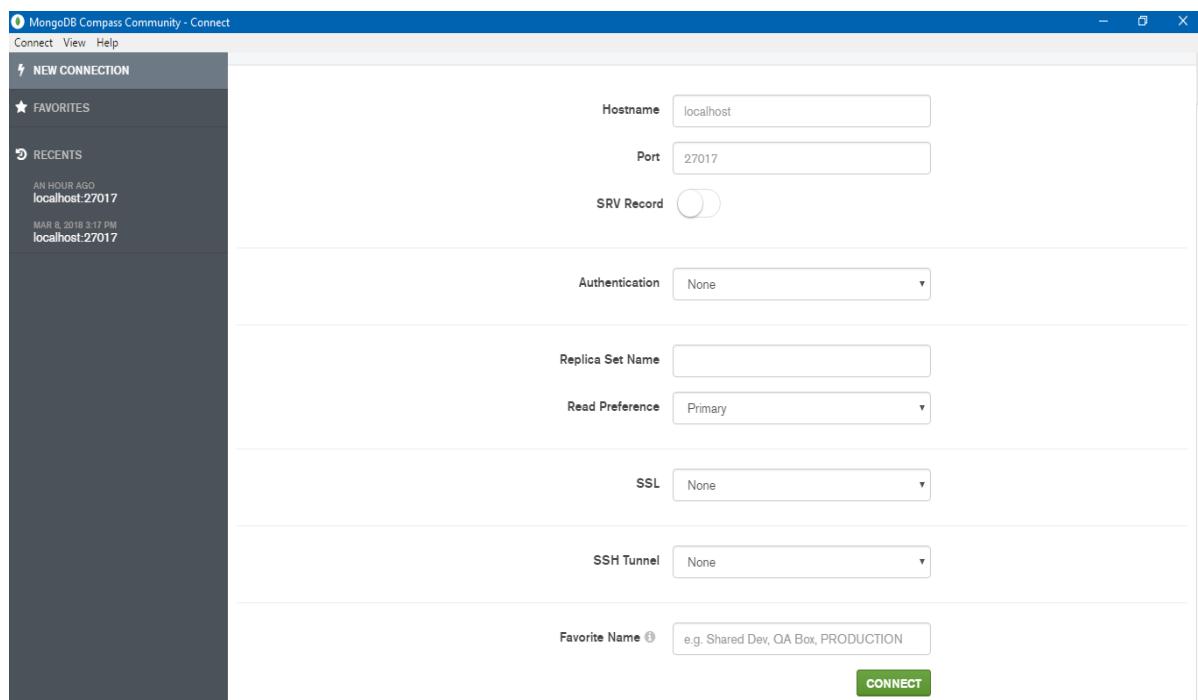
6. Create directory C:\data\db

7. Restart Apache server

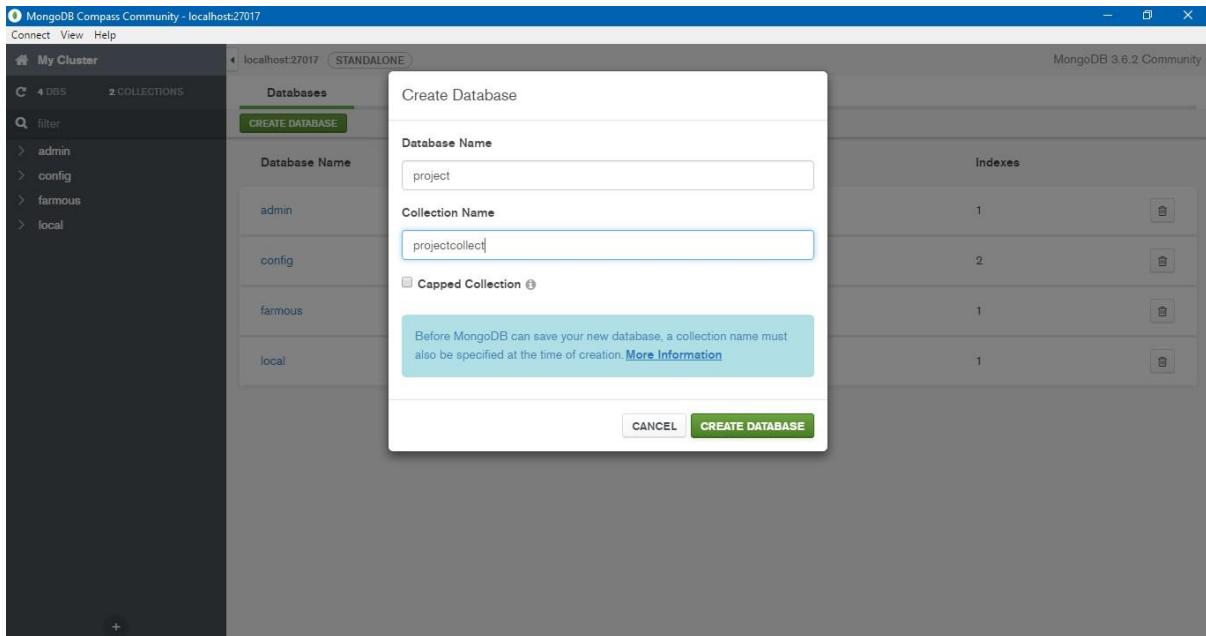
8. Open CMD and start MongoDB server by using command Mongod

### Working with MongoDB Server

1. Open the MongoDB Server (MongoDB Compass community: localhost)
2. Connect to localhost



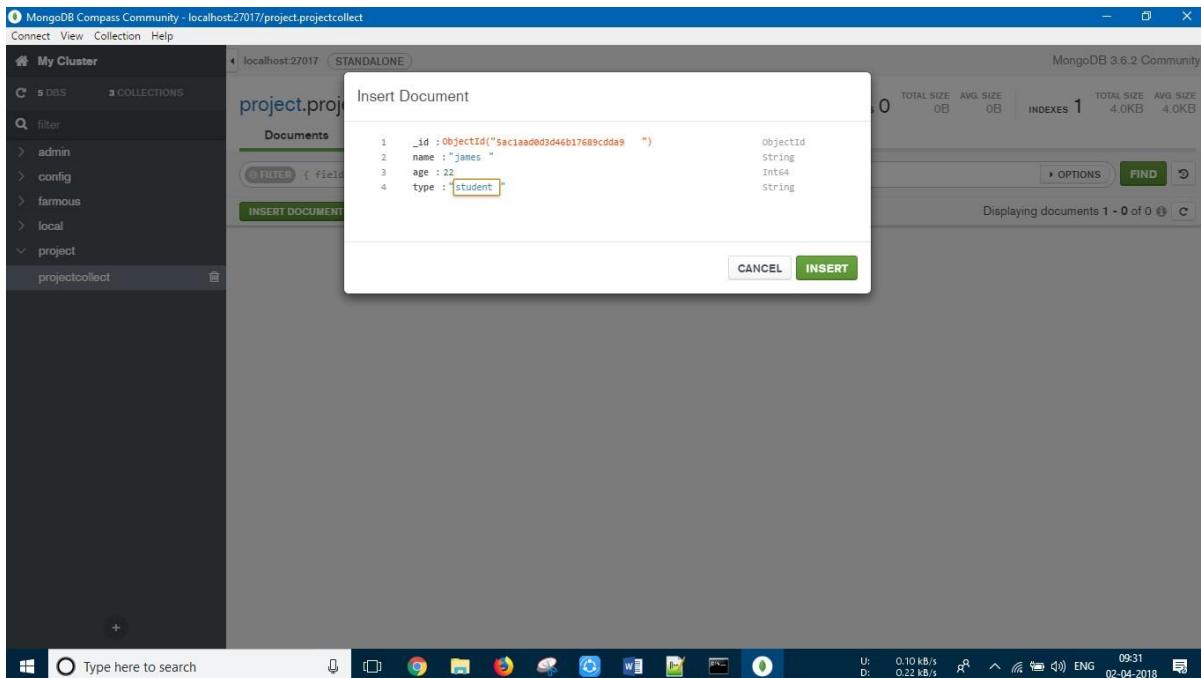
3. Once connected to the server, Create a database and collection as well. A collection in MongoDB is equivalent to RDBMS table



4. Once the database and collection are created, insert your documents into the collection.  
Documents in MongoDB is 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 ?>
```

## P3.2 Bigtable in GCP

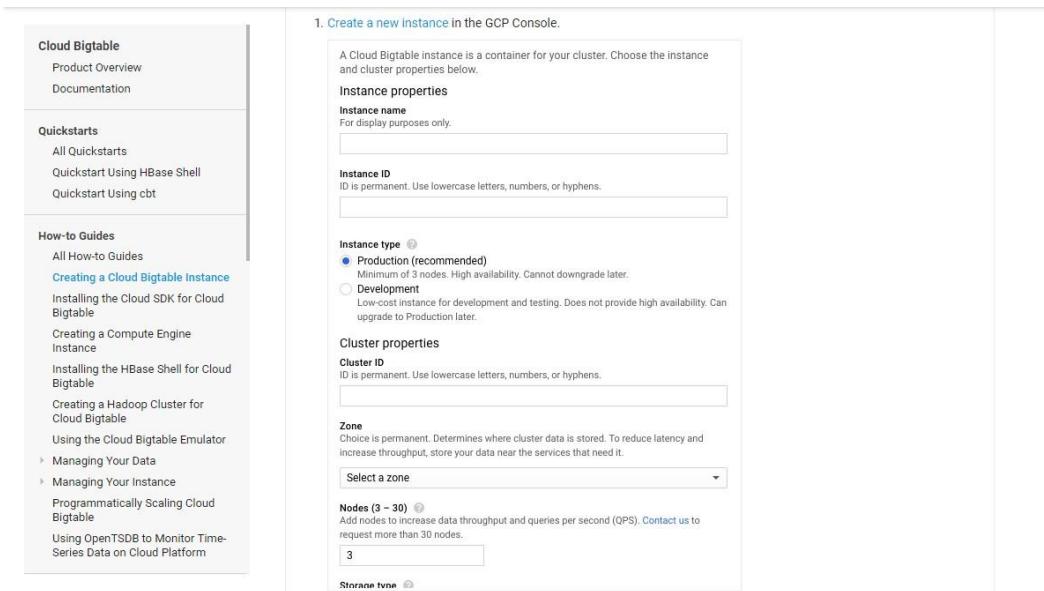
### P3.2.1 Introduction to Bigtable

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 petabytes 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 achieve high capacity. Google Bigtable serves as the database for applications such as the Google App Engine Datastore, 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, including the 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 Hypertable, an open source technology that is marketed in a commercial version as an alternative to HBase.

### P3.2.2 Implementation of Bigtable

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



- Installing the Cloud SDK for Cloud Bigtable

```
gcloud components update beta
```

```
gcloud config set project [PROJECT_ID]
```

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

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

## **PART4**

### **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.

## P4.1.2 Implementation of Google AdWords

1. Go to Google AdWords and sign into your Google account

Welcome to Google AdWords!

We'll help you sign up and start advertising in just a few steps.  
Experienced with AdWords? Skip the guided set-up.

What is your email address?  
albintom@mca.ajce.in

What is your website?  
www.eworkshop.ml

Hello, again. Next, click "Continue" to sign in to your Google Account and continue setting up your first campaign. Do you want to create a new AdWords account associated with this email address? [Click here](#).

[Continue](#)

For free support call: 1-800-419-0905  
[More international numbers](#)

albintom@mca.ajce.in

© 2018 Google | [Privacy Policy](#)

## 2: Add a new campaign

Overview Campaigns

All time Nov 29 – Dec 14, 2017

Campaigns

Settings Locations Change history

+ New campaign Load campaign settings

Find campaigns

Budget Status Campaign type Bid strategy

No campaigns match your filters

### 3: Select a campaign Type, Set your goal, set the results

The screenshot shows the Google Ads campaign setup process across three main sections:

- Campaign type:** A header "Select a campaign type" is followed by five options: "Search Network" (selected), "Display Network", "Shopping", "Video", and "Universal App". Each option includes a small icon and a brief description.
- Select the single goal that would make this campaign successful to you:** A sidebar lists "Sales" (selected), "Leads", and "Website traffic". A note states: "When you select a goal, you'll see recommended settings and features customized for your campaign's success. If you don't want a goal's recommendations, you can create your campaign without a goal."
- Setup details:** A note says "No goal selected for this campaign". It asks "Select the results you want to get from this campaign" and lists three options: "Get website visits", "Get phone calls", and "Get app downloads".

#### 4: Fill in the campaign details(name, network, location, budget)

The screenshot shows the Google AdWords interface for creating a new campaign. The top navigation bar includes the Google AdWords logo, customer ID (751-007-4993), and support information (1-800-419-091). The main section is titled "Your first campaign" with a sub-instruction: "A campaign focuses on a theme or a group of products. To create a campaign, you'll set a budget, choose your audience, and write your ad. Keep in mind, you won't be charged for selecting options, and you can always make changes later." Below this, three steps are listed: "About your business" (step 1, checked), "Your first campaign" (step 2, selected), and "Payment" (step 3). Step 2 details include:

- Your budget:** Rs.1.00 per day.
- Daily potential reach:** Search Network only. (3+ clicks, 31+ impressions).
- Locations:** India.
- Networks:** Search Network, Display Network.
- Keywords:** A list of 15 keywords including "appliances", "kitchen accessories", "kitchen gadgets", "kitchen appliances", "pots and pans", "home appliances", "kitchen equipment", "electrical appliances", "appliance stores", "appliances online", "best kitchen appliances", "appliance packages", "kitchen appliance packages", "shop", "small kitchen appliances", and "kitchen appliances online".

#### 5. Set Your bid

This screenshot shows step 3 of the campaign setup process: "Set your bid". It displays a single input field for the bid amount, with a note: "AdWords automatically sets your bids to help you get as many clicks as possible within your budget." The rest of the page is mostly blank, indicating the next steps in the process.

#### 6. Write your ad

This screenshot shows step 4 of the campaign setup process: "Write your ad". It displays a "Text ad" template with the following content:

```

    vehicle workshop - services
    Ad www.eworkshop.ml
    shopping
  
```

Below the ad template, there is a checkbox: "Send me personalized tips and recommendations to improve my ad performance." At the bottom of the screen is a blue "Save and continue" button.

## 7. Provide your payment information

**Your ad**

vehicle workshop - services  
Ad www.eworkshop.ml  
shopping

Your ad could be formatted differently to fit a user's device, but your ad text will stay the same.

**Daily potential reach**  
3+ Clicks

**Budget and bidding**  
Rs. 1.00 daily budget  
AdWords automatically sets your bids to help you get as many clicks as possible within your budget.

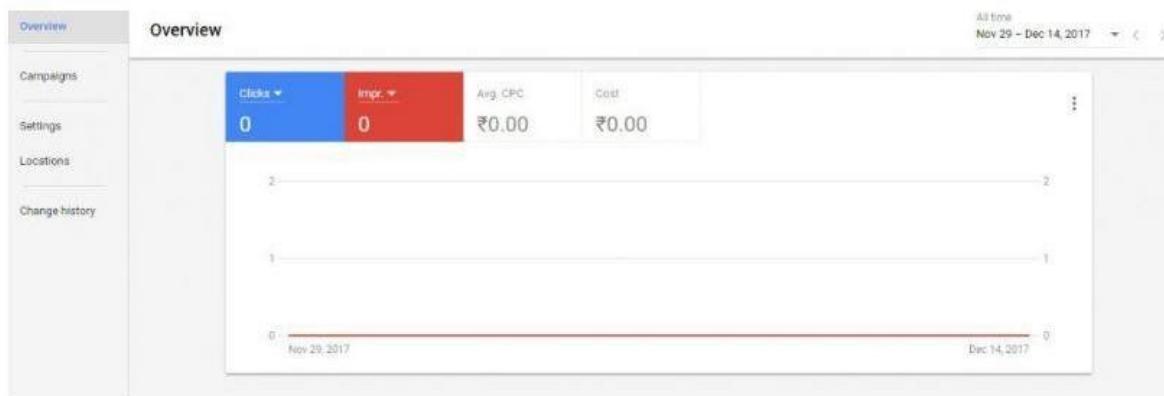
**Payment information**

Billing country: India

Time zone: (GMT+05:30) India Standard Ti...

Introductory offer: [Field] Apply

You can view the overall status of your ad here



## 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.

#### P4.2.2 Implementation of AdSense

1. Go to AdSense Custom Search Ads Generator

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 page. It includes sections for 'Required' settings (Container ID: afscontainer1, Width (px): 700), 'Configuration Settings' (Type of ad: BTF, Number of ads: 2), and 'Fonts' (Font family: ARIAL, Title font size: 12 PX, Description font size: 12 PX). The interface has a blue header bar with tabs for HOME, GUIDES, REFERENCE, and CODE GENERATOR. The bottom of the screen shows a Windows taskbar with various icons and a system tray indicating the date and time as 03-Apr-18 at 10:37 PM.

3. Preview your Ad unit.

The screenshot shows the 'Ad Unit 1 Preview' section. It displays ads from Google related to hotels, including links to Hotels.com and Booking.com. The Hotels.com ad features a star rating of 4.4 and offers cheap hotels with rewards. The Booking.com ad offers lowest price guarantees and instant confirmation. At the bottom, there is a 'Get the Code' button. The interface has a blue header bar with tabs for HOME, GUIDES, REFERENCE, and CODE GENERATOR. The bottom of the screen shows a Windows taskbar with various icons and a system tray indicating the date and time as 03-Apr-18 at 10:38 PM.

4. Place the javascript code in your <head> tag and HTML content in your <body> tag.

The screenshot shows a browser window with the URL <https://developers.google.com/custom-search-ads/docs/code-generator?authuser=0>. The page is titled "AdSense Custom Search Ads" and features a "CODE GENERATOR" tab. It displays two code snippets:

**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']=i*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
};
```

5. Refresh your page to check whether the Ads is working or not.

## 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 user 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.

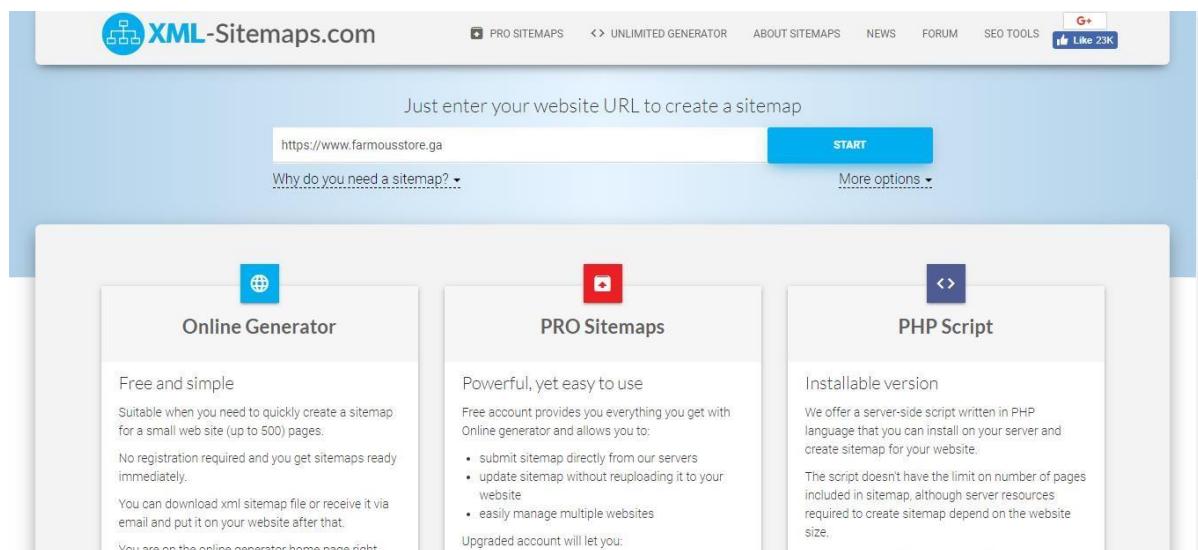
#### How GWT can help monitor your website's performance

- It verifies that Google can access the content on your website.
- 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.
- It helps you deliver and evaluate content that offers users a more visual experience.
- You can maintain your website without disrupting its presence in search results.
- It allows you to discover and eliminate malware or spam problems that may not be easily found through other means.

