HOSTING A WEB APPLICATION USING PORT FORWARDING TECHNIQUE

Report submitted to the SASTRA Deemed to be University

as the requirements for the course.

CSE302: COMPUTER NETWORKS

Submitted by

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SCHOOL OF COMPUTING

THANJAVUR, TAMIL NADU, INDIA -613401

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THANJAVUR – 613401

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Project Based Work Viva Voce held on_____

Examiner – I **Examiner – II**

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ABBREVIATION

HTML	Hyper Text Markup Language
TCP	Transmission Control Protocol
NAT	Network Address Translation
SSH	Secure Shell is a network communication protocol
UDP	User Datagram Protocol
OS	Operating System
CSS	Cascading style sheet
LAMP	Linux, Apache, MySQL, PHP
MEAN	MongoDB, Express. js , AngularJS, Node. js
SDK	Software Development Kit
XAMPP	Apache, MySQL, PHP, Perl

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ABSTRACT

Port forwarding allows us to specify ports on the guest machine to share via a port on the host machine. This allows us to access a port on our host machine, but actually have all the network traffic forwarded to a specific port on the guest machine, over either TCP or UDP.

We have created a website and now we need a place to store the website and put it on the internet. After the long tiring hard work done, creating your own website and with the appropriate content and marking it with the **HTML,** this is the part where your site creation will be proved much easier. We have been looking at our site locally, which is on my own computer. In order for others to see, we have to upload it to the servers so that the rest of the world can see it. There are two components to publish our website, firstly we need to hold the files that we have created for the visitors to see it. Secondly, we must have a domain name that serves as the website address, as the people type the address to visit you. These two are the vital components required to publish our website. And we have to decide on the domain and a hosting provider.

Port forwarding report mapping is an application of **Network Address Translation** (NAT), which redirects a communication request from one address and port number combination to another while the packets are traversing a network gateway, such as a router or firewall. This method is frequently used to selectively expose services available on remote machines to clients running on the local machines or on a machine that is connected to the local networks.The services running over TCP are easy to forward using SSH, a minimum of, as long as the details of the transported protocol are transparent. Tools are available for other classes of tunnelling, including UDP tunnelling. However, these tools are not very portable and should be limited to root/admin usage or may simply not be available. This tool is tested for traffic like SNMP with multiple clients and multiple targets.

KEY WORDS: HTML, NAT, TCP, SSH, UDP

CHAPTER 1

INTRODUCTION TO WEB APPLICATIONS

A **web-application** is an application program that is usually stored on a remote server, and users can access it through the use of Software known as web-browser. It is a type of computer program that usually runs with the help of a web browser and also uses many web technologies to perform various tasks on the internet. These applications are programmed employing a client–server modelled structure— the user ("client") is provided services through an off-site server that's hosted by a third party. Samples of commonly-used web applications include: web-mail, online retail sales, online banking, and online auctions. the overall distinction between a dynamic online page of any kind and a "web app" is unclear. Websites presumably to be noted as "web applications" are those which have similar functionality to a desktop software application, or to a mobile app. HTML5 introduced explicit language support for creating applications that are loaded as websites, but can store data locally and still function while offline. Single-page applications are more application like because they reject the more typical web paradigm of moving between distinct pages with different URLs. Single-page frameworks can be wont to speed development of such an internet app for a mobile platform.

A website is a collection of several webpages linked together using hyperlinks. All the webpages are linked under a single domain to uniquely identify the website. Websites are the main source of connecting hyperlinks to different sections, and these sections may further include other relevant webpages. Like a webpage, people can easily navigate any website using a web browser and entering the domain address. Websites also follow the same programming languages for the development, which are required for webpage development. However, website development is complex and takes more time. A website is hosted on a single or multiple web server. It is accessible via a network like the Internet or a private local area network via IP address.

A web application is a software or program which is accessed by using a web browser. Its frontend is typically created using languages like HTML, CSS, JAVASCRIPT. These languages are supported by major browser. While the backend could use any programming stack like **XAMPP**, LAMP, MEAN, etc. Unlike mobile apps, there is no specific SDK for developing web applications.

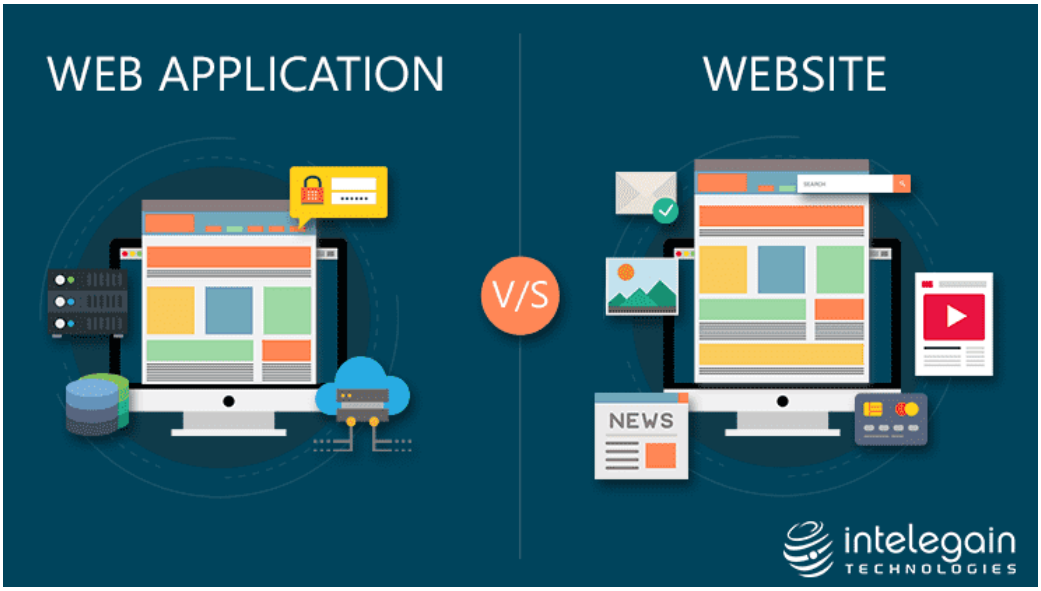


Fig:1.1 website vs web application

ADVANTAGES OF HOSTING YOUR OWN WEBSITE

If you host your own site, you can have complete control over your site. This means you have the ability to manage the amount of space you have and how much you need to provide the best website possible for your customers. You are also not bound to a third-party server, meaning you do not have to finish a contract if you wanted to change or upgrade your server. You can also select your own hardware, meaning upgrading your system will be completely down to you and the hardware you choose.

1.Quick response times

Working with your own team means that you can make improvements or upgrades at any time. This means you can conceivably take advantage of bleeding-edge new technology as soon as it becomes available (as long as you have resources who can implement it).

2. Utility pricing

By creating your own hosting and development platform, you have the ability to omit unneeded components to reduce your overall costs. Taking advantage of consumption-based pricing means you're not billed for traffic or bandwidth you don't use. You can also pick and choose your disaster recovery options, foregoing the cost of a disaster-recovery-as-a-service product.

3. Infinite customization possibilities

If you own the server, you can configure its abilities and its limitations. The sky's the limit with what you can host.

4. Its Relatively easy

As the name sound HOSTING YOUR OWN WEBSITE sounds like a massive effort or massive challenge to do so but given the instructions, we can host a website relatively in a easy method or a =easy way. The easiest ways and one of the best way to host a website is by using a virtual private server running ubuntu. Initial server setup can be setup in minutes, using the standards, set up a DNS zone and point your domain appropriately, install software stack and create a virtual host. If you are inexperience with coding or web hosting in particular, there are easy earning curves to tackle.

PORT FORWARDING

Port forwarding, sometimes called port mapping, allows computers or services in private networks to connect over the internet with other public or private computers or services.

In computer networking, Port Forwarding or Port mapping is an application of network address translation (NAT) that redirects a communication request from one address to another port number combination to another while the packets are traversing a network gateway such as a router or firewall. This service is mostly used to make services on a host residing on a protected or masqueraded (internal network) available to host in the opposite side of the gateway (external network), by mapping the destination IP address and port number of the communication to an internal host.