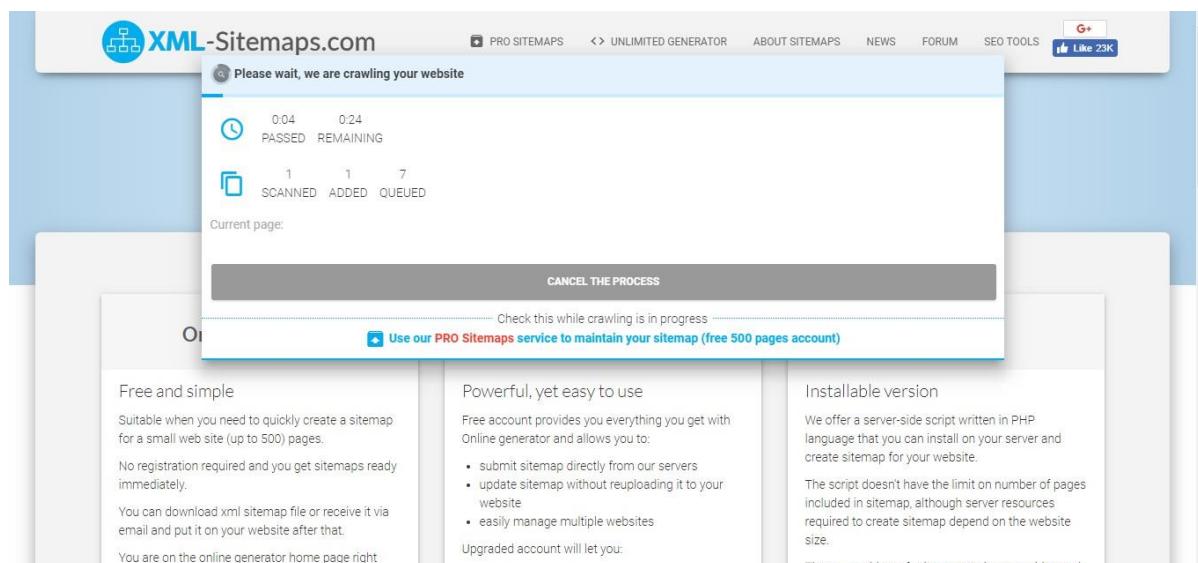
### P4.3.2 Implementation of Sitemap

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



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



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

URL	Last Submitted	URLs Submitted	Last Crawl	Status
https://eworkshop.ml/	15-03-2018	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  SUBMIT

Fetch as Bingbot to see how the page's code appears to Bing  
Markup Validator reports on any structured markup found on the page  
SEO Analyzer to discover areas of your site which may need work to comply with SEO best practices.

### 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 to 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 (i.e. <http://mydomain.com/robots.txt>) 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/

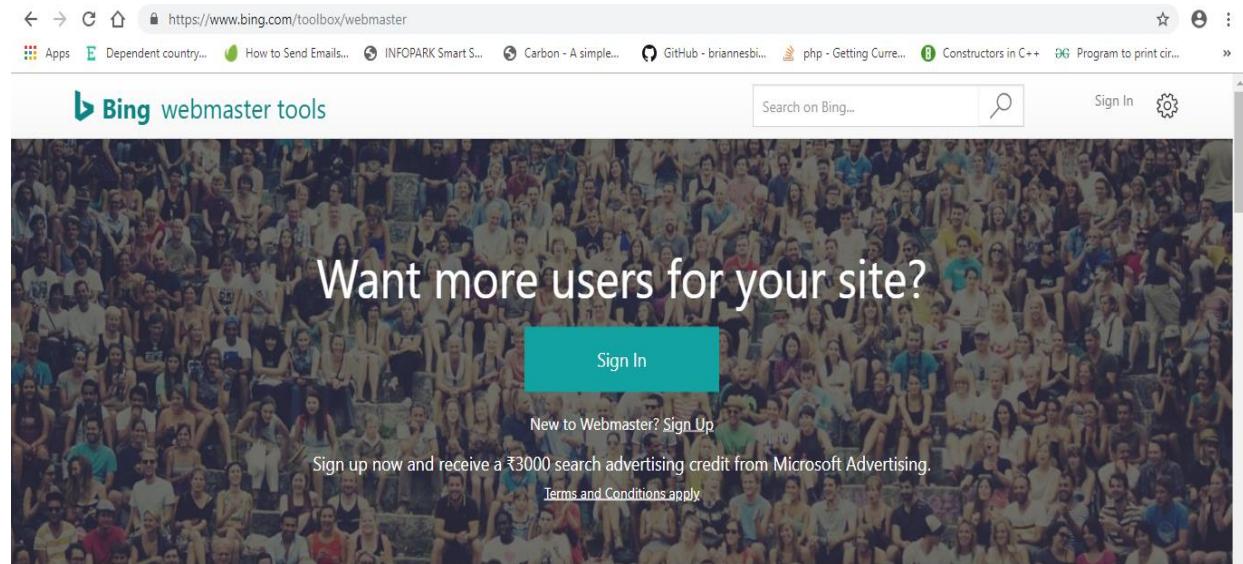
## P4.4 Bing Webmaster Tool

### 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.

## Implementation of Bing Webmaster Tool

### 1. Sign in to Bing webmaster



Get insights into your site

### 2. Goto My Sites (User-friendly interface to maintain multiple websites from a single account.) and add your website URL

Add a Site  
Enter site URL

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?

#### Recent Blog Posts

Webmaster Blog

Privacy and Cookies   Legal   Advertise   Help   Support

Search Blog

Feedback

**My Sites**

Add a Site  
http://rents.ml **ADD**

**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

**ABOUT MY WEBSITE**

URL \*  
http://rents.ml/

Add a sitemap <http://rents.ml/sitemap.xml>

When do you receive the most traffic to this site for your local time of the day? [?](#)

**ABOUT ME**

First Name Annu	Last Name Jacob
Email *	jacobannu555@gmail.com
Job role Student	
Company or organization Name Amal Jyothi College of E	Company or organization size <input type="text"/>
Industry Technology	
Contact phone 8606005637	

### 3. 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

The screenshot shows the Bing Webmaster interface with the URL <https://www.bing.com/webmaster/configure/verify/ownership/?url=http://rents.ml/>. The page title is "Bing webmaster" and the sub-section is "Verify ownership for: rents.ml".

**Option 1: Place an XML file on your web server**

1. Download [BingSiteAuth.xml](#)
2. Upload the file to <http://rents.ml/BingSiteAuth.xml>
3. Confirm successful upload by visiting <http://rents.ml/BingSiteAuth.xml> in your browser
4. Click the verify button below

Buttons: 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="595F71E185372436A57D84C95693B5D8" />
```

An example:

```
<html>
  <head>
    <meta name="msvalidate.01" content="595F71E185372436A57D84C95693B5D8" />
    <title>Your SEO optimized title</title>
  </head>
  <body>
    page contents
  </body>
</html>
```

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

The screenshot shows the Bing Webmaster interface for adding website information. The URL is <https://www.bing.com/webmaster/home/addsite?from=mysites&addurl=http%3A%2F%2Frents.ml>.

Input fields:
 

- Name: 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](#)

## SEO Analyzer

SEO analyzer tool to give webmasters or bloggers an SEO analysis on a page-by-page basis. This tool analyzes the website social media ranking, site usability, online reputation, meta tags, keywords, and site speed. Examine your webpage and get your analysis report together with your rankings from this SEO tool. Improve your web pages and increase your search engine ranking.

1. Go to Dashboard > Diagnostics & Tools > SEO Analyzer > Enter your Website page URL and Analyze.

## **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 backlisting'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-based website protection. Its 360 -degree monitoring finds and fixes threats, prevents future attacks, accelerates website performance and meets PCI compliance standards for businesses 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 fewer than 0.01% false positives.
- **Web Application Firewall**
  - Secure websites from automated and human targeted attacks, prevent scrapers, 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 (PCI DSS) 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 erasure. 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', 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 hotlink 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 any way.

## 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} !-f
RewriteRule ^([^\.]+)\$ \$1.php [NC,L]
```

## P6.3 ModSecurity Tools

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

**ModSecurity Core RuleSet (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 the ModSecurity Apache module in order to use this interface.

- If your system runs EasyApache 3, use WHM's *EasyApache 3* interface (*WHM >> Home >> Software >> EasyApache 3*) to install the ModSecurity Apache module.

- If your system runs EasyApache 4, use WHM's *EasyApache 4* interface (*WHM >> Home >> Software >> EasyApache 4*) or the yum install ea-apache24-mod\_security2 command to install the ModSecurity Apache module

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

The screenshot shows the WHM interface under the 'Software' section. On the left, a sidebar lists 'Transfers', 'Themes', 'Packages', 'DNS Functions', 'SQL Services', 'IP Functions', and 'Software'. The 'Software' option is selected. The main area displays several icons and links:

- 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 interface under the 'Security Center' section. On the left, a sidebar lists 'Server Configuration', 'Support', 'Networking Setup', 'Security Center', 'Server Contacts', 'Resellers', 'Service Configuration', 'Locales', 'Backup', and 'Clusters'. The 'Security Center' option is selected. The main area displays several icons and links:

- 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 (Web Host Manager) interface under the Security Center. The left sidebar has a 'ModSecurity™ Vendors' link selected. The main content area is titled 'ModSecurity™ Vendors' and 'Manage Vendors'. It features a search bar, a page size selector (10), and navigation buttons (First, Last). A table lists a single vendor entry: 'OWASP ModSecurity Core Rule Set V3.0' from 'SpiderLabs OWASP V3 curated ModSecurity rule set'. A note says 'This vendor is not installed.' with a '+ Install' button. Below the table are 'Back To Top' and 'Add Vendor' buttons.

### Step 4: Add COMODO ModSecurity Apache Rule Set

The screenshot shows the 'Add Vendor' form in WHM. The left sidebar has a 'ModSecurity™ Vendors' link selected. The main form has a title 'Add Vendor' and instructions: 'Use this interface to add a Vendor for ModSecurity. For more information on how to create a Vendor, visit our documentation.' It includes a 'Vendor Configuration URL' input field containing 'https://example.com/example/meta\_example.yaml', a 'Load' button, and several text input fields for 'Vendor Name', 'Vendor Description', 'Vendor Documentation URL', 'Vendor Report URL', and 'Path'. At the bottom are 'Save' and 'Cancel' buttons.

ModSecurity™ Vendors

Add Vendor

Use this interface to add a Vendor for ModSecurity.  
For more information on how to create a Vendor, visit our documentation.

**Vendor Configuration URL**

`https://waf.comodo.com/doc/meta_comodo_apache.yaml`

The file name should begin with meta\_ followed by the short vendor identification code, and finally the .yaml extension.  
Example: `https://example.com/example/meta_example.yaml`

**Vendor Name**  
COMODO ModSecurity Apache Rule Set

**Vendor Description**  
COMODO ModSecurity Rules for Apache

**Load**

### Add COMODO ModSecurity Apache Rule Set

Load

**Vendor Name**  
COMODO ModSecurity Apache Rule Set

**Vendor Description**  
COMODO ModSecurity Rules for Apache

**Vendor Documentation URL**  
`https://waf.comodo.com`

**Vendor Report URL**  
`https://waf.comodo.com/api/cpanel_feedback?source=0&rule_se`

**Path**  
`/etc/apache2/conf.d/modsec_vendor_configs/comodo_apache`

**Save**   **Cancel**

## Successfully added COMODO ModSecurity Apache Rule Set

The screenshot shows the WHM Security Center interface under the 'ModSecurity™ Vendors' section. A success message at the top states: "Success: You have successfully added 'COMODO ModSecurity Apache Rule Set' to the vendor configuration list." Below this, a table lists vendors. The 'COMODO ModSecurity Apache Rule Set' is listed as a 'Third Party' vendor, with its status set to 'On'. The table includes columns for Vendor, Provider, Enabled, Updates, and Sets Included.

Vendor	Provider	Enabled	Updates	Sets Included
OWASP ModSecurity Core Rule Set V3.0	SpiderLabs OWASP V3 curated ModSecurity rule set		<span>On</span>	This vendor is not installed.
COMODO ModSecurity Apache Rule Set	COMODO ModSecurity Rules for Apache	Third Party	<span>On</span>	34 / 34

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

The screenshot shows the WHM Security Center interface under the 'ModSecurity™ Vendors' section. A success message at the top states: "Success: You have successfully added 'COMODO ModSecurity Apache Rule Set' to the vendor configuration list." Below this, a confirmation dialog box asks: "Are you sure that you wish to install the 'OWASP ModSecurity Core Rule Set V3.0' vendor?" It contains two buttons: "Install and Restart Apache" (highlighted in blue) and "Cancel". The table below shows the vendor details again.

Vendor	Provider	Enabled	Updates	Sets Included
OWASP ModSecurity Core Rule Set V3.0	SpiderLabs OWASP V3 curated ModSecurity rule set		<span>On</span>	This vendor is not installed.
COMODO ModSecurity Apache Rule Set	COMODO ModSecurity Rules for Apache	Third Party	<span>On</span>	34 / 34

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

The screenshot shows the 'Manage Vendors' page of the ModSecurity™ Vendors section. A success message at the top states: "Success: You have successfully installed the vendor: OWASP ModSecurity Core Rule Set V3.0". The table below lists two vendors:

Vendor	Provider	Enabled	Updates	Sets Included	
COMODO ModSecurity Apache Rule Set COMODO ModSecurity Rules for Apache	Third Party	<input type="button" value="On"/> <input type="button" value="Off"/>	<input type="button" value="On"/> <input type="button" value="Off"/>	34 / 34	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
OWASP ModSecurity Core Rule Set V3.0 SpiderLabs OWASP curated ModSecurity rule set	CP	<input type="button" value="On"/> <input type="button" value="Off"/>	<input type="button" value="On"/> <input type="button" value="Off"/>	22 / 22	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

### Rules List by the two Vendors COMODO and OWASP

The screenshot shows the 'Rules List' page of the ModSecurity™ Tools section. The table displays rules from the OWASP vendor:

Status	Staging	Vendor	ID	Message	Actions
Enabled	Published	OWASP3	900990	<pre>#  # -- [[ End of setup ]] # # The CRS checks the tx.crs_setup_version variable to ensure that the setup # has been loaded. If you are not planning to use this setup template, # you must manually set the tx.crs_setup_version variable before including # the CRS rules/* files. # # The variable is a numerical representation of the CRS version number. # E.g., v3.0.0 is represented as 300. # SecAction "id:900990,phase:1,nolog,pass,t:none,setvar:tx.crs_setup_version=302"</pre>	<input type="button" value="Copy"/> <input type="button" value="Disable"/>

**Home » Security Center » ModSecurity™ Tools » Rules List**

Enabled	Published	OWASP3	953011	
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
Enabled	Published	OWASP3	953110	PHP source code leakage

**WHD News Change Log Log Out (root)**

**Home » Security Center » ModSecurity™ Tools » Hits List**

Date	Host	Source	Severity	Status	Rule ID	Action
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

**Home » Security Center » ModSecurity™ Tools » Hits List**

Date	Host	Source	Severity	Status	Rule ID	Action
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

**Request:** POST /logcon.php?query=%5C..%5C..%5CWEB-INF%5Cweb.xml

**Action:**

**Description:** Access denied with code 403 (phase 2).

**Justification:** Pattern match "(?:\x5c|(%?:(?:%0:(?:[2aq]f|5c|9v)|%?(?:[19p]c|8s|af))|2(%?:(?:%025af|1%259c)|2f|5c)|%46|f)|(?:%?:(?:%8%8)?0%8|e)0%80%6a|bg%q)f|%3(%?:(?:%6|4)f|5%663)|u(%?221%56|002f|EFC8|F025)|1u|5c)|0x(%?2f|5c)|\V|)(?:%?:(?:%c%80|8)%8)?0%8..." at REQUEST\_URI\_RAW.

**Report this hit**

- Testing Vulnerabilities with sqlmap kali Linux Tool

```

Applications ▾ Places ▾ Terminal ▾ Sat Apr 7, 8:31PM•
root@kali: ~

File Edit View Search Terminal Help
--sqlmap-shell      Prompt for an interactive sqlmap shell
--wizard            Simple wizard interface for beginner users

[!] to see full list of options run with '-hh'
root@kali:~# sqlmap --url="https://eworkshop.ml/project/spare_order.php?category_id=95"

[!] legal disclaimer: Usage of sqlmap for attacking targets without prior mutual consent is illegal. It is the end user's responsibility to obey all applicable local, state and federal laws. Developers assume no liability and are not responsible for any misuse or damage caused by this program

[*] 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
[20:28:22] [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'
[20:28:27] [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 (XMLEType)'
[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'

[!] 210801: COMODO WAF: Request Indicates a Security Scanner Scanned the Site | eworkshop.ml | F | 2
[!] 211190: COMODO WAF: Remote File Access Attempt | eworkshop.ml | F | 2
[!] 210801: COMODO WAF: Request Indicates a Security Scanner Scanned the Site | eworkshop.ml | F | 2
[!] 210801: COMODO WAF: Request Indicates a Security Scanner Scanned the Site | eworkshop.ml | F | 2
[!] 210801: COMODO WAF: Request Indicates a Security Scanner Scanned the Site | eworkshop.ml | F | 2
[!] 210801: COMODO WAF: Request Indicates a Security Scanner Scanned the Site | eworkshop.ml | F | 2

```

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

Date	Host	Source	Severity	Status	Rule ID
2018-04-07 11:00:43	eworkshop.ml	117.239.249.114	CRITICAL	403	<a href="#"># 210801: COMODO WAF: Request Indicates a Security Scanner Scanned the Site   eworkshop.ml   F   2</a>
2018-04-07 11:00:43	eworkshop.ml	117.239.249.114	CRITICAL	403	<a href="#"># 211190: COMODO WAF: Remote File Access Attempt   eworkshop.ml   F   2</a>
2018-04-07 11:00:44	eworkshop.ml	115.248.7.13	CRITICAL	403	<a href="#"># 210801: COMODO WAF: Request Indicates a Security Scanner Scanned the Site   eworkshop.ml   F   2</a>
2018-04-07 11:00:44	eworkshop.ml	117.239.249.114	CRITICAL	403	<a href="#"># 210801: COMODO WAF: Request Indicates a Security Scanner Scanned the Site   eworkshop.ml   F   2</a>
2018-04-07 11:00:44	eworkshop.ml	117.239.249.114	CRITICAL	403	<a href="#"># 210801: COMODO WAF: Request Indicates a Security Scanner Scanned the Site   eworkshop.ml   F   2</a>

## 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 security 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 top 10 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 world's 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 the result of a continuous evolution of the platform, from WHoppiX to WHAX, to BackTrack, and now to a complete penetration testing framework leveraging many features of Debian GNU/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.

### P6.5.2 Implementation of Kali Linux - Penetration Testing Tools

#### 1. Testing with The Mole

Mole is a programmed automatic SQL Injection exploitation tool. Just by giving a vulnerable URL and a substantial string on the site it can recognize the injection and exploit it, either by utilizing the union method or a boolean question-based system. The Mole utilizes a command-based interface, permitting the client to show the activity he needs to perform effectively. The CLI likewise gives auto-completion on both commands and command arguments, making the user sort as less as could be expected under the possibilities.

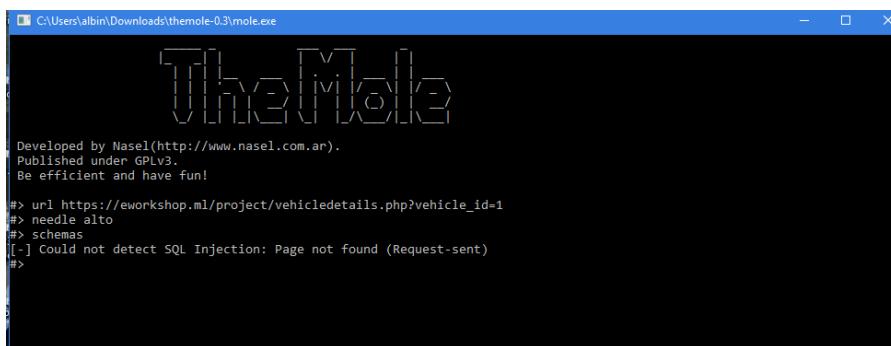
- Download and open themole.exe file
- Once a command-line interface is opened, use the following commands
- url http://www.yourwebsite.com/page.php?id=numeric\_value

```
C:\Users\albin\Downloads\themole-0.3\mole.exe
TheMole[Mole]
Developed by Nasel(http://www.nasel.com.ar).
Published under GPLv3.
Be efficient and have fun!
#> url https://eworkshop.ml/project/vehicledetails.php?vehicle_id=1
#>
```

- Now find out any keywords available on the website, it may anything means any word find you on this site, I'm using '**alto**'.
- needle alto

```
C:\Users\albin\Downloads\themole-0.3\mole.exe
TheMole[Mole]
Developed by Nasel(http://www.nasel.com.ar).
Published under GPLv3.
Be efficient and have fun!
#> url https://eworkshop.ml/project/vehicledetails.php?vehicle_id=1
#> needle alto
#> schemas
[-] Could not detect SQL Injection: Page not found (Request-sent)
#>
```

- finally, use command schemas to fetch tables



TheMole

```
C:\Users\albin\Downloads\themole-0.3\mole.exe
Developed by Nasel(http://www.nasel.com.ar).
Published under GPLv3.
Be efficient and have fun!

#> url https://eworkshop.ml/project/vehicledetails.php?vehicle_id=1
#> needle alto
#> schemas
[-] Could not detect SQL Injection: Page not found (Request-sent)
#>
```

### Output:

Could not Exploit SQL Injection

## 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.
- When using Linux, SELinux should be considered.

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, guardservices, ircd, psyBNC, ptlink.
- Securing /tmp /var/tmp /dev/shm

## **Part 7**

# **Technology Frameworks**

## P7.1 ASP.NET MVC

### Introduction

ASP.NET MVC is an 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.