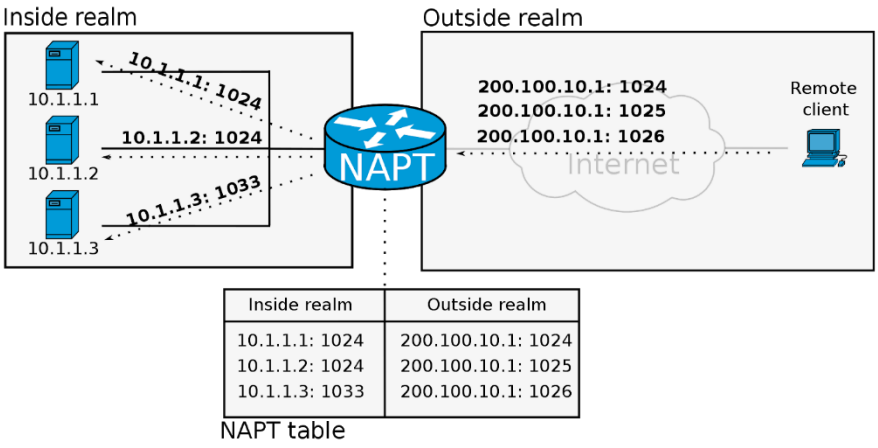


Fig:1.2 Port forwarding

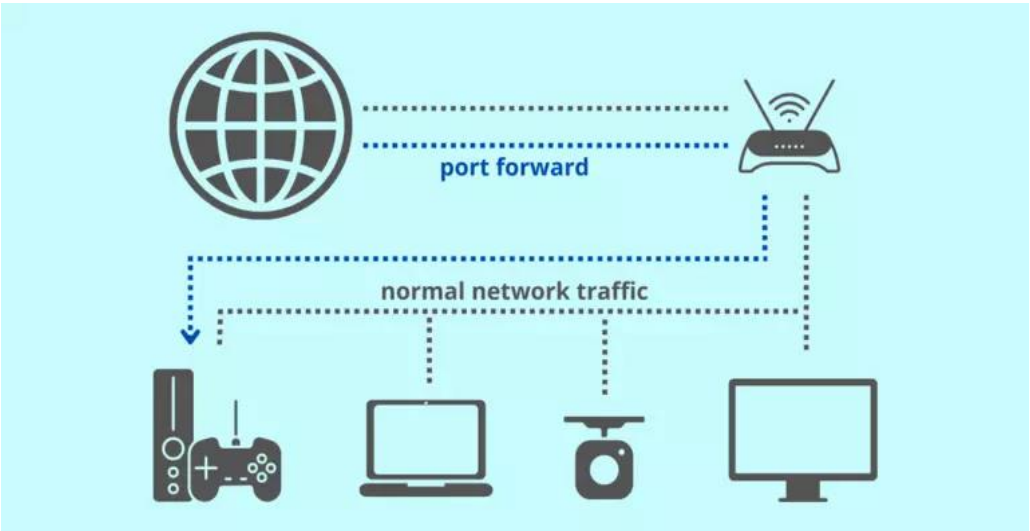


Fig:1.3 Port Forwarding (Example)

Port forwarding allows remote computer to connect to a specific computer or service within a private local-area network. (LAN). In a typical resident network, nodes obtain internet access through the DSL or Cable modem connected to the Router or NAT. Hosts on the private network are connected via Wireless LAN. The NAT device's external interface is configured with the public IP address. The computer which is connected to the router on the other hand are invisible to hosts on the internet are invisible as they only communicate only with the private IP address. When configuring port forwarding, the network administrator sets aside one port number on the gateway for the exclusive use of communicating with a service in the private network, located on a specific host. External hosts must know this port number and the address of the gateway to communication with the network-internal service. Port number 80 for web services (HTTP), are used in port forwarding, so that the common internet services may be implemented on hosts within private network.

Types of Port Forwarding :-

- Local Port Forwarding
- Remote Port Forwarding
- Dynamic Port Forwarding

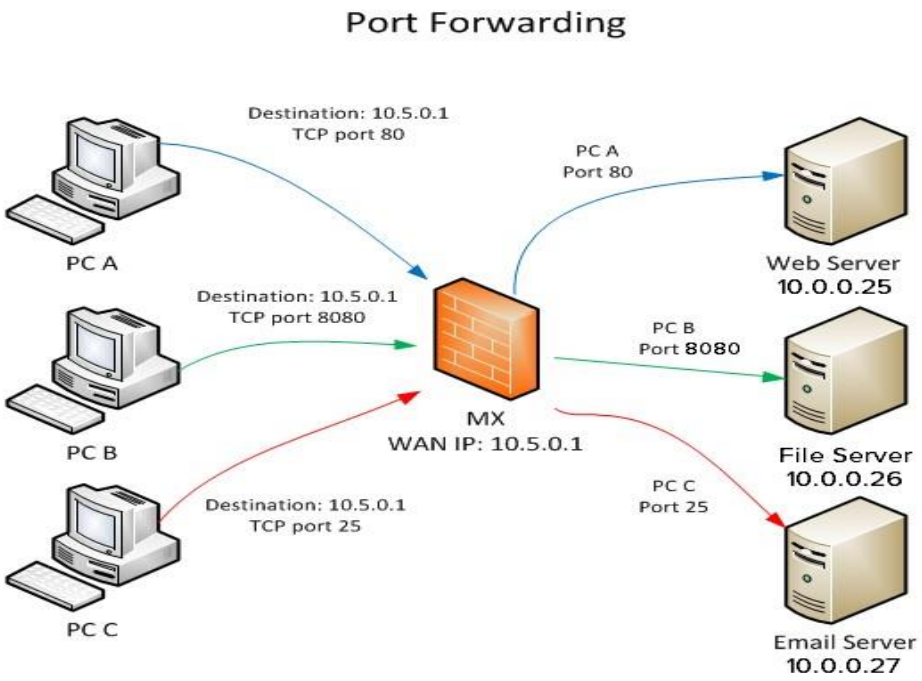


Fig:1.4 Types of port forwarding

Why port forwarding?

Port forwarding is an excellent way to preserve public IP addresses. It can protect servers and clients from unwanted access, "hide" the services and servers available on a network and limit access to and from a network. Port forwarding is transparent to the end-user and adds an extra layer of security to networks.

In short, port forwarding is used to keep unwanted traffic off networks. It allows network administrators to use one IP address for all external communications on the Internet while dedicating multiple servers with different IPs and ports to the task internally. Port forwarding is useful for home network users who may wish to run a Web server or gaming server on one network. The network administrator can set up a single public IP address on the router to translate requests to the proper server on the internal network. By using only one IP address to accomplish multiple tasks—and dropping all traffic that is unrelated to the services provided at the firewall the administrator can hide from the outside world what services are running on the network.

IP address

INTERNET PROTOCOL address is a numerical Label assigned to each device connected to a network. Which also uses the internet protocol for the communication. IP address serves as two main functions (i) Host or Network Interface Identification and (ii) Location addressing. An IP address server two principal functions. It identifies the host, or more specifically its network interface, and it provides the location of the host in the network, thus the capability of establishing the path to that host. An address indicates where it is. A router indicates how to get to that place. The header of each IP packet contains the IP address of the sending host, and that of the destination host.