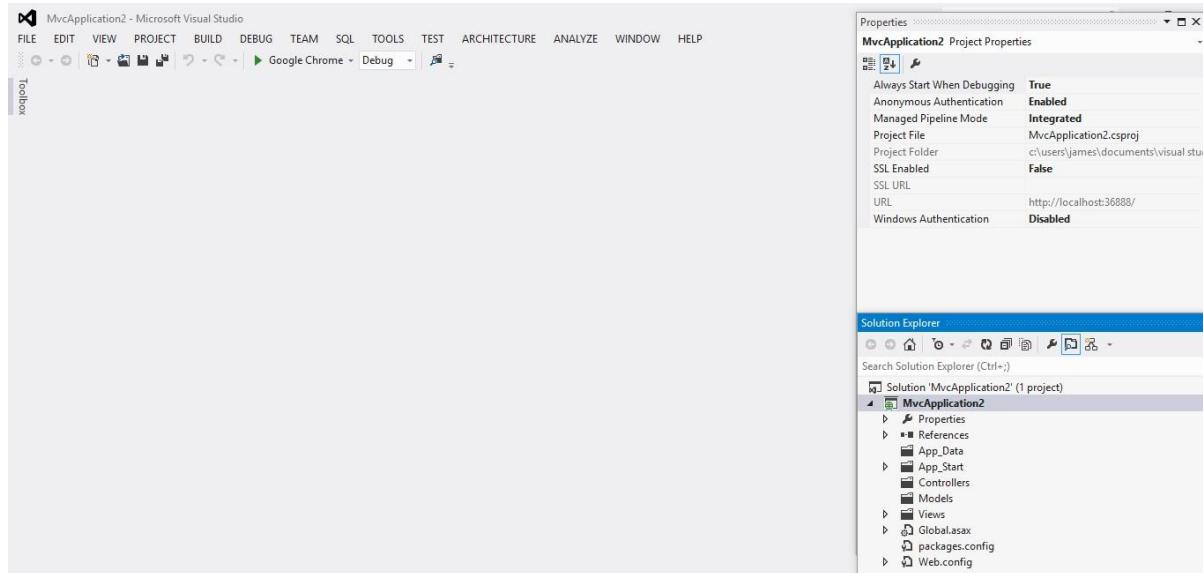
The MVC architectural pattern separates the user interface (UI) of an application into three main parts.

- **The Model** – A set of classes that describes the data you are working with as well as the business logic.
- **The View** – Defines how 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.

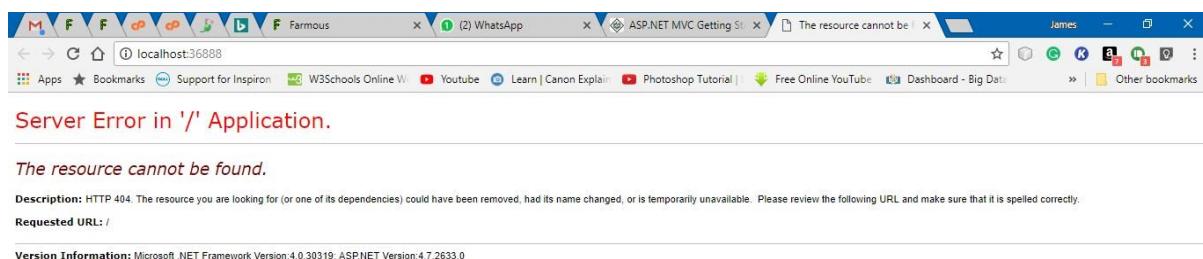
### Implementation of ASP.Net MVC

- Download and install Microsoft Visual Studio 2012 and onwards
- 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.



## Add Controller

- To remove the 404 Not Found error, 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:

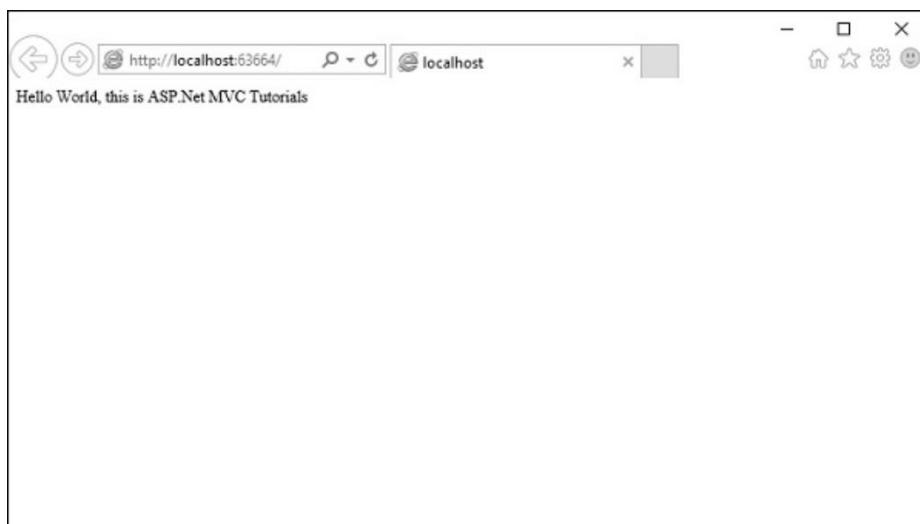
- Code Editor:** Displays the `DefaultController.cs` file with the following code:

```
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" with files like DefaultController.cs, App\_Data, Global.asax, and Web.config.
- Properties Window:** Shows project properties for "MvcApplication2" with settings like "Always Start When Debugging" set to True, "Anonymous Authentication" set to Enabled, and "Managed Pipeline Mode" set to Integrated.

- 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.

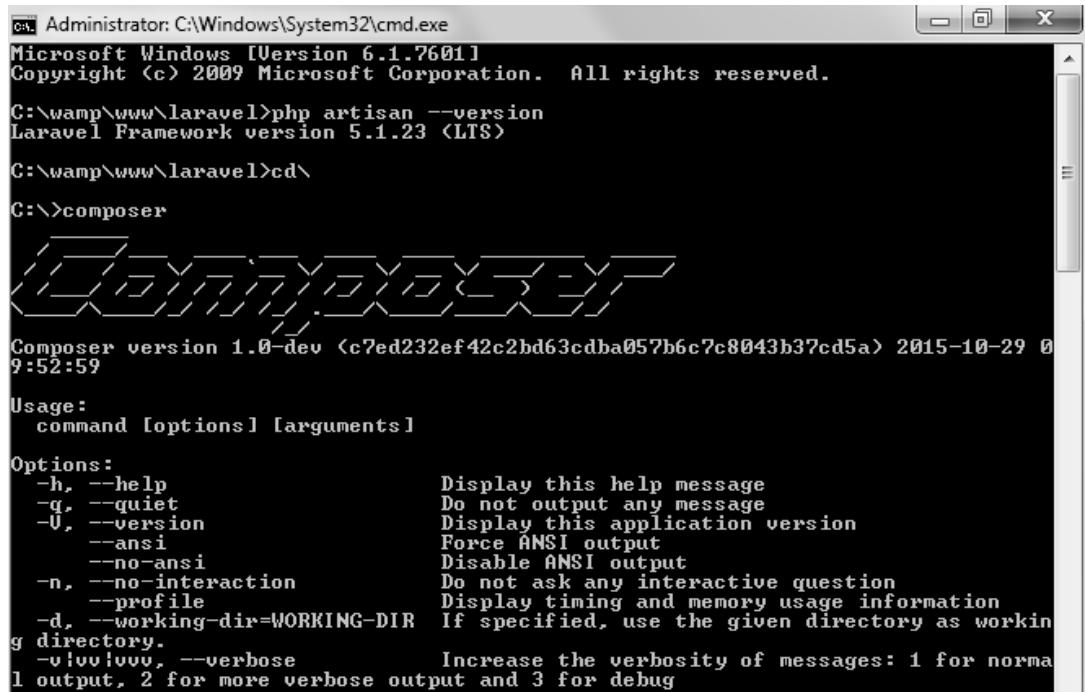
### 2.1 Installation

For managing dependencies, Laravel uses composer. Make sure you have a Composer installed 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
The logo is a decorative graphic composed of a grid of lines forming a stylized letter 'C' shape, with some additional lines extending downwards and to the right.

Composer version 1.0-dev (c7ed232ef42c2bd63cdba057b6c7c8043b37cd5a) 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|vv|vvv, --verbose   Increase the verbosity of messages: 1 for normal
  1 output, 2 for more verbose output and 3 for debug
```

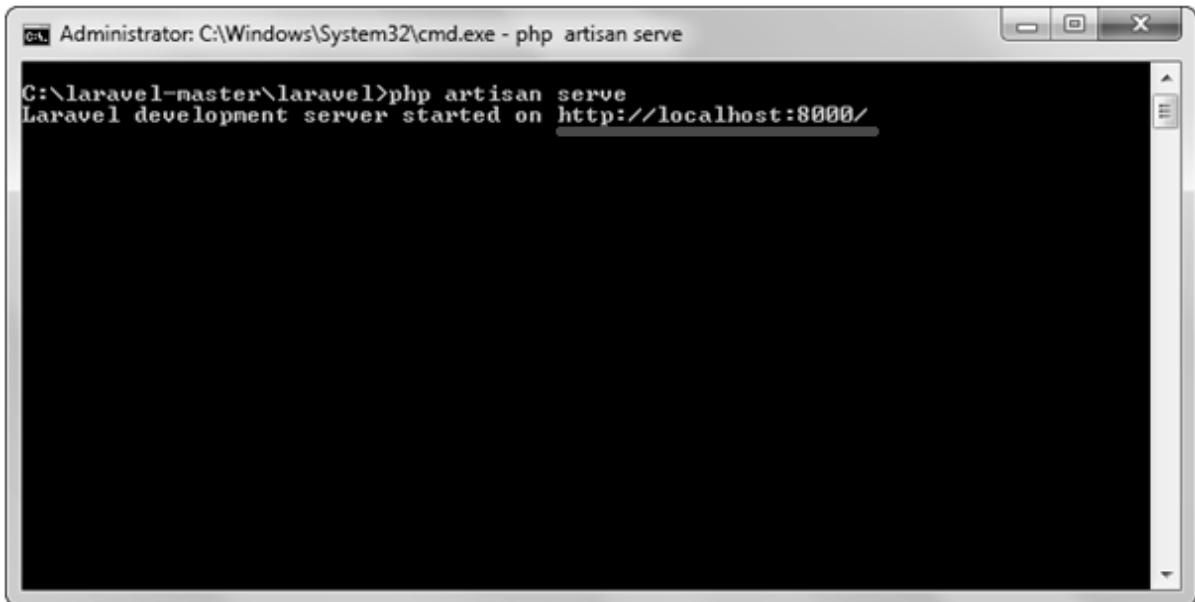
**Step 3:** Create a new directory anywhere in your system for your new Laravel project. After that, move to path where you have created the new directory and type the following command there to install Laravel.

```
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:



```
Administrator: C:\Windows\System32\cmd.exe - php artisan serve
C:\laravel-master\laravel>php artisan serve
Laravel development server started on http://localhost:8000/
```

**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 has 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
```

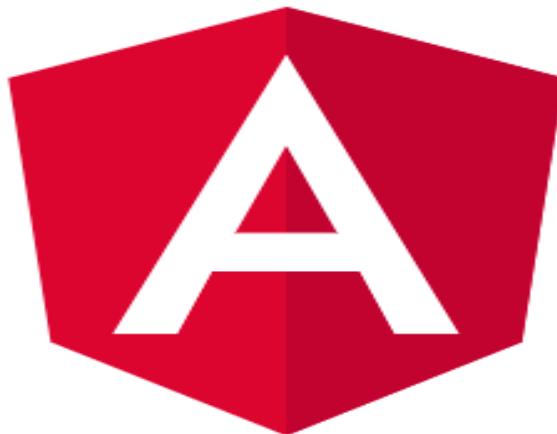
```
ng serve --open
```

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!



### P7.4 Android

**Android** is a software package and linux based operating system for mobile devices such as tablet computers and smartphones. 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, Eclair, Donut etc .

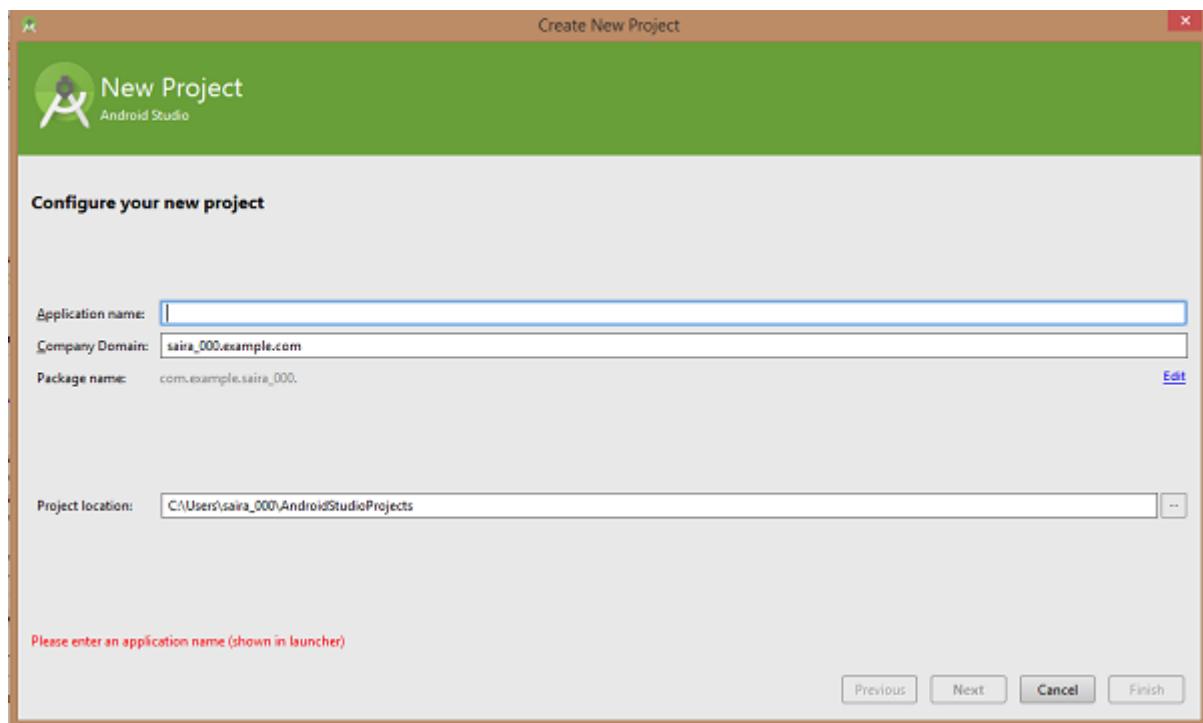
#### Creating Android Application

The first step is to create a simple Android Application using Android studio. When you click

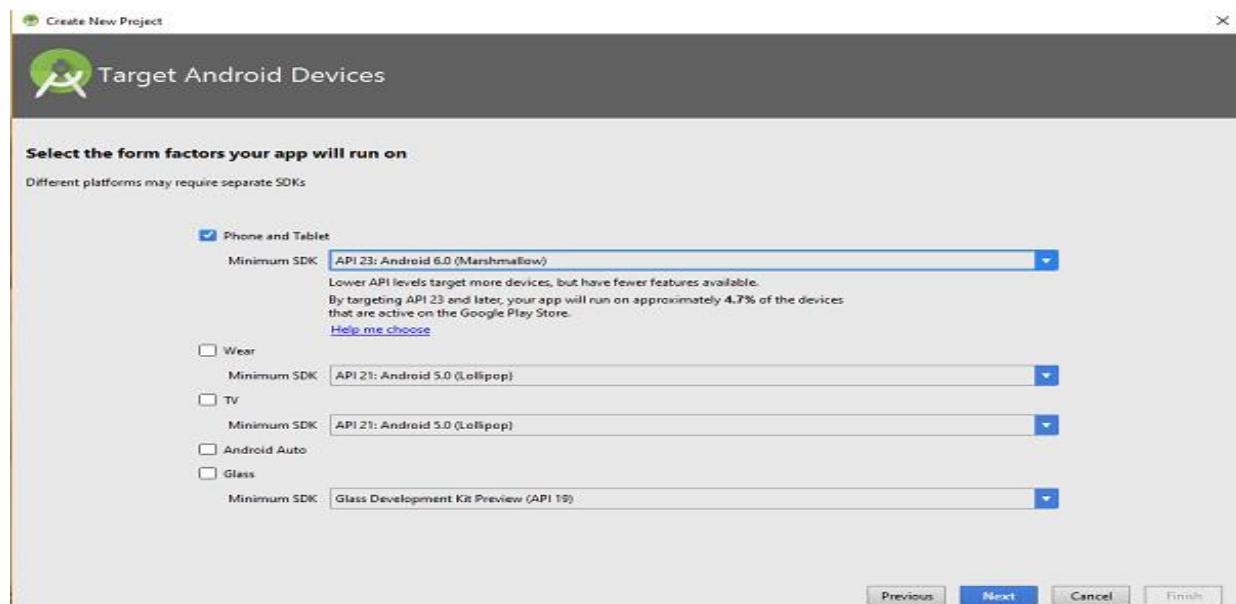
on Android studio icon, it will show screen as shown below



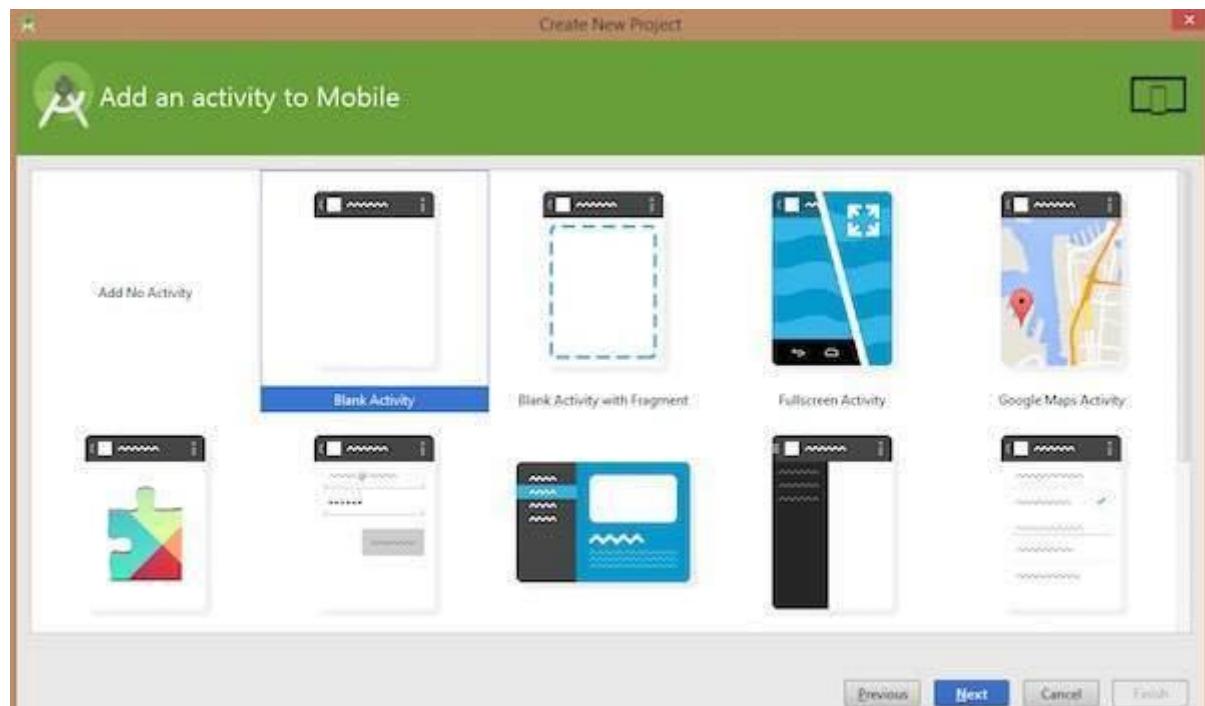
You can start your application development by calling start a new android studio project. in a new installation frame should ask Application name, package information and location of the project –