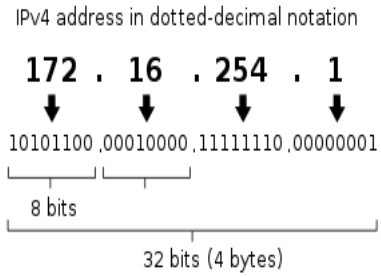


Fig:1.5 IPv4 Address

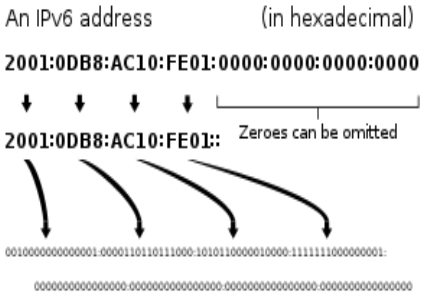


Fig:1.6 IPv6 Address

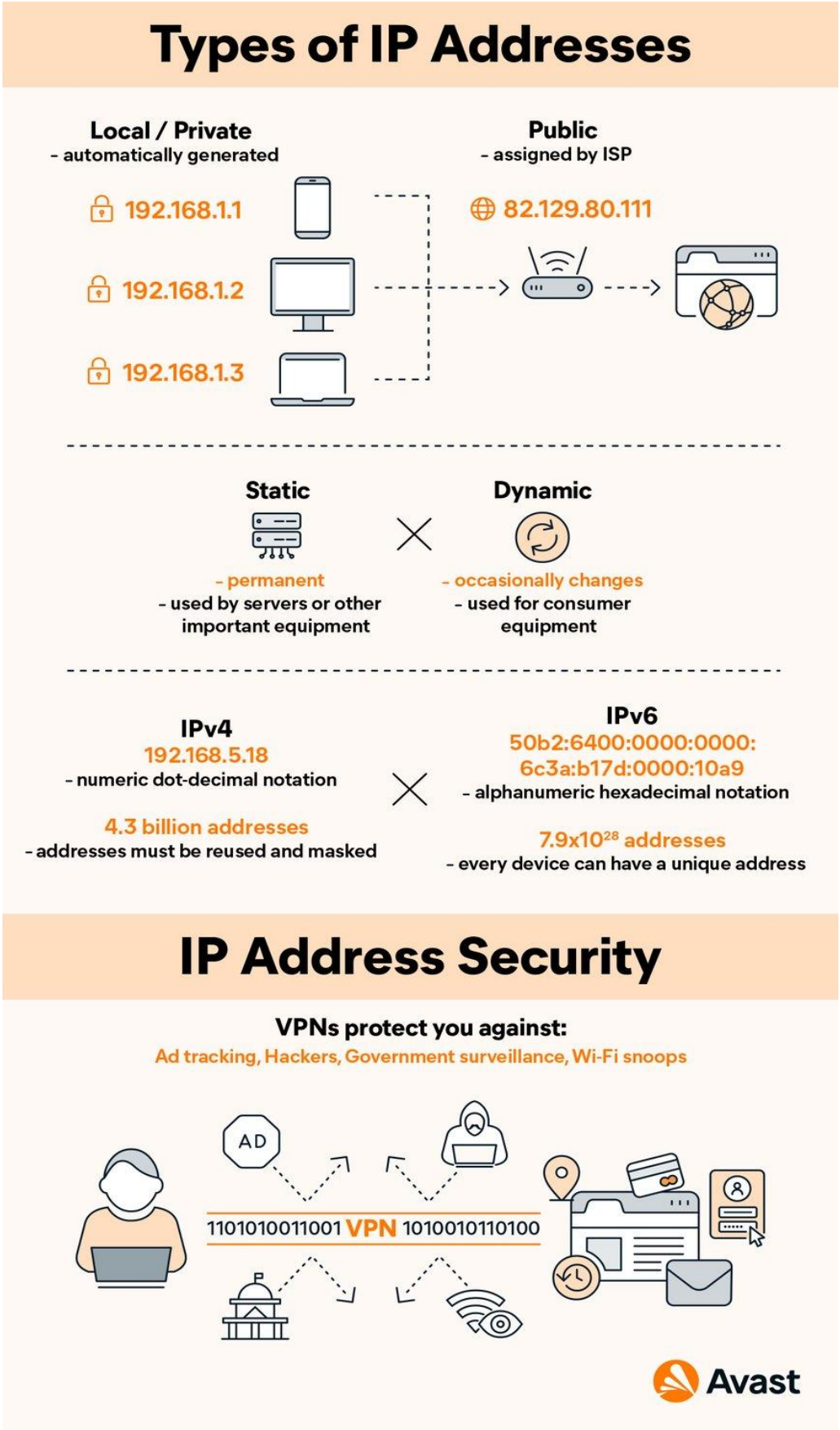


Fig:1.7 IPv6 Address

Historical classful network architecture							
Class	**Leading bits**	**Size of *network number* bit field**	**Size of *rest* bit field**	**Number of networks**	**Number of addresses per network**	**Start address**	**End address**
A	0	8	24	128 (2^7)	16777216 (2^{24})	0.0.0.0	127.255.255.255
B	10	16	16	16384 (2^{14})	65536 (2^{16})	128.0.0.0	191.255.255.255
C	110	24	8	2097152 (2^{21})	256 (2^8)	192.0.0.0	223.255.255.255

Table 1 Historical Classful Network Architecture

What is XAMPP?