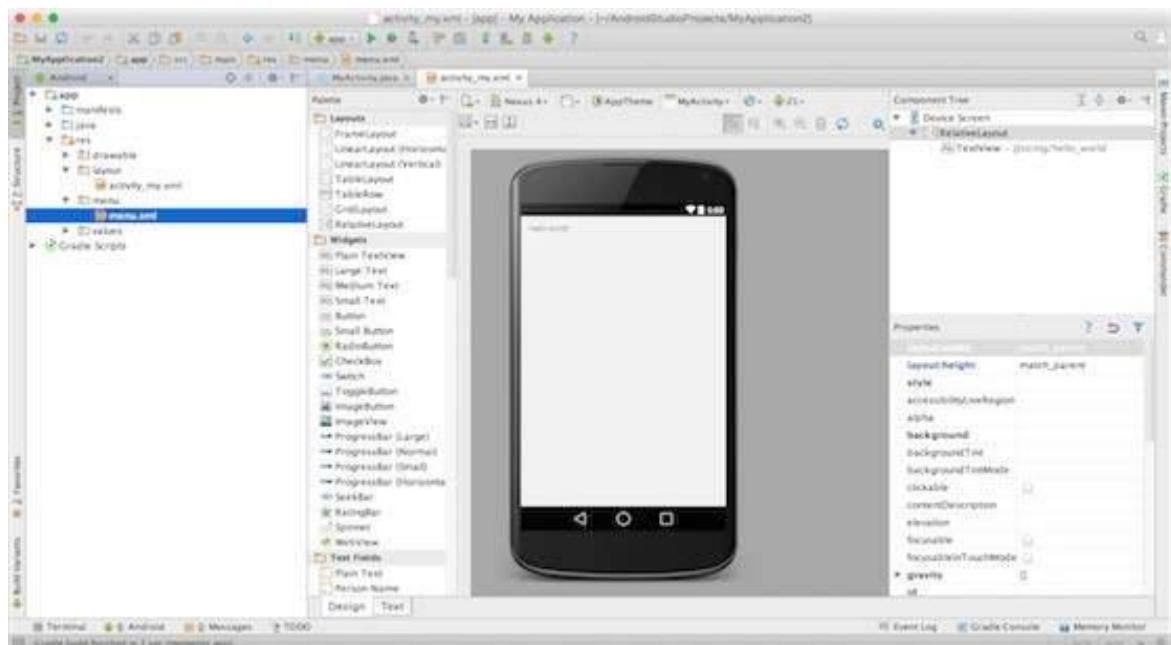
After entered application name, it going to be called select the form factors your application runs on, here need to specify Minimum SDK, in our tutorial, I have declared as API23: Android 6.0(Marshmallow) –



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

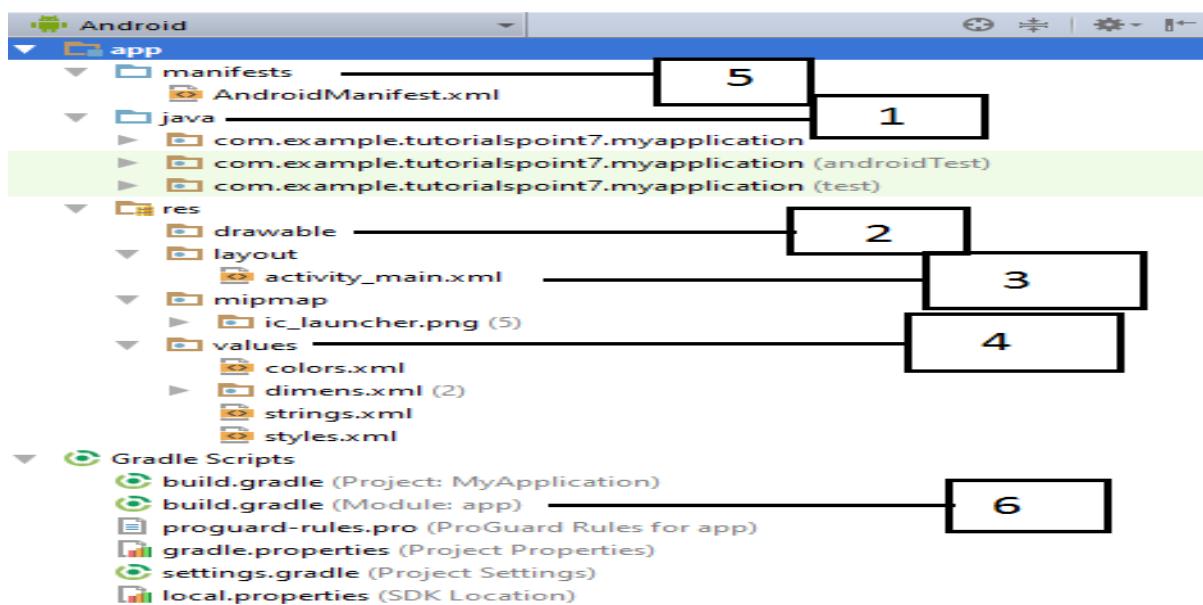


At the final stage it going to be open development tool to write the application code.



### Anatomy of Android Application

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



Sr.No.	Folder, File & Description
1	<p><b>Java</b></p> <p>This contains the <b>.java</b> 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><b>res/drawable-hdpi</b></p> <p>This is a directory for drawable objects that are designed for high-density screens.</p>
3	<p><b>res/layout</b></p> <p>This is a directory for files that define your app's user interface.</p>
4	<p><b>res/values</b></p> <p>This is a directory for other various XML files that contain a collection of resources, such as strings and colours definitions.</p>
5	<p><b>AndroidManifest.xml</b></p> <p>This is the manifest file which describes the fundamental characteristics of the app and defines each of its components.</p>
6	<p><b>Build.gradle</b></p> <p>This is an auto generated file which contains compileSdkVersion, buildToolsVersion, applicationId, minSdkVersion, targetSdkVersion, versionCode, versionName</p>

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 "HelloWorld". 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 –



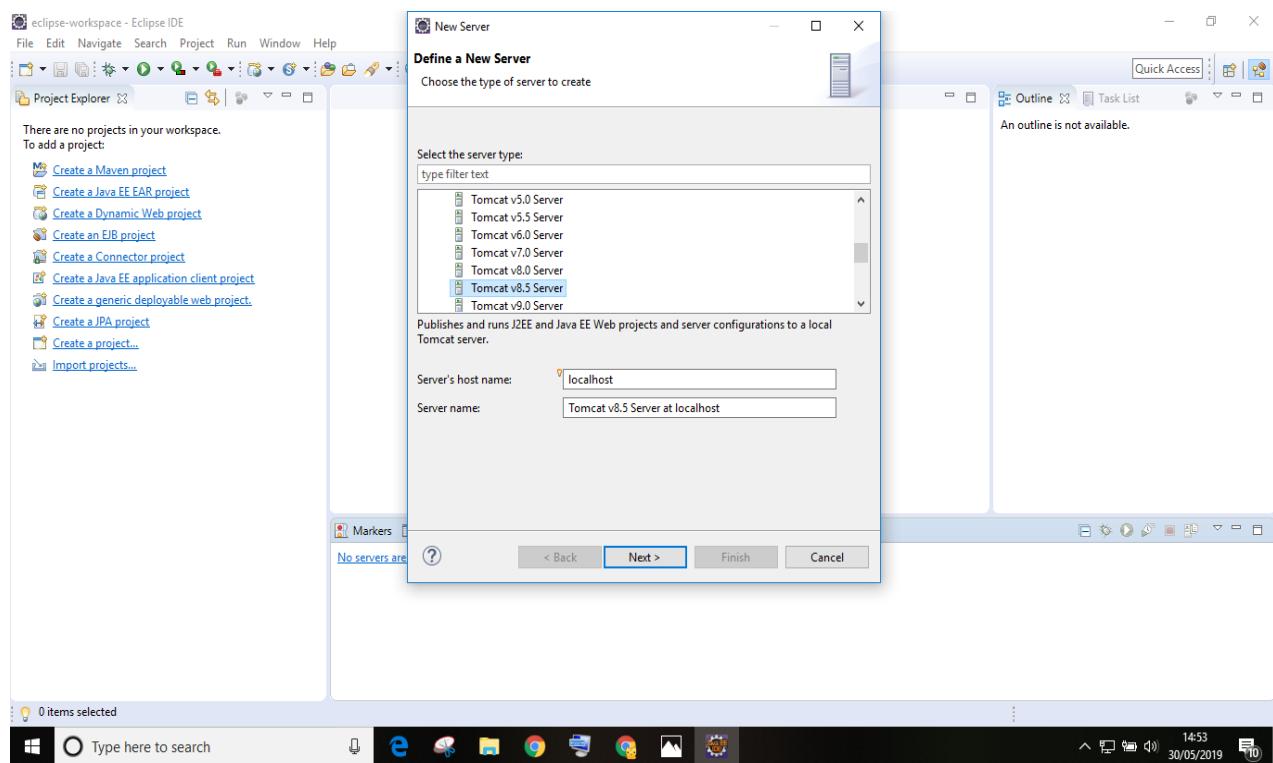
## P7.5 Java Spring

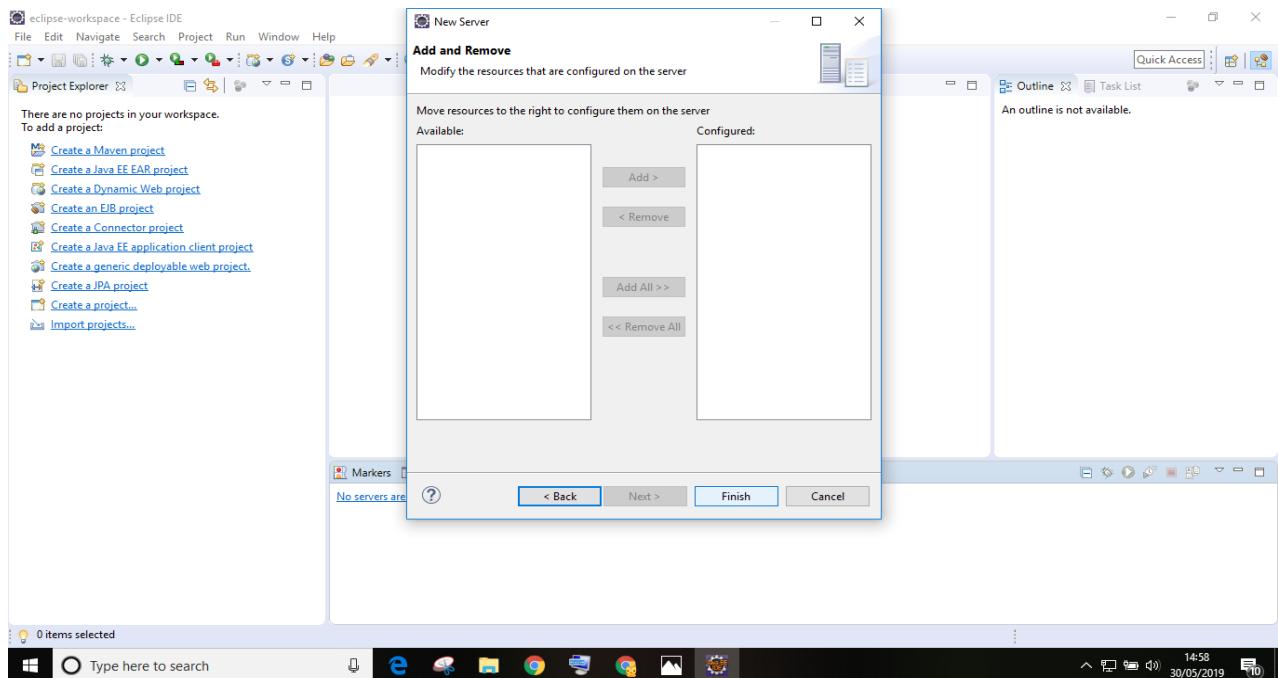
### P7.5.1 Introduction to Java Spring

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.

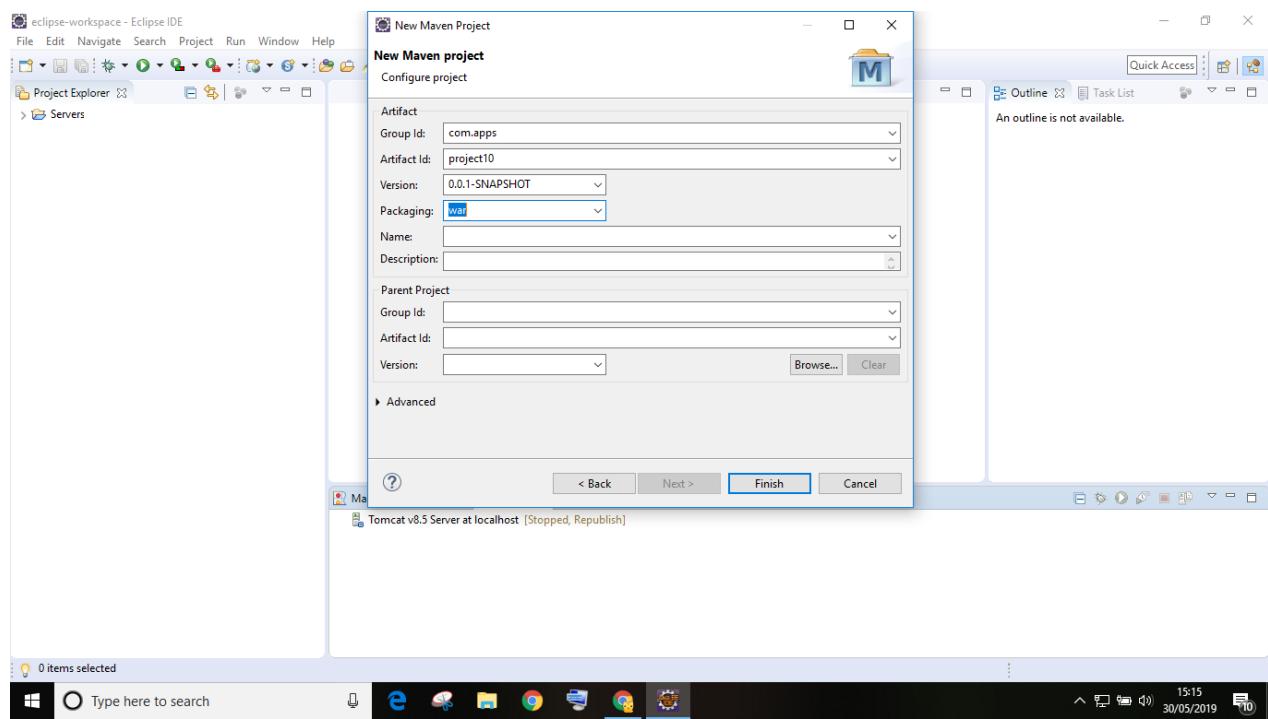
## Sample Program Implementation

### Step1: Install JDK 1.8 and set Tomcat server

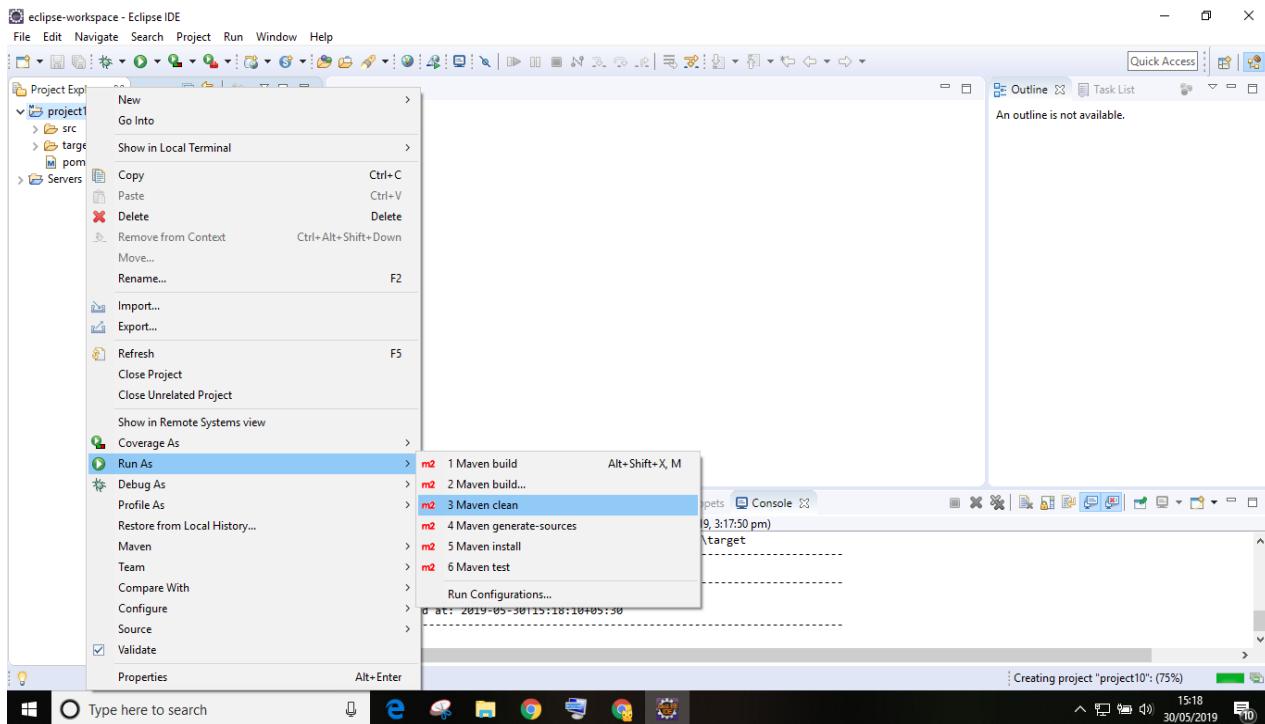




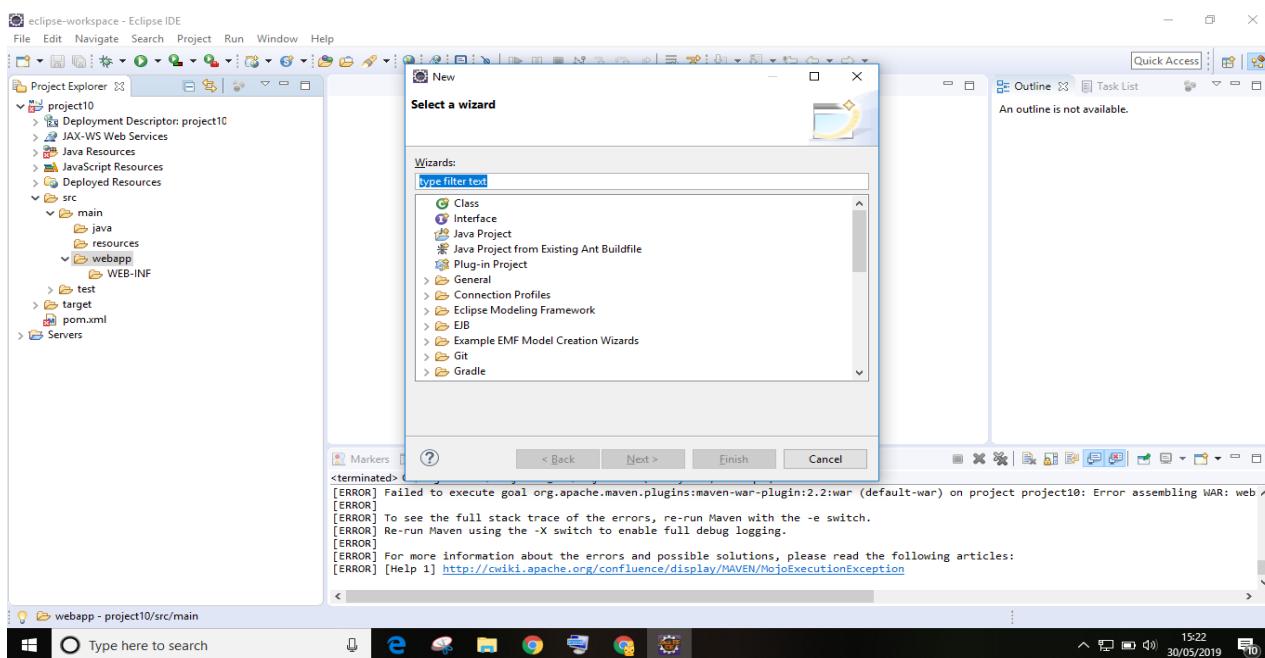
**Step2:** Start Maven project – file-> new -> maven



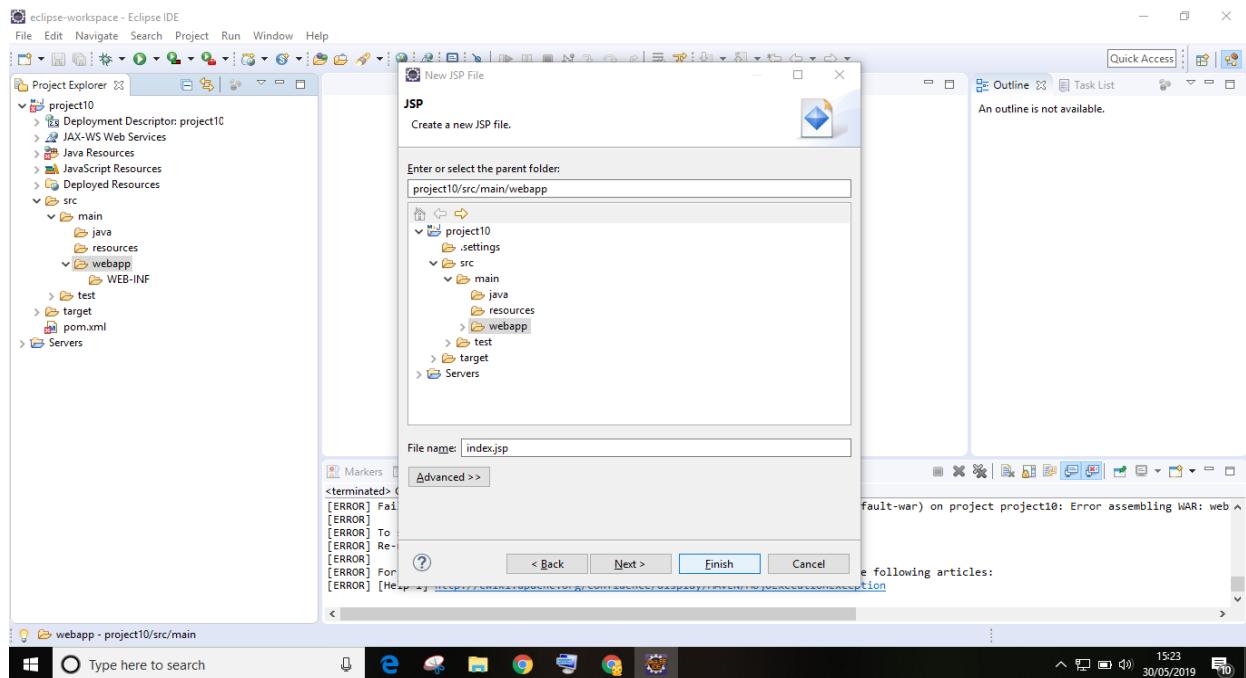
### Step3: Build your maven project



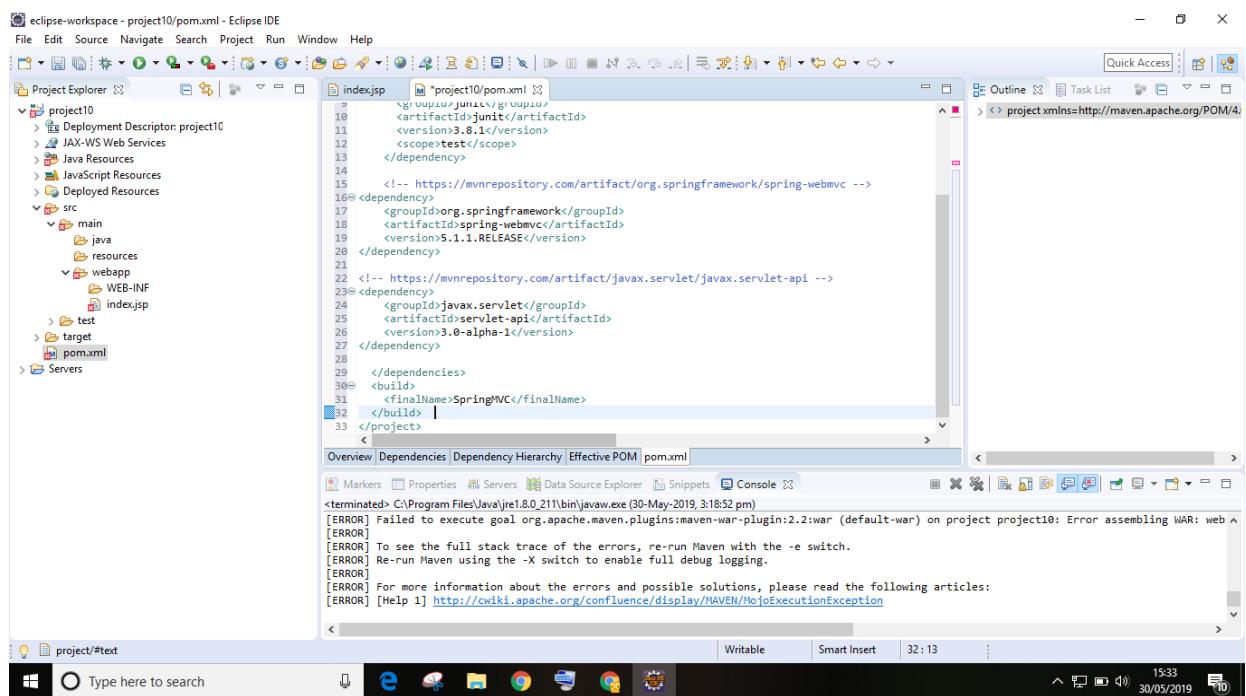
### Step4: Add a folder in webapp and the folder name is WEB-INF



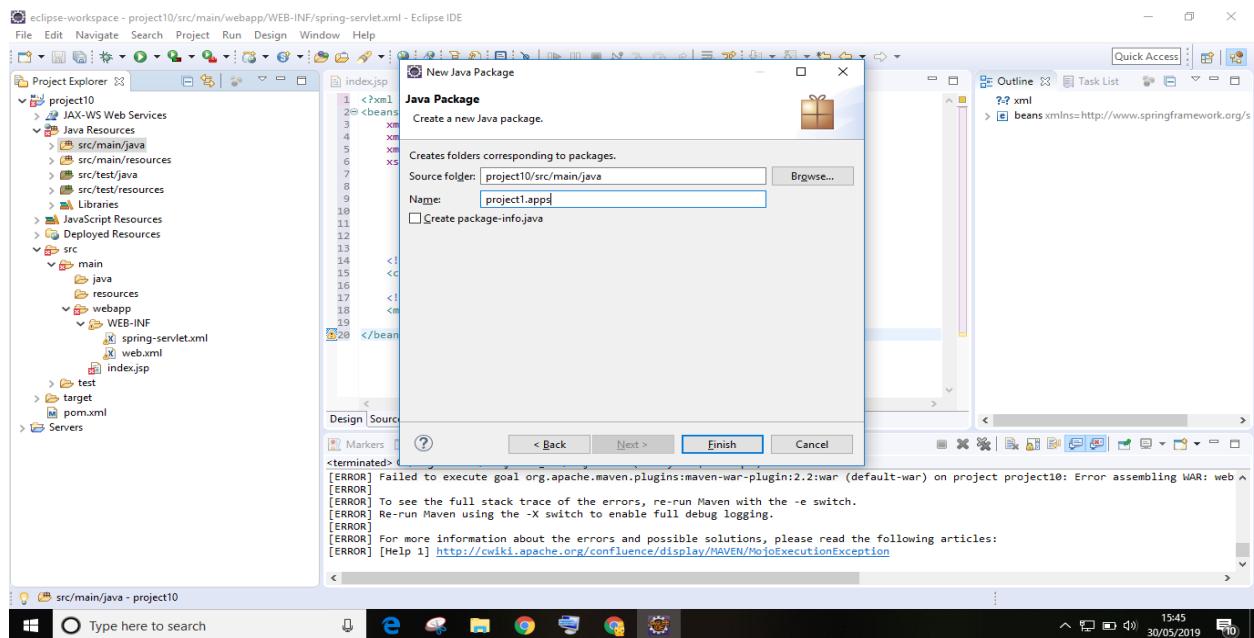
**Step5:** Click WEB-INF ->Ctrl+N -> select jsp file -> name the file with index.jsp



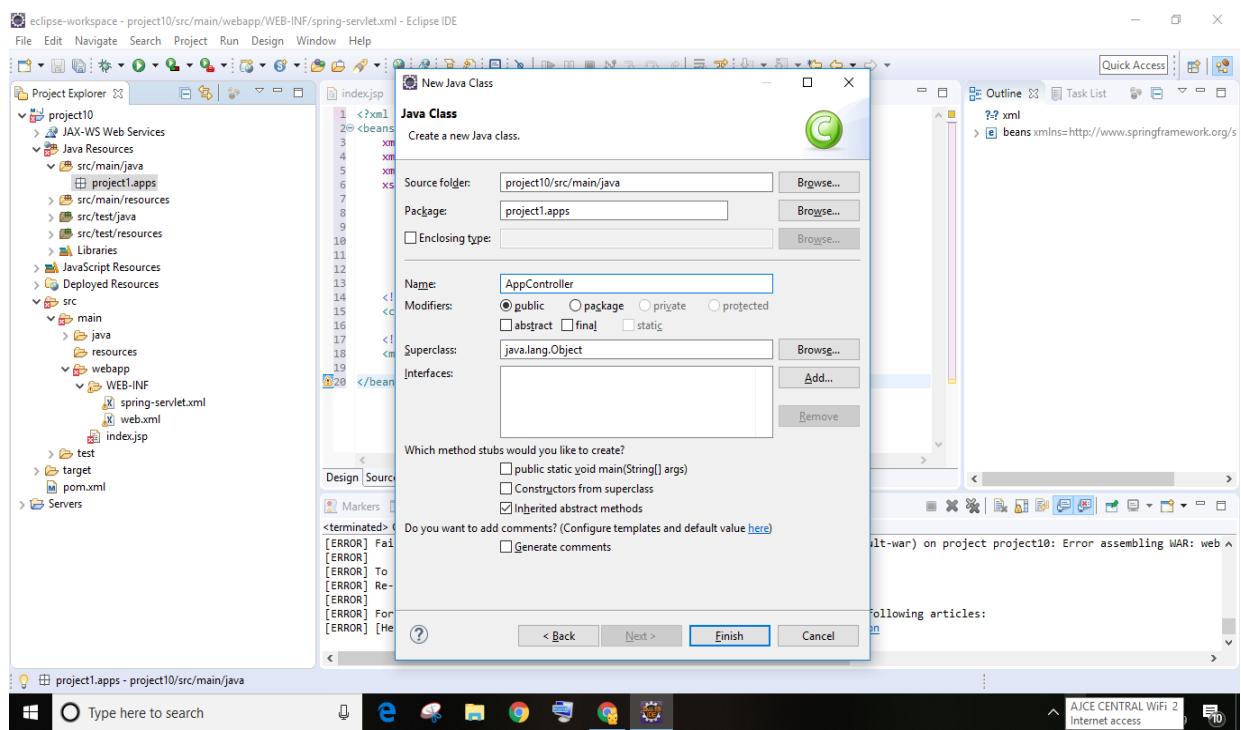
**Step6:** Set Pom file



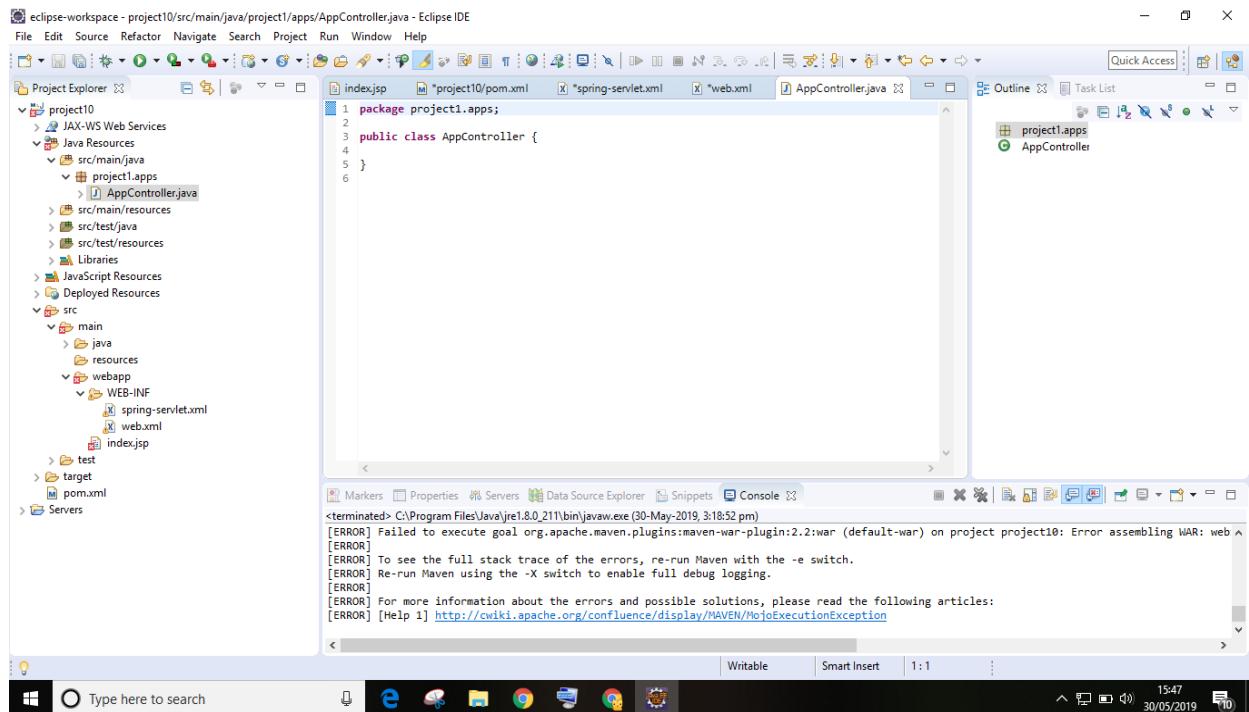
## Step7: Create java packages



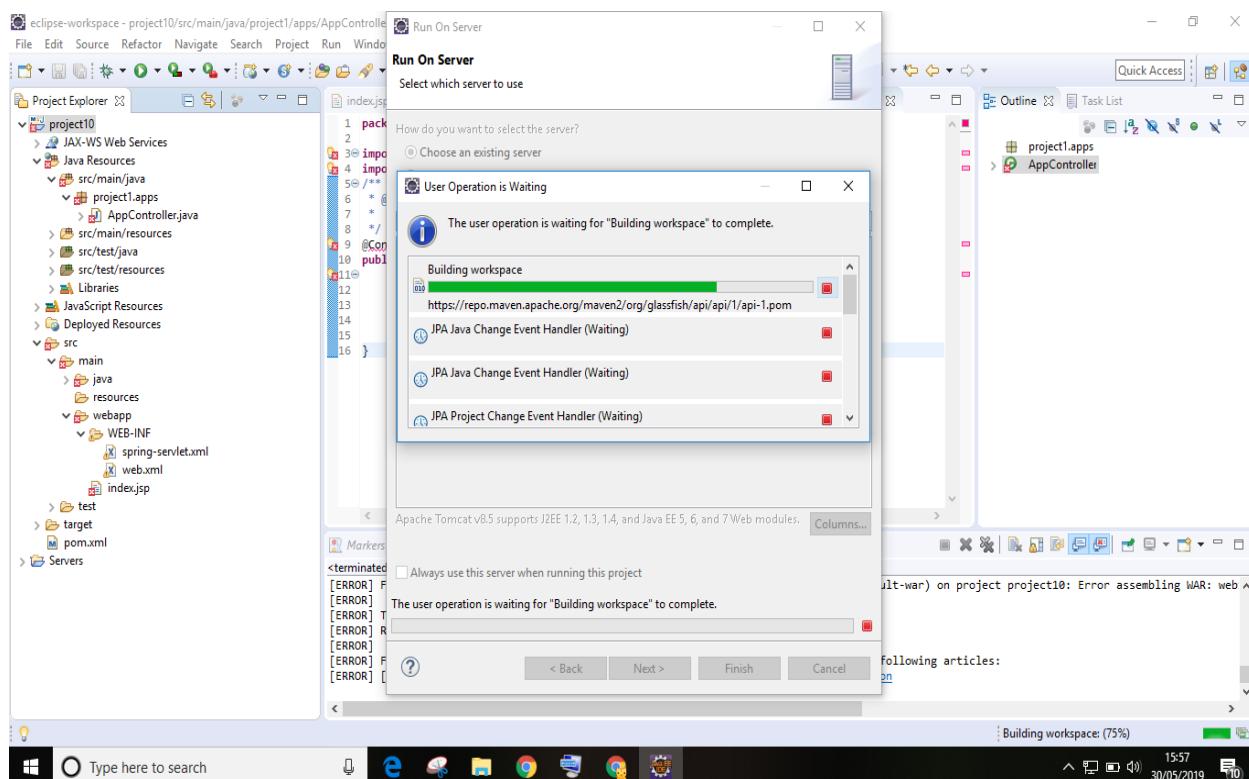
## Step: 8 Create java class

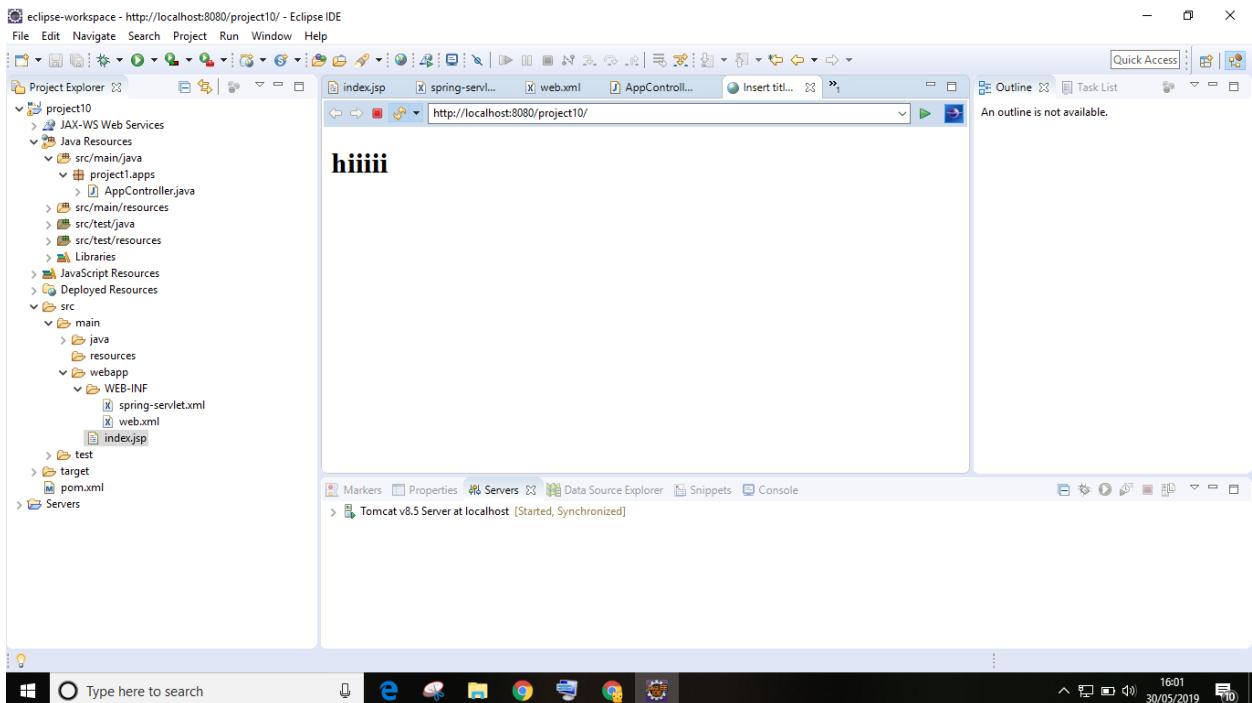


## Step: 9 Set AppController



## Step: 10 Run your project



**Output:**

## **Part 8**

### **Project Documentation**

## P8.1 INTRODUCTION

### P8.1.1 Project Overview

“House Rental” is a web application which is meant for users who are looking for house in rent and those who want to give their house for rent. This system will consist of three user's admin, house owners, and the people who need a house for rent. The admin will facilitate the registration for house owners who want to give their house for rent and the people who are looking for rental home. The house owners can register their rental house in this site. The interested people will check a rent house in their preference. An advance will be paid to house owner from user at the time of booking.