XAMPP is a cross-platform web server that is free and open-source. XAMPP is a short form for Cross-Platform, Apache, MySQL, PHP, and Perl. XAMPP is a popular cross-platform web server that allows programmers to write and test their code on a local webserver. It was created by Apache Friends, and the public can revise or modify its native source code.

Advantages of XAMPP: -

- In comparison to other web servers such as WAMP, it is simple to set up.
- With a single command, you may start and stop the entire web server and database stack.
- It has a control panel that you can see contains start and stop buttons for specific mechanisms, such as Apache, which is running through its Control Panel.

CHAPTER - 2

PROPOSED WORK

Here I am going to propose a method by which my computer can act as a server and other devices can be connected through Internet or LAN. Firstly I have installed the XAMPP App for this project and stored all my codes in the folder named htdocs which is created when I have installed XAMPP. I have used XAMPP as my main platform in this particular project. As it is easy to establish a connection within local server. After adding all the codes to the htdocs , open the XAMPP Control Panel from the windows. Then we have to establish the connection with the local servers by clicking start action for Apache and MySQL Module in the control panel. All my devices are connected to the router's public IP address. There will be two address available for each device as they are: (i) Public IP address – as the name states the public IP address is visible for the other devices to connect or to give request to the internet to get some particular information from the server. This Public IP address is visible to everyone who sees it. (ii) Private IP address – As the name states the private IP address is only available and visible only to the user of the computer or mobile or any other devices which have private IP address. It is not possible to access the Private IP address of a particular device without the device owner. In this particular project all my devices are connected to the public IP address of the Router. LAN. In this project of mine I have used the software called NGROK. NGROK is a cross platform application which allows the developers to expose a local development server to the internet with minimal effort. This software makes your device host locally web server appeared to be hosted on a subdomain of ngrok.com, which in sense states that no public IP address or domain name on the local machine is needed. I have used the concept of port forwarding in this particular project. Which allows the computers to connect through the internet to connect a specific computer or service within a private local-area network (LAN). The computers behind the routers, on the other hand are invisible hosts on the internet as they each communicate only with a private IP address. I have created a sample webpage so that by using the LAN network and by using port forwarding method and with the help of NGROK, it is easily possible to access the webpage by everyone and my computer acts as a server in this particular option. The IP address will be random and it ends with.ngrok.io Login to your router via default gateway address and then enter your router credentials into the login page, device user name password must be entered. We must locate the port forwarding settings and, on the port, forwarding page enter in a name for your device. By using the port forwarding method, its safety depends in how good the router is and the firewall and how well is it protected both internally and externally. It is very easy to create a website and have the website shared to the people around the world with no cost of maintenance and no restriction in the website for both the server and the people. It is comparatively easy and it is fully transparent.

Output Analysis: - Program has been entered and then the activation in both the NGROK and Script part is done. The website is executed as the program given and the http:// numbers are duly is noted. And in different computer and different networks these websites are checked.

CHAPTER – 3

SOURCE CODE

index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Student Web interface</title>
    <link rel="shortcut icon" href="./images/logo.png">
    <link href="https://fonts.googleapis.com/icon?family=Material+Icons+Sharp" rel="stylesheet">
    <link rel="stylesheet" href="style.css">
</head>
<body>
    <header>
        <div class="logo" title="SASTRA DEMEED UNIVERSITY">
            <img src="./images/logo.png" alt="">
            <h2><span class="danger">SASTRA</span> DEEMED UNIVERSITY</h2>
        </div>
        <div class="navbar">
            <a href="index.html" class="active">
                <span class="material-icons-sharp">home</span>
                <h3>Home</h3>
            </a>
            <a href="password.html">
                <span class="material-icons-sharp">password</span>
                <h3>Change Password</h3>
            </a>
            <a href="#">
                <span class="material-icons-sharp" onclick="">logout</span>
                <h3>Logout</h3>
            </a>
```

```
    </div>
    <div id="profile-btn">
        <span class="material-icons-sharp">person</span>
    </div>
    <div class="theme-toggler">
        <span class="material-icons-sharp active">light_mode</span>
        <span class="material-icons-sharp">dark_mode</span>
    </div>

</header>
<div class="container">
    <aside>
        <div class="profile">
            <div class="top">
                <div class="profile-photo">
                    <img src="./images/profile-1.png" alt="">
                </div>
                <div class="info">
                    <p>Hey, <b>Ranjith Kumar</b> </p>
                    <small class="text-muted">124003147</small>
                </div>
            </div>
            <div class="about">
                <h5>Course</h5>
                <p>BTech. Computer Science & Engineering</p>
                <h5>DOB</h5>
                <p>27-Jul-2002</p>
                <h5>Contact</h5>
                <p>1234567890</p>
                <h5>Email</h5>
                <p>unknown@gmail.com</p>
                <h5>Address</h5>
                <p>Nizamabad,Telangana</p>
            </div>
```

```
    </div>
</aside>

<main>
    <h1>Attendance</h1>
    <div class="subjects">
        <div class="eg">
            <span class="material-icons-sharp">architecture</span>
            <h3>Theory of Computation</h3>
            <h2>12/14</h2>
            <div class="progress">
                <svg><circle cx="38" cy="38" r="36"></circle></svg>
                <div class="number"><p>86%</p></div>
            </div>
            <small class="text-muted">Last 24 Hours</small>
        </div>
        <div class="mth">
            <span class="material-icons-sharp">functions</span>
            <h3>Operating Sysytems</h3>
            <h2>27/29</h2>
            <div class="progress">
                <svg><circle cx="38" cy="38" r="36"></circle></svg>
                <div class="number"><p>93%</p></div>
            </div>
            <small class="text-muted">Last 24 Hours</small>
        </div>
        <div class="cs">
            <span class="material-icons-sharp">computer</span>
            <h3>Computer Networks</h3>
            <h2>27/30</h2>
            <div class="progress">
                <svg><circle cx="38" cy="38" r="36"></circle></svg>
                <div class="number"><p>81%</p></div>
            </div>
```

```
            <small class="text-muted">Last 24 Hours</small>
        </div>
        <div class="cg">
            <span class="material-icons-sharp">dns</span>
            <h3>Python Programming</h3>
            <h2>24/25</h2>
            <div class="progress">
                <svg><circle cx="38" cy="38" r="36"></circle></svg>
                <div class="number"><p>96%</p></div>
            </div>
            <small class="text-muted">Last 24 Hours</small>
        </div>
        <div class="net">
            <span class="material-icons-sharp">router</span>
            <h3>Linux Programming</h3>
            <h2>25/27</h2>
            <div class="progress">
                <svg><circle cx="38" cy="38" r="36"></circle></svg>
                <div class="number"><p>92%</p></div>
            </div>
            <small class="text-muted">Last 24 Hours</small>
        </div>
    </div>
</main>

<div class="right">
    <div class="announcements">
        <h2>Announcements</h2>
        <div class="updates">
            <div class="message">
                <p> <b>Academic</b> Summer training internship with Live Projects.</p>
                <small class="text-muted">2 Minutes Ago</small>
            </div>
            <div class="message">
```

```
            <p> <b>Co-curricular</b> Global internship oportunity by Student organization.</p>
            <small class="text-muted">10 Minutes Ago</small>
        </div>
        <div class="message">
            <p> <b>Examination</b> Instructions for Mid Term Examination.</p>
            <small class="text-muted">Yesterday</small>
        </div>
    </div>
</div>

<div class="leaves">
    <h2>Handling Faculty</h2>
    <div class="teacher">
        <div class="info">
            <h3>Priyadarshini :- CSE301 </h3>
        </div>
    </div>
    <div class="teacher">
        <div class="info">
            <h3>Karthikeyan.B :- CSE308</h3>
        </div>
    </div>
    <div class="teacher">
        <div class="info">
            <h3>Kannan Balasubramanian :- CSE302</h3>
        </div>
    </div>
    <div class="teacher">
        <div class="info">
            <h3>Reka.S :- CSE304</h3>
        </div>
    </div>
    <div class="teacher">
        <div class="info">
```

```
                <h3>Rajendran.P :-CSE203</h3>
            </div>
        </div>
    </div>