This software will be very helpful for people who are seeking for home in rent and also for the people who want to get nice income for their rental house. This will be also very much helpful for people in abroad coming to their native place and seeking house. “House Rental” is hosted on various Cloud Platforms such as Google Cloud Platform, Azure Cloud and Amazon web services.

### P8.1.2 Project Specification

This is a website in which user can look for rental homes. We can also view home details, rent price, number of rooms and owner details.

The system includes 3 users. They are:

#### 1. Admin Module

The admin is the overall controller of the system. Admin can manage house owner details and give platform to register their houses.

#### 2. User Module

Registered user can add details about house for rent and search rental house and can also book house. house owners can send notification to owners when they want to book a house or they want to vacate.

#### 3. House owner

House owner can add their houses for rent. Registering their houses according to their facilities like location, rooms, car parking, etc. Users can search house by filtering different options.

## 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 Home Rental 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. The online home rental system is meant for users who are looking for house in rent and those who want to give their house for rent. This software is not yet reached in a better level. This system will consist of three users, admin, house owners, and the people who need a house for rent. The admin will facilitate the registration for house owners who want to give their house for rent and the people who are looking for rental home. The interested people will check a rent house in their preference. Security amount will be paid to house owner 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 Economic 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.

Online house rental 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 one?
- 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. House rental is simple enough so that no training is needed.

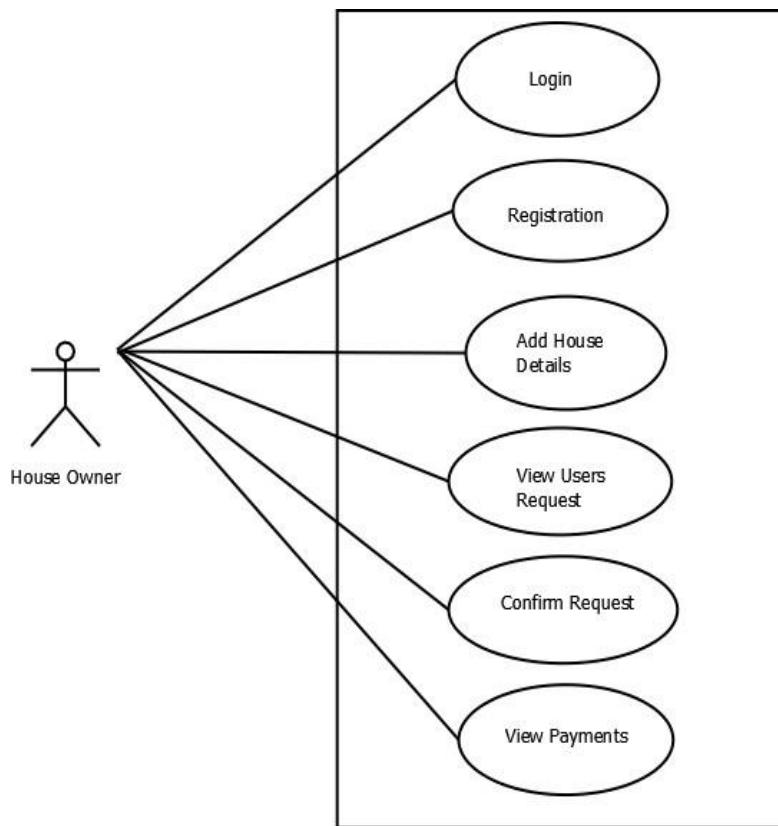
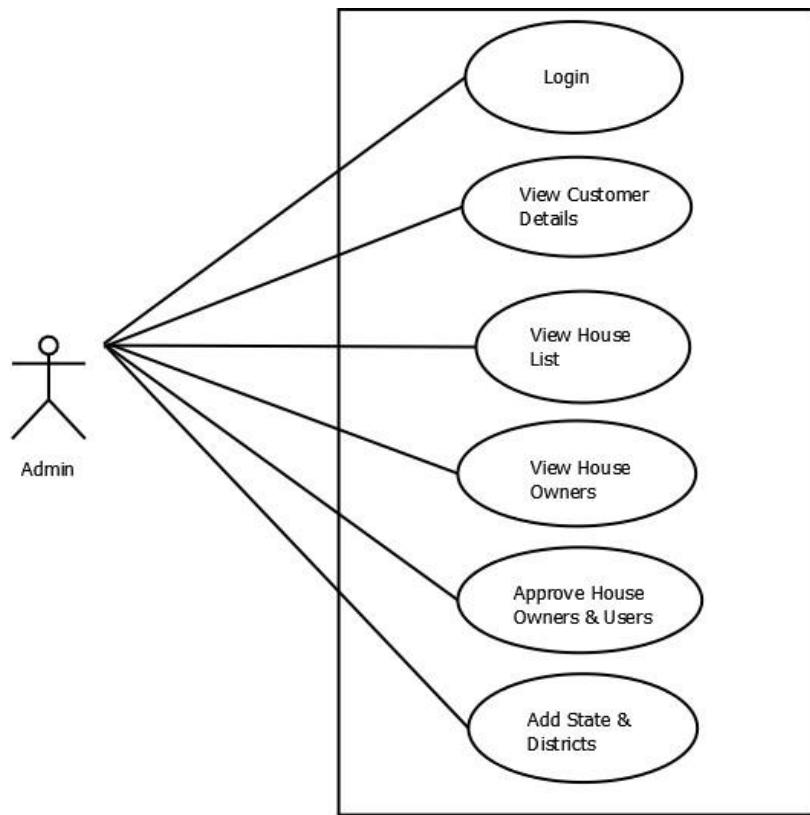
## P8.4 Requirement Modeling

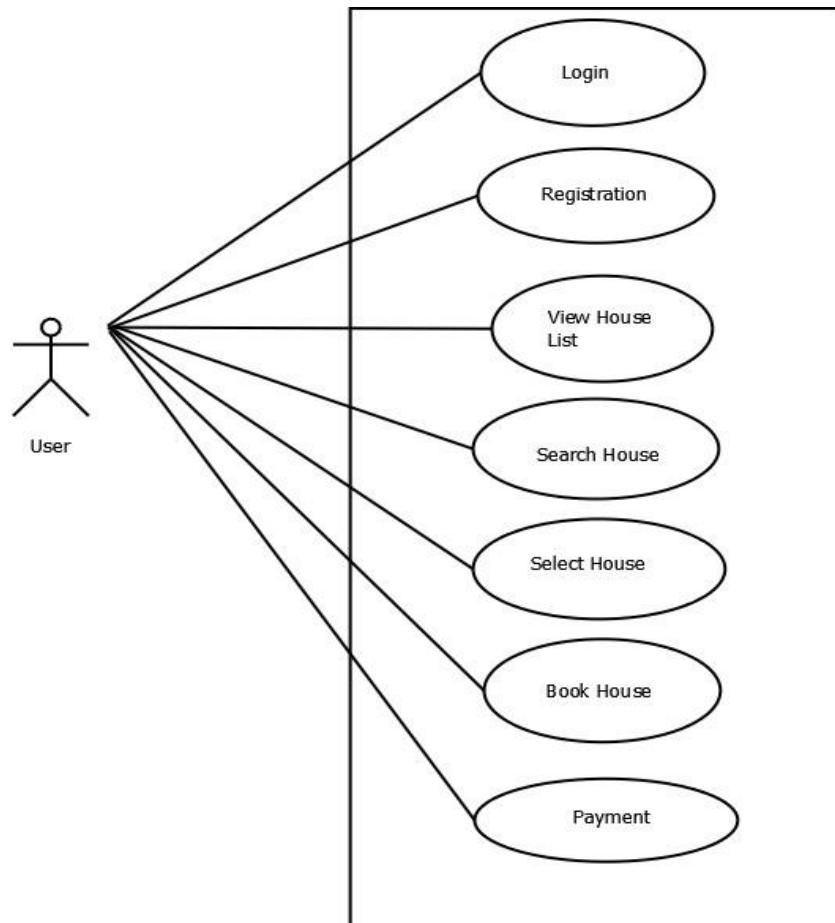
### P8.4.1 UML Use Case Diagram

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 Web site. Use case diagrams are employed in UML (Unified Modeling Language), a standard notation for the modeling 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 are the specific roles played by the actors within and around the system.
- The relationships between and among the actors and the use cases.



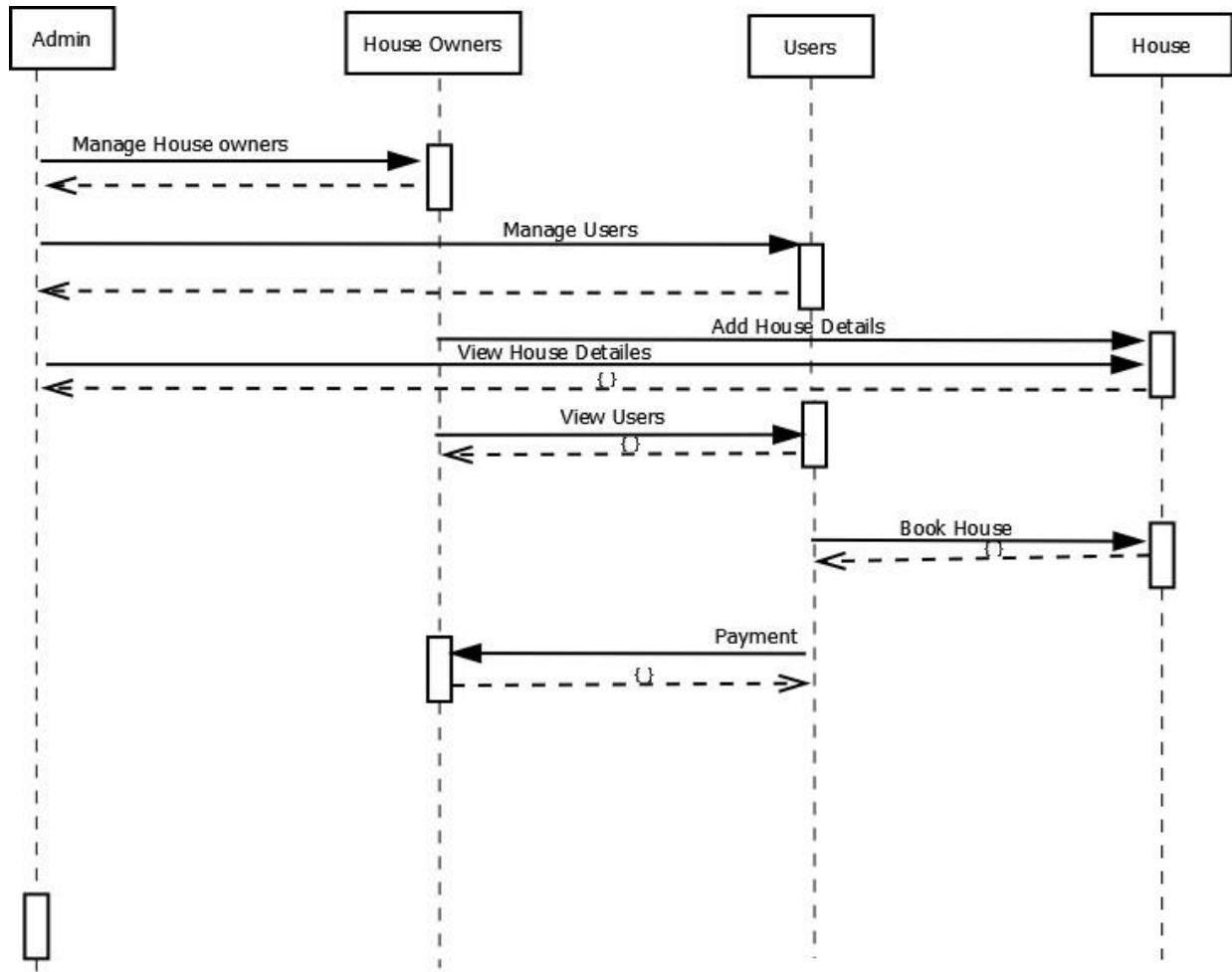


### P8.4.2 UML Sequence Diagram

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.

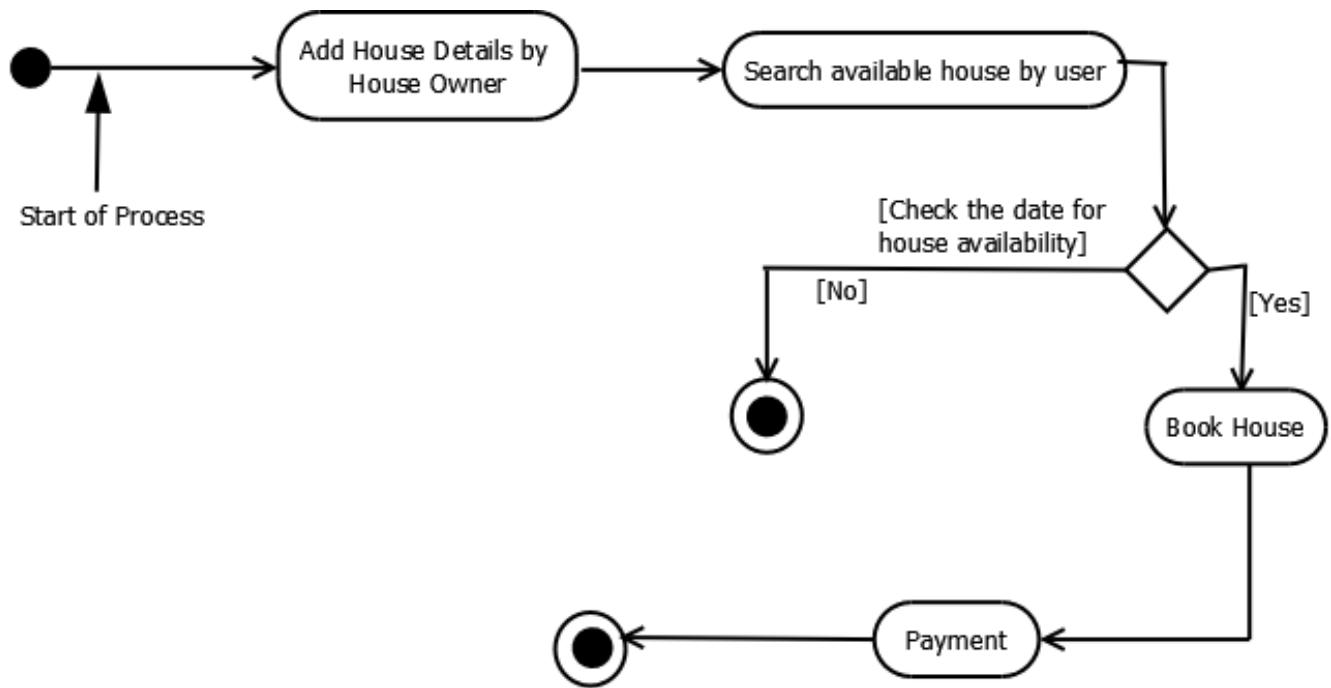


### P8.4.3 Activity Diagram

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.

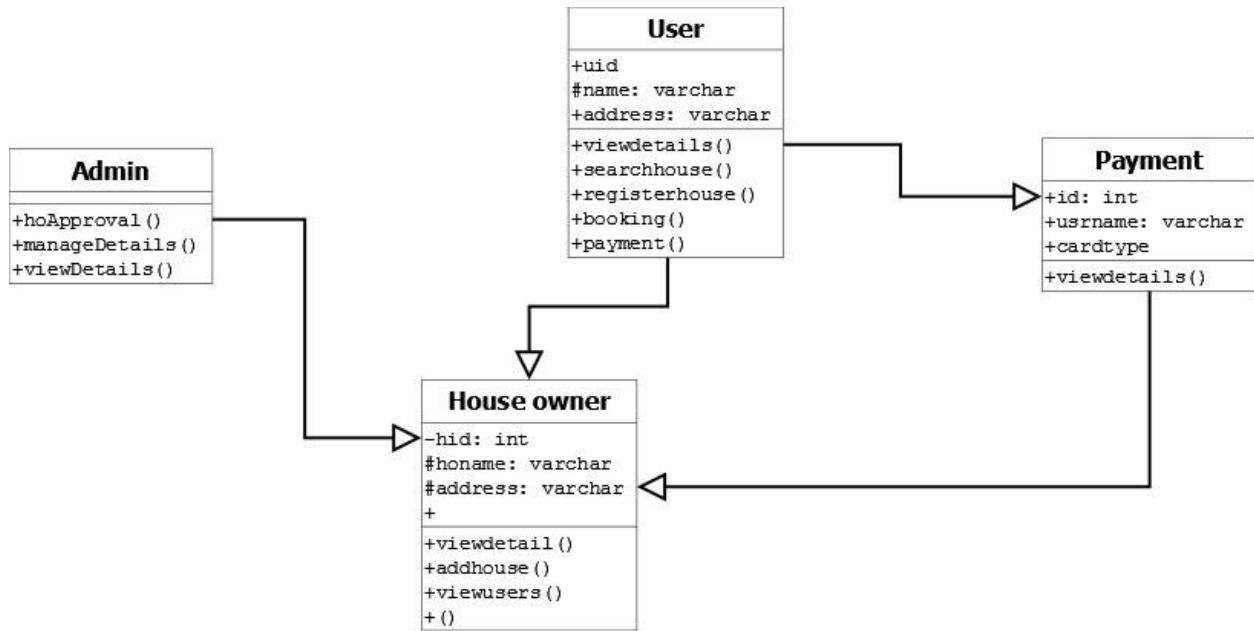


#### P8.4.4 Class Diagram

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.

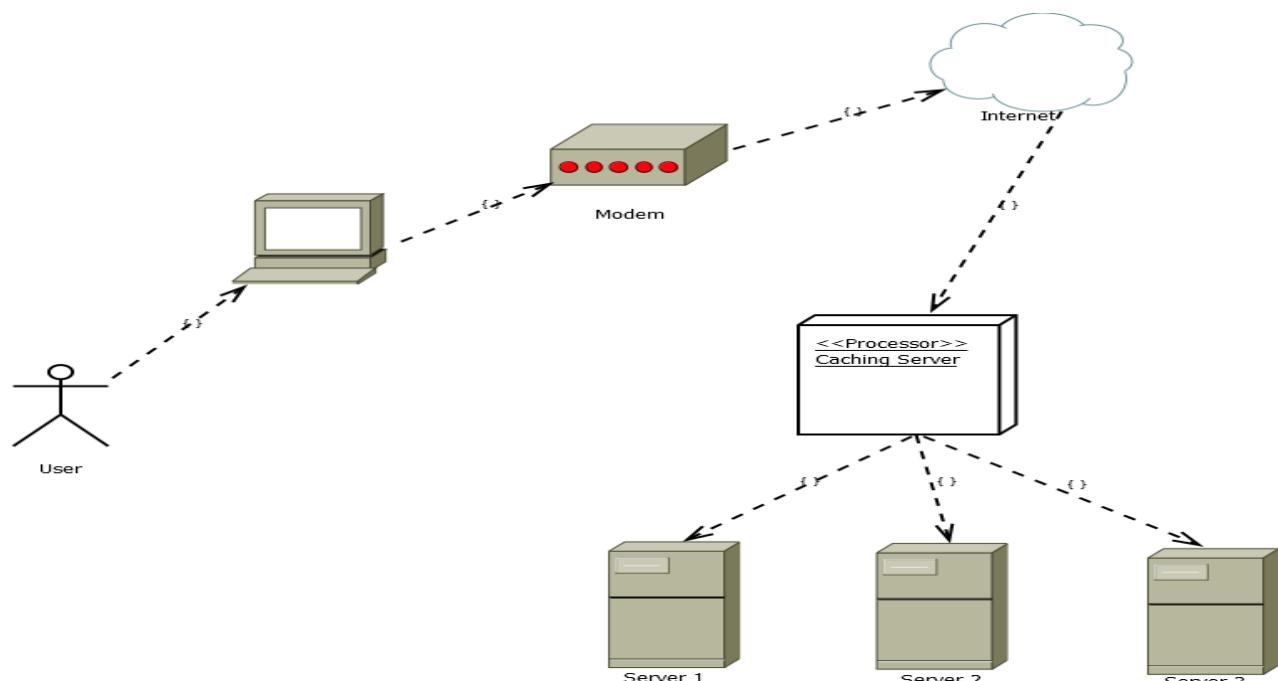
Class diagram shows a collection of classes, interfaces, associations, collaborations, and constraints. It is also known as a structural diagram.



#### 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 relationship.

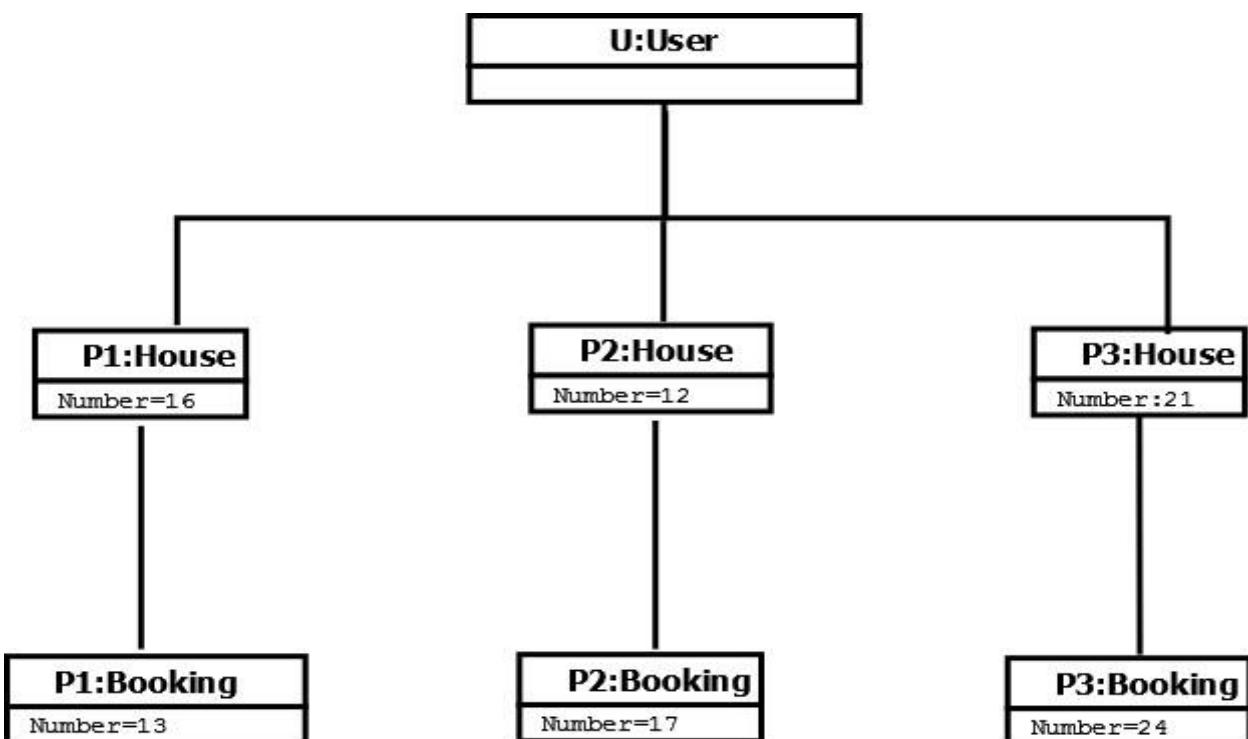


### P8.4.6 Object Diagrams

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.

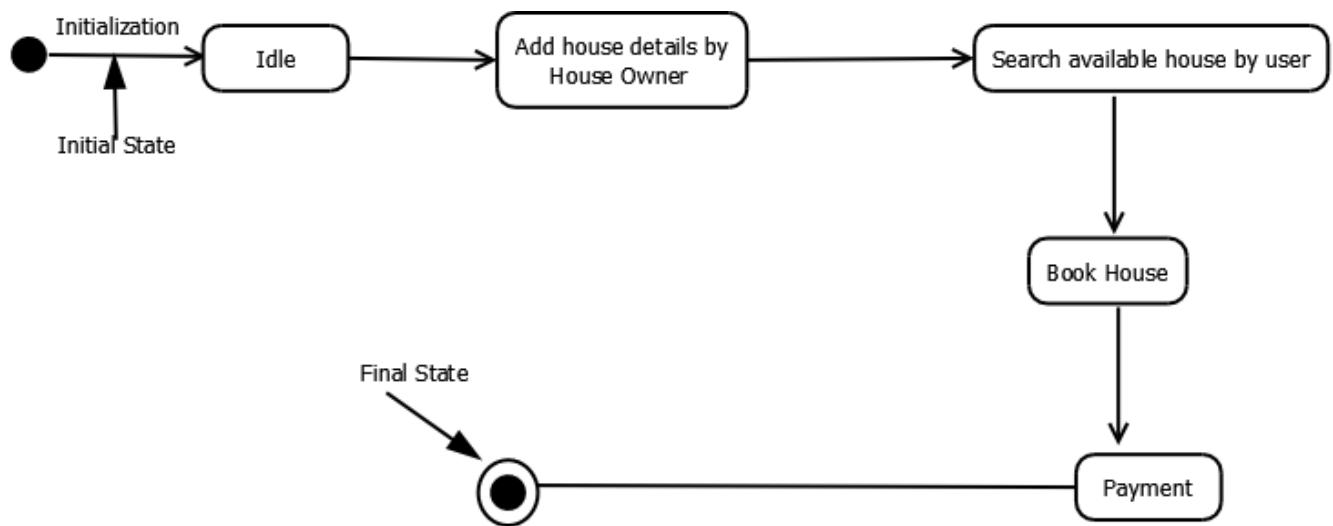


### P8.4.7 State Chart Diagram

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.

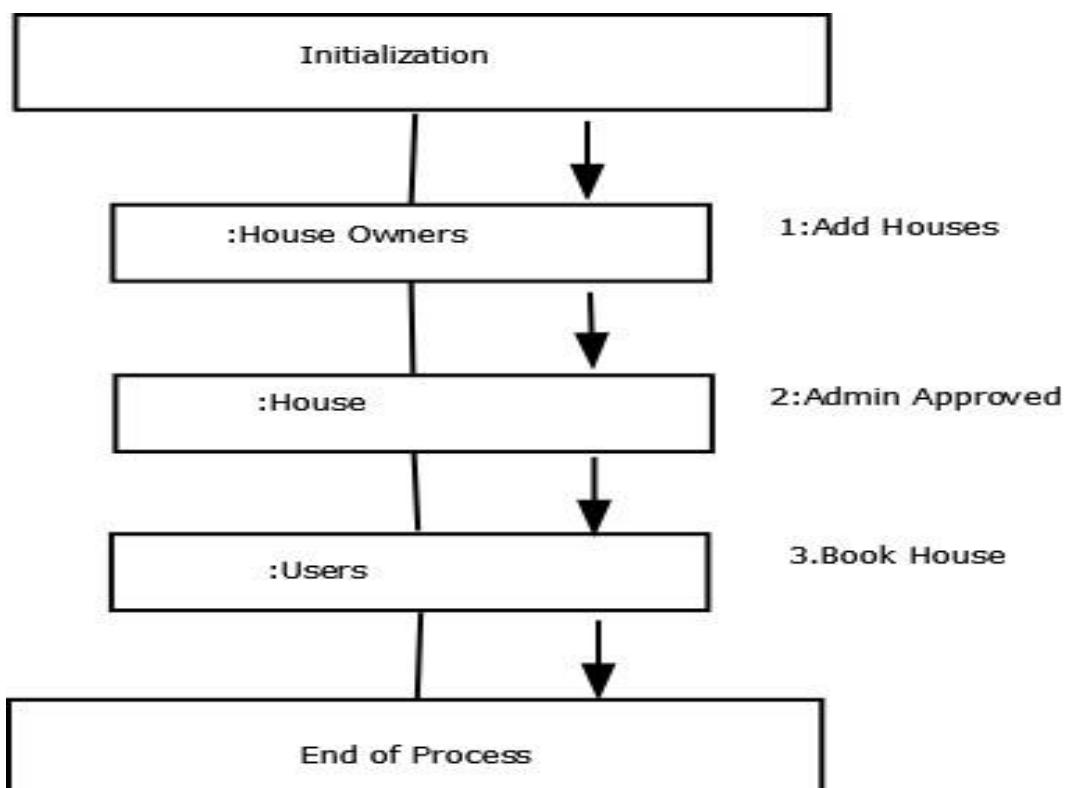
A State chart diagram describes a state machine. State machine can be defined as a machine which defines different states of an object and these states are controlled by external or internal events.

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 is 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 - 1 GB

Hard disk - 500 GB

### P2.5.2 Software Specification

Front End - PHP-Laravel Framework

Backend - MYSQL

Client on PC - Windows 10

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

## P8.6 Software Description

### P8.6.1 Laravel

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.

### 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 database enforces these rules, so that with a well-designed database, your application never 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 any time.

- **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 in different 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 comfortably on a 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 backends, 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.**

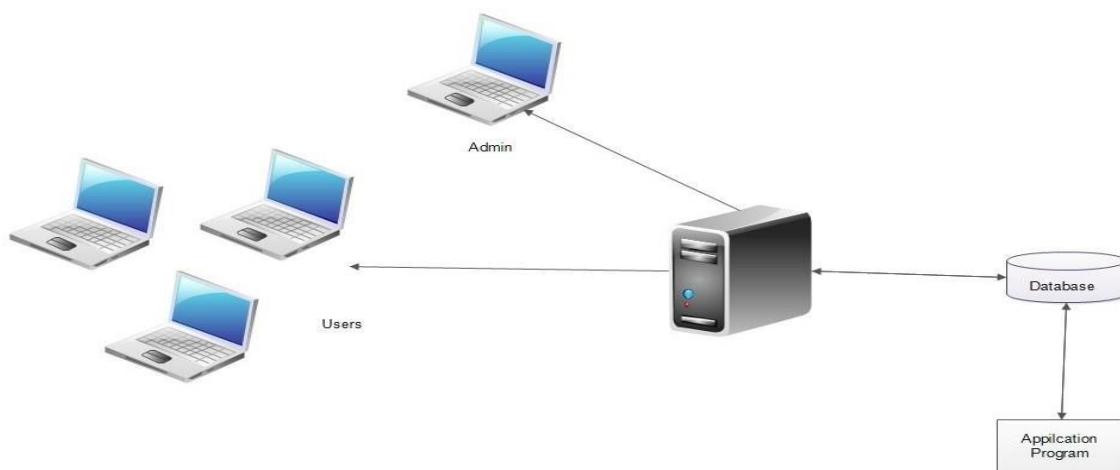
MySQL Server has a practical set of features developed in close cooperation with our users. It is very likely that your favorite application or language supports the MySQL Database Server.

## 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 Module Design

### Admin Module

The admin is the overall controller of the system. The admin can manage the registered house owners,

Manage registered house owners	Block/Unblock the registered house owners
--------------------------------	---

### Registered User Module

After registration, user can search for rental houses according to their preference and can book houses by paying a security amount to the house owner.

User registration, login	Search rental houses
Send booking request	Manage profile
Download agreement after payment	Manage registered houses

### P8.7.4 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 form in data modelling 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 done by moving data into 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 eliminates repeating groups of data. A relation is said to be in first normal form if and 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 and 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.

**TABLES****1.tbl\_login**

Primary key: id

<b>Field Name</b>	<b>Field Type</b>	<b>Size</b>	<b>Description</b>
Id	Bigint	20	Id
email	Varchar	255	Email of user
password	Password	255	Password
Type	Varchar	255	Type of the user
remember_token	Varchar	255	Encrypted Password

**2.tbl\_uregister**

Primary key: id

Foreign key: email – tbl\_login

<b>Field Name</b>	<b>Field Type</b>	<b>Size</b>	<b>Description</b>
Id	bigint	20	Registration Id
firstname	varchar	255	First Name
lastname	varchar	255	Last Name
place	varchar	255	Place
district	varchar	255	District
pin	varchar	255	Pin
phone	varchar	255	Phone
idproof	varchar	255	Id proof
email	varchar	255	Email
password	password	255	Password
status	varchar	255	Status
type	varchar	255	Type

**3.tbl\_district**

Primary key: district\_id

<b>Field Name</b>	<b>Field Type</b>	<b>Size</b>	<b>Description</b>
district_id	bigint	20	District Id
district	varchar	255	District Name

**4.tbl\_city**

Primary key: city\_id

Foreign key: district\_id – tbl\_district

<b>Field Name</b>	<b>Field Type</b>	<b>Size</b>	<b>Description</b>
city_id	bigint	20	City Id
district_id	bigint	20	District_Id
city_name	varchar	255	City Name

**5.tbl\_reg\_houses**

Primary key: h\_id

Foreign key: district\_id – tbl\_district , city\_id – tbl\_city, id – tbl\_login

<b>Field Name</b>	<b>Field Type</b>	<b>Size</b>	<b>Description</b>
h_id	bigInt	20	House Registration Id
Id	bigInt	20	User id
property_type	Varchar	255	Type of property
district	Varchar	255	District
city	Varchar	255	City
area	Varchar	255	Area of property
bed	Varchar	255	No of bedrooms
bath	Varchar	255	No of bathrooms
kitchen	Varchar	255	No of Kitchen
furnishing	Varchar	255	Furnished/unfurnished
rent	Varchar	255	Rent per month
details	Varchar	255	Other details
Img1	Varchar	255	Image of Property
Is_booked	Varchar	255	Booked or not

**6.tbl\_rents**

Primary key: b\_id

Foreign Key: h\_id – tbl\_reg\_house , id – tbl\_login

<b>Field Name</b>	<b>Field Type</b>	<b>Size</b>	<b>Description</b>
b_id	bigint	20	Booking Id
h_id	bigint	20	House id
Id	bigint	20	User id
type	Varchar	255	Property Type
adults	Int	50	Number of adults
children	Int	50	Number of children
profession	Varchar	255	Employee/Student
gender	Varchar	255	Gender
total	Int	50	Total members
s_date	Varchar	255	Date from
e_date	Varchar	255	Date to
status	Varchar	255	Approved/Rejected
reason	Varchar	255	Reason for rejection

**7.tbl\_payment**

primary key: payment\_id

Foreign Key:id – tbl\_login

<b>Field Name</b>	<b>Field Type</b>	<b>Size</b>	<b>Description</b>
Id	bigInt	20	Payment Id
b_id	bigInt	20	Booking id
cardno	varchar	255	Card number
expm	varchar	255	Card Expiry Month
expy	Varchar	255	Expiry Year
cvv	Varchar	255	Card cvv number

## P8.8 System Testing

### P8.8.1 Introduction

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 appears to be working according to the specification, that performance requirement appears 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 is 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 set up 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.

## P8.8.2 Test Case

### Test Case 1

<b>Project Name:</b> Online House Rental Portal					
<b>User Registration Test Case</b>					
<b>Test Case ID:</b> Fun_1			<b>Test Designed By:</b> Annu Jacob		
<b>Test Priority(Low/Medium/High):</b> High			<b>Test Designed date:</b> 05-04-2019		
<b>Module Name:</b> Login Screen			<b>Test Executed by:</b> Ms. Sruthimol Kurian		
<b>Test Title:</b> Verify login with valid username and password			<b>Test Execution date:</b> 06-04-2019		
<b>Description:</b> Test the Login page					
<b>Pre-conditions:</b> User has valid username and password					
Step	Test Steps	Test Data	Expected Result	Actual Result	Status(Pass/Fail)
1	Navigation to Login page		Login page for users	Login page for users	Pass
2	Provide valid username	Username: admin	User should be able to login	Logged in successfully and navigated to dashboard	Pass
3	Provide valid password	Password: admin			
4	Click login button				
5	Provide invalid username or password	Username: admin Password: adminnn	User should not be able to login	User registered and user can	Pass
6	Provide null username or password	Username: null Password: null			
<b>Post conditions:</b> User is validated with database and then user can successfully login to account. The account session details are logged in database					

## Test Case 2

<b>Project Name:</b> Online House Rental Portal								
<b>User Registration Test Case</b>								
<b>Test Case ID:</b> Fun_2			<b>Test Designed By:</b> Annu Jacob					
<b>Test Priority(Low/Medium/High):</b> Medium			<b>Test Designed date:</b> 05-04-2019					
<b>Module Name:</b> User Registration			<b>Test Executed by:</b> Ms. Sruthimol Kurian					
<b>Test Title:</b> To register new user			<b>Test Execution date:</b> 06-04-2019					
<b>Description:</b> Test the user registration								
<b>Pre-conditions:</b> User should not be already registered								
Step	Test Steps	Test Data	Expected Result	Actual Result	Status(Pass/Fail)			
1	Navigation to User registration		User registration form	User registration form	Pass			
2	Provide null information	User name=null	Message for enter user name	Message for enter user name	Pass			
3	Provide Valid Registration details of user	Registration details of user	User registration	User registered and user can login	Pass			
4	Click on Register Button							
<b>Post conditions:</b> User is validated with database and then user can 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 operational one.

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 through 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 changeover.

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

### 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.

### **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 home at low cost just like an auction site. The need 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.

## P8.11 Bibliography

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## P8.12 APPENDIX

### P8.12.1 SAMPLE CODE

#### RegHouseController

```
<?php

namespace App\Http\Controllers;

use App\reg_house;
use Illuminate\Http\Request;
use Illuminate\Support\Facades\Log;

use DB;

class RegHouseController extends Controller
{
    /**
     * Display a listing of the resource.
     *
     * @return \Illuminate\Http\Response
     */
    public function index()
    {
        $items = reg_house::all();
        return view ('owner.viewhouse',compact('items'));
    }

    public function house()
    {
        $type ='House/Villa';
        $house = DB::select('select * from reg_houses as r inner join tbl_district as d
        on r.district=d.district_id inner join tbl_city as c on c.city_id = r.city
        where r.property_type = "'.$type .'"');
        return view ('user.houseview',compact('house'));
    }

    public function apartment()
```

```

{
$type ='Apartment/Flat';

$apartment = DB::select('select * from reg_houses as r inner join tbl_district as d
on r.district=d.district_id inner join tbl_city as c on c.city_id = r.city where r.property_type =
".$type."');

return view ('user.apartment',compact('apartment'));
}

public function commercial()
{
$type ='Commercial';

$commercial = DB::select('select * from reg_houses as r inner join tbl_district as d
on r.district=d.district_id inner join tbl_city as c on c.city_id = r.city where r.property_type =
".$type."');

return view ('user.commercial',compact('commercial'));
}

public function booked()
{
$id = 0;

if(session()->has('email'))
{
$x=session()->get('email');

$regid=DB::table('logins')->where('email',"=", $x)->get();

foreach($regid as $rid)
{
$id=$rid->id;
}

$house = DB::select('SELECT d.*, c.*, r.type as hType, r.*, u.*, h.* , r.status as b_status FROM rent as r
inner join reg_houses as h on r.h_id = h.h_id inner join logins as l on l.id = r.id
inner join tbl_district as d
on h.district=d.district_id inner join tbl_city as c on c.city_id = h.city
inner join registers as u on u.email = l.email where r.id = '.$id .');

return view ('user.booked',compact('house'));
}

public function insert()
{
if(session()->has('id'))
{
}
}

```

```
$x=session()->get('id');
}

$type ='House/Villa';
$items = DB::select('select * from reg_houses as r inner join tbl_district as d
on r.district=d.district_id inner join tbl_city as c on c.city_id = r.city
where r.property_type = "'.$type .'" and r.`id`='.$x) ;
return view('owner.viewhouse',compact('items'));

}

public function apartmentview()
{
if(session()->has('id'))
{
$x=session()->get('id');
}
$type ='Apartment/Flat';
$items = DB::select('select * from reg_houses as r inner join tbl_district as d
on r.district=d.district_id inner join tbl_city as c on c.city_id = r.city
where r.property_type = "'.$type .'" and r.`id`='.$x) ;
return view('owner.apartmentview',compact('items'));

}

public function commercialview()
{
if(session()->has('id'))
{
$x=session()->get('id');
}
$type ='Commercial';
$items = DB::select('select * from reg_houses as r inner join tbl_district as d
on r.district=d.district_id inner join tbl_city as c on c.city_id = r.city
where r.property_type = "'.$type .'" and r.`id`='.$x) ;
return view('owner.commercialview',compact('items'));

}
```

```

/**
 * Show the form for creating a new resource.
 *
 * @return \Illuminate\Http\Response
 */

public function create()
{
}

public function details()
{
    if(session()->has('id'))
    {
        $x=session()->get('id');
    }

    $item=reg_house::where('id','=',$x)->get();
    return view('owner.details',compact('item'));
}

/**
 * Store a newly created resource in storage.
 *
 * @param \Illuminate\Http\Request $request
 * @return \Illuminate\Http\Response
 */

public function store(Request $request)
{
    if(session()->has('email'))
    {
        $x=session()->get('email');

    }

    $regid=DB::table('logins')->where('email',"=", $x)->get();
    foreach($regid as $rid)
    {
        $loginid=$rid->id;
    }

    $ptype = $request->input('ptype');
    $district = $request->input('district');
    $location = $request->input('city');
    $area = $request->input('area');
}

```

```

$bed = $request->input('bed');
$bath = $request->input('bath');
$kitchen = $request->input('kitchen');
$furnishing = $request->input('furnishing');
$rent = $request->input('rent');
$details = $request->input('details');
$img1=$request->input('img1');
$filename1=$request->img1->getClientOriginalName();
$request->img1->storeAs('public/upload',$filename1);
$data=array('id'=>$loginid,'property_type'=>$ptype,'district'=>$district,'city'=>$location,'area'=>$area,'bed'=>$bed,'bath'=>$bath,'kitchen'=>$kitchen,'furnishing'=>$furnishing,'rent'=>$rent,'details'=>$details,'img1'=>$filename1,'Is_booked'=>0);
DB::table('reg_houses')->insert($data);
echo "<script>";
echo 'alert("Registered Successfully")';
echo" </script>";
return redirect("/owner.index");
}

/**
 * Display the specified resource.
 *
 * @param \App\reg_house $reg_house
 * @return \Illuminate\Http\Response
 */
public function show(reg_house $reg_house)
{
}

/**
 * Show the form for editing the specified resource.
 *
 * @param \App\reg_house $reg_house
 * @return \Illuminate\Http\Response
 */
public function edit(reg_house $reg_house)
{
}

```

```

public function change($id)
{
    $use=DB::table('reg_houses')->where(['h_id'=>$id])->get();
    return view("owner.edit_house",compact('use'));
}

/**
 * Update the specified resource in storage.
 *
 * @param \Illuminate\Http\Request $request
 * @param \App\reg_house $reg_house
 * @return \Illuminate\Http\Response
 */

```

```

public function update(Request $request,$id)
{
    $ptype = $request->input('ptype');
    $district=$request->input('district');
    $location = $request->input('city');
    $area = $request->input('area');
    $bed = $request->input('bed');
    $bath = $request->input('bath');
    $kitchen = $request->input('kitchen');
    $furnishing = $request->input('furnishing');
    $details = $request->input('details');
    $filename1=$request->img1->getClientOriginalName();
    $request->img1->storeAs('public/upload',$filename1);
    $regid=db::table('reg_houses')->where('h_id',"=",$id)->get();
    $data=array("property_type"=>$ptype,"district"=>$district,"city"=>$location,"area"=>$area,"bed"=>$bed,
    "bath"=>$bath,"furnishing"=>$furnishing,"details"=>$details,"img1"=>$filename1);
    DB::table('reg_houses')->where('h_id',"=",$id)->update($data);
    return redirect("/viewhouse");
}

/**
 * Remove the specified resource from storage.
 *
 * @param \App\reg_house $reg_house
 */

```

```

* @return \Illuminate\Http\Response
*/
public function search(Request $request)
{
    $ptype = $request->input('ptype');
    $districtId = $request->input('district');
    $location = $request->input('city');
    $area = $request->input('area');
    $bed = $request->input('bed');
    $bath = $request->input('bath');
    $kitchen = $request->input('kitchen');
    $furnishing = $request->input('furnishing');
    $rent = $request->input('rent');
    $qry = "";
    if (isset($ptype) && $ptype !== "") {
        $qry = ($qry === "" ? (' r.`property_type`=' . "'". $ptype . "'") : ($qry . ' and r.`property_type`=' . "'". $ptype . "'"));
    }
    if (isset($districtId) && $districtId !== "") {
        $qry = ($qry === "" ? (' r.`district`=' . $districtId) : ($qry . ' and r.`district`=' . $districtId));
    }
    if (isset($location) && $location !== "") {
        $qry = ($qry === "" ? (' r.`city`=' . "'". $location . "'") : ($qry . ' and r.`city`=' . "'". $location . "'"));
    }
    if (isset($area) && $area !== "") {
        $qry = ($qry === "" ? (' r.`area`=' . "'". $area . "'") : ($qry . ' and r.`area`=' . "'". $area . "'"));
    }
    if (isset($bed) && $bed !== "") {
        $qry = ($qry === "" ? (' r.`bed`=' . "'". $bed . "'") : ($qry . ' and r.`bed`=' . "'". $bed . "'"));
    }
    if (isset($bath) && $bath !== "") {
        $qry = ($qry === "" ? (' r.`bath`=' . "'". $bath . "'") : ($qry . ' and r.`bath`=' . "'". $bath . "'"));
    }
    if (isset($kitchen) && $kitchen !== "") {
        $qry = ($qry === "" ? (' r.`kitchen`=' . "'". $kitchen . "'") : ($qry . ' and r.`kitchen`=' . "'". $kitchen . "'"));
    }
    if (isset($furnishing) && $furnishing !== "") {
        $qry = ($qry === "" ? (' r.`furnishing`=' . "'". $furnishing . "'") : ($qry . ' and r.`furnishing`=' . "'". $furnishing . "'"));
    }
}

```

```

r.`furnishing`='"".$furnishing."");
}

if (isset($rent) && $rent !== "") {
    $qry = ($qry === "" ? (' r.`rent`='."".$rent."") : ($qry.' and r.`rent`='"".$rent.""));
}

if ($qry === "") {
    $items = DB::select('select * from reg_houses as r inner join tbl_district as d
        on r.district=d.district_id inner join tbl_city as c on c.city_id = r.city') ;
} else {
    $items = DB::select('select * from reg_houses as r inner join tbl_district as d
        on r.district=d.district_id inner join tbl_city as c on c.city_id = r.city where ' . $qry) ;
}

$house = $items;
$district= DB::table('tbl_district')->get();
returnview
('user.search',compact('house','district','qry','districtId','ptype','location','area','bed','bath','kitchen','furnishing',
'rent'));
}

public function cityajax1($id)
{
    $city = city::where("district_id",$id)->get()->toJson();
    return $city;
}

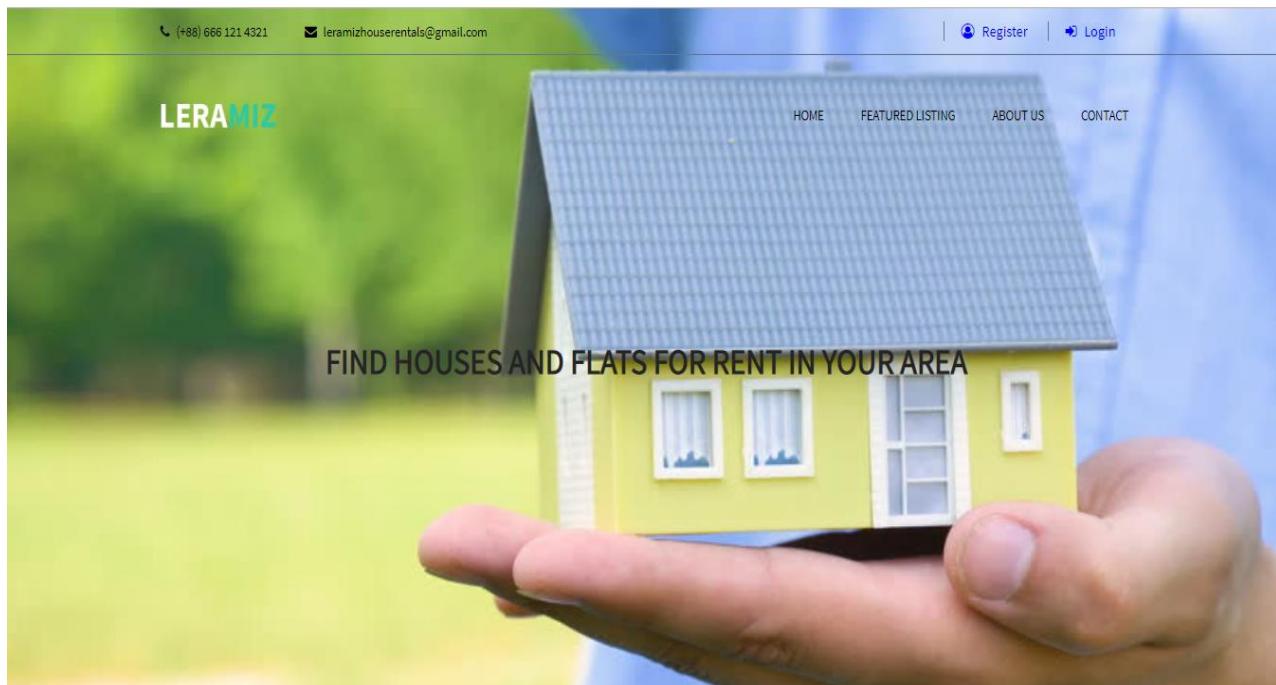
public function city1()
{
    $city= city::all();
    return View::make('district', ['city'=>$city]);
}

public function destroy(reg_house $reg_house)
{
}
}

```

## P8.12.2 SCREENSHOTS

### Main Home Page



### User Home Page

- [Dashboard](#)
- [Profile](#)
- [Search Property](#)
- [View Properties >](#)
- [View Booked Properties](#)

**LOOKING PROPERTY**

What kind of property are you looking for? We will help you

Apartment	Family Home	Villas	Office Building

**User Profile Page**

The screenshot shows the user profile page for 'LERAMIZ'. The header displays the brand name 'LERAMIZ' in orange and the user's email 'besty@gmail.com' with a green dropdown arrow. On the left, a dark sidebar menu includes 'Dashboard', 'Profile', 'Search Property', 'View Properties >', and 'View Booked Properties'. The main content area is titled 'View Profile' and contains fields for First Name ('Besty'), Last Name ('Jose'), Place ('Poonjar'), District ('Kottayam'), Postal Code ('659955'), and an 'Update Profile' button. An 'ID Proof' section shows a placeholder image of a document. To the right, the user's details are summarized: 'Besty Jose' and 'Email id:besty@gmail.com'.

**Search Property Page**

The screenshot shows the search property page for 'LERAMIZ'. The header displays the brand name 'LERAMIZ' in orange and the user's email 'besty@gmail.com' with a green dropdown arrow. The left sidebar is identical to the user profile page. The main content area is titled 'Search Your House' and features a grid of search filters: 'Property Type' (Select), 'Area(sqft)' (Select), 'Kitchen' (Select); 'District' (Select), 'Bed' (Select), 'Furnishing' (Select); 'Location' (Select), 'Bath' (Select), 'Rent' (Select). Below these filters is a 'Search' button. Further down, a section titled 'FEATURED LISTINGS' is shown with three thumbnail images of properties labeled 'FOR RENT': a wooden cabinet unit, a modern building at dusk, and an office interior.

### View Booked Property

The screenshot shows the 'View Booked Properties' section of the LERAMIZ portal. On the left is a dark sidebar with navigation options: Dashboard, Profile, Search Property, View Properties (with a dropdown arrow), and View Booked Properties. The main area has a header 'LERAMIZ' and an email 'besty@gmail.com'. Below is a section titled 'FEATURED LISTINGS' with three items:

- Kottayam, Kanjirappally**: Approved listing. Kitchen image. Details: 2500-3000(sqft), 4 bedrooms, 2 bathrooms.
- Kottayam, Kanjirappally**: Approved listing. Office interior image. Details: 2000-2500(sqft), 0 bedrooms, 0 bathrooms. An orange 'PAY ONLINE' button is visible.
- Thiruvananthapuram, Neyyattinkara**: Cancelled listing. Building exterior image. Details: 2500-3000(sqft), 3 bedrooms, 2 bathrooms.

### House Owners Home Page

The screenshot shows the 'House Owners Home Page' for user 'starAdmin' (email: james@gmail.com). The top navigation bar includes a star icon, 'starAdmin', and 'james@gmail.com'. The sidebar on the left lists: Dashboard, Profile, Add, View, and View Booked Users. The main area displays two summary boxes: 'Registered Users' (10) and 'Notifications' (1). Below is a section titled 'LOOKING PROPERTY' with four categories: Apartment, Family Home, Villas, and Office Building, each with a representative image.

**Add House Page**

The screenshot shows a registration form titled "Register Your House". The form includes dropdown menus for Property Type, District, Location, Area(sqft), Bed, Bath, Kitchen, and Furnishing, all currently set to "Select". On the left, a sidebar menu lists "Dashboard", "Profile", "Add" (which is selected and has a sub-menu "Add Property"), "View", and "View Booked Users". The top navigation bar shows the user "starAdmin" and the email "james@gmail.com".

**Property View Page**

The screenshot shows a "FEATURED LISTINGS" section. It displays a thumbnail image of a modern apartment building with a "FOR RENT" button and an "EDIT" button. Below the image, the location is listed as "Kottayam, Pala". At the bottom, there are two small icons: one for area (2500-3000 sqft) and another for bedrooms (2).

## View Booked Users

The screenshot shows a user interface for managing bookings. At the top, there's a header bar with a star icon and the text "starAdmin" on the left, and an email address "james@gmail.com" on the right. Below the header is a sidebar on the left with the same email address and the title "House Owner". The sidebar includes links for "Dashboard", "Profile", "Add", "View", and "View Booked Users". The main content area is titled "Orders" and contains a table with one row of data. The table columns are: Name, Email, Phone, ID Proof, Status, Payment Status, and View. The data in the first row is: Regi Chacko, regi@gmail.com, 9497326564, a placeholder image for ID proof, Approved, Unpaid, and a "View" button.

Name	Email	Phone	ID Proof	Status	Payment Status	View
Regi Chacko	regi@gmail.com	9497326564		Approved	Unpaid	<a href="#">View</a>

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## View Booked Property

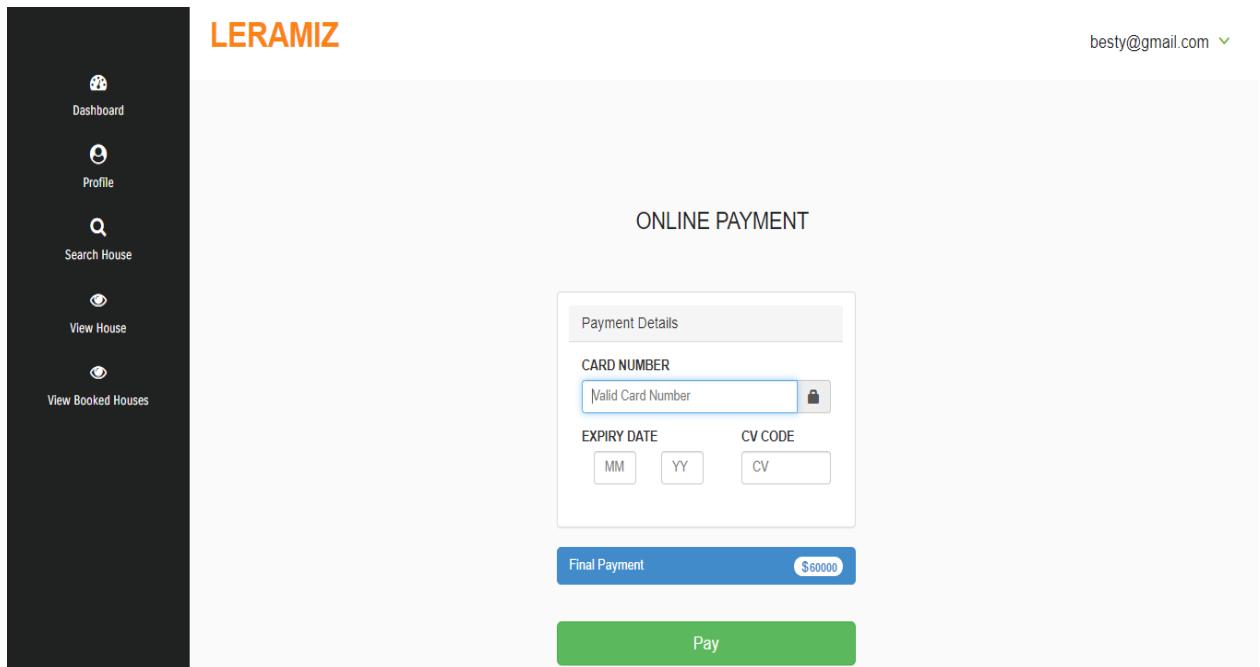
The screenshot shows a detailed view of a booked property. At the top, it features the "starAdmin" header and the "james@gmail.com" email. The sidebar on the left has links for "View" and "View Booked Users". The main content area displays a photograph of a kitchen with wooden cabinets and a window. Below the photo, the location is listed as "Kasaragod, Kanhangad". Technical details are shown in a grid: "1000-1500(sqft)", "2", "2", "1", and a small text "dfgh". A "Booking Person Details" section at the bottom lists the name "Regi Chacko", phone number "9497326564", place "Mundakayam", and email "regi@gmail.com".

1000-1500(sqft)	2
2	1
dfgh	

**Booking Person Details**

Name: Regi Chacko  
Place: Mundakayam  
Phone: 9497326564  
Email: regi@gmail.com

## Payment Page



## Agreement

### RESIDENTIAL RENTAL AGREEMENT

Ajil Sunny

(the "Landlord")

- AND -

Besty Jose

(the "Tenant")

IN CONSIDERATION OF the Landlord leasing certain premises to the Tenant and other valuable consideration, the receipt and sufficiency of which consideration is hereby acknowledged, the Parties agree as follows:

#### Leased Property

1. The Landlord agrees to rent to the Tenant the house, municipally described as Address Here (the "Property"), for use as residential premises only.
2. No guests of the Tenants may occupy the Property for longer than one week without the prior written permission of the Landlord.
3. No pets or animals are allowed to be kept in or about the Property without the prior written permission of the Landlord. Upon 30 days' notice, the Landlord may revoke any permission previously given pursuant to this clause.
4. The is a Furnished Property provided to the Tenant.

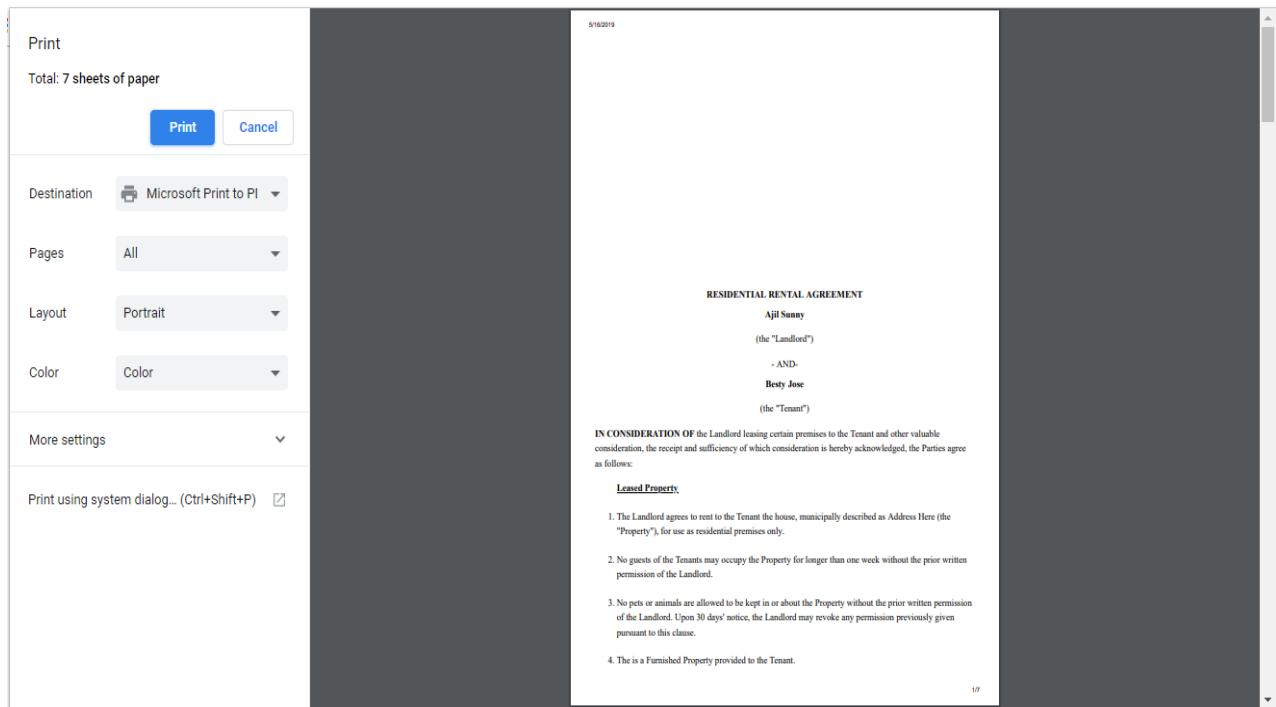
#### Term

5. The term of the Lease commences at 12:00 noon on 01/08/2019 and ends at 12:00 noon on 29/01/2020.

6. Upon the greater of 60 days' notice and any notice required under the applicable legislation of Kerala (the "Act"), the Landlord may terminate this tenancy if the Tenant has defaulted in the payment of any portion of the Rent when due, and that amount is still due after any grace period required by the Act, or the Tenant has breached any provision of this rental.

#### Rent

## Agreement Download



## Approval Mail