  </div>
</div>
<script src="app.js"></script>
</body>
</html>
```

password.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Student Web Interface</title>
    <link href="https://fonts.googleapis.com/icon?family=Material+Icons+Sharp" rel="stylesheet">
    <link rel="shortcut icon" href="./images/logo.png">
    <link rel="stylesheet" href="style.css">

    <style>
        header{position: relative;}
        .change-password-container{
            display: flex;
            align-items: center;
            justify-content: center;
            width: 100%;
            height: 90vh;
        }
        .change-password-container form{
            display: flex;
```

```
    flex-direction: column;
    justify-content: center;
    border-radius: var(--border-radius-2);
    padding : 3.5rem;
    background-color: var(--color-white);
    box-shadow: var(--box-shadow);
    width: 95%;
    max-width: 32rem;
}
.change-password-container form:hover{box-shadow: none;}
.change-password-container form input[type=password]{
    border: none;
    outline: none;
    border: 1px solid var(--color-light);
    background: transparent;
    height: 2rem;
    width: 100%;
    padding: 0 .5rem;
}
.change-password-container form .box{
    padding: .5rem 0;
}
.change-password-container form .box p{
    line-height: 2;
}
.change-password-container form h2+p{margin: .4rem 0 1.2rem 0;}
.btn{
    background: none;
    border: none;
    border: 2px solid var(--color-primary) !important;
    border-radius: var(--border-radius-1);
    padding: .5rem 1rem;
    color: var(--color-white);
    background-color: var(--color-primary);
```

```
            cursor: pointer;
            margin: 1rem 1.5rem 1rem 0;
            margin-top: 1.5rem;
        }
        .btn:hover{
            color: var(--color-primary);
            background-color: transparent;
        }
    </style>

</head>
<body>
    <header>
        <div class="logo" title="SASTRA DEMEED UNIVERSITY">
            <img src="./images/logo.png" alt="">
            <h2><span class="danger">SASTRA</span> DEEMED UNIVERSITY</h2>
        </div>
        <div class="navbar">
            <a href="index.html">
                <span class="material-icons-sharp">home</span>
                <h3>Home</h3>
            </a>
            <a href="password.html" class="active">
                <span class="material-icons-sharp">password</span>
                <h3>Change Password</h3>
            </a>
            <a href="#">
                <span class="material-icons-sharp">logout</span>
                <h3>Logout</h3>
            </a>
        </div>
        <div id="profile-btn" style="display: none;">
            <span class="material-icons-sharp">person</span>
        </div>
```

```
        <div class="theme-toggler">
            <span class="material-icons-sharp active">light_mode</span>
            <span class="material-icons-sharp">dark_mode</span>
        </div>
    </header>

    <div class="change-password-container">
        <form action="">
            <h2>Create new password</h2>
            <p class="text-muted">Your new password must be different from previous used passwords.</p>
            <div class="box">
                <p class="text-muted">Current Password</p>
                <input type="password" id="currentpass">
            </div>
            <div class="box">
                <p class="text-muted">New Password</p>
                <input type="password" id="newpass">
            </div>
            <div class="box">
                <p class="text-muted">Confirm Password</p>
                <input type="password" id="confirmpass">
            </div>
            <div class="button">
                <input type="submit" value="Save" class="btn">
                <a href="index.html" class="text-muted">Cancel</a>
            </div>
            <a href="#"><p>Forget password?</p></a>
        </form>
    </div>
</body>
<script src="app.js"></script>
</html>
```

style.css

```
@import
url('https://fonts.googleapis.com/css2?family=Cairo:wght@200;300;400;500;600;700;800;900&famil
y=Poppins:wght@300;400;500;600;700;800&display=swap');


:root{
    --color-primary: #7380ec;
    --color-danger: #2a23b5;
    --color-success: #41f1b6;
    --color-warning: #ffbb55;
    --color-white: #fff;
    --color-info: #7d8da1;
    --color-dark: #363949;
    --color-light: rgba(132, 139, 200, 0.18);
    --color-dark-varient: #677483;
    --color-background: #f6f6f9;

    --card-border-radius: 2rem;
    --border-radius-1: 0.4rem;
    --border-radius-2: 1.2rem;

    --card-padding: 1.8rem;
    --box-shadow: 0 2rem 3rem var(--color-light)
}

.dark-theme{
    --color-background: #181a1e;
    --color-white: #202528;
    --color-dark: #edeffd;
    --color-dark-varient: #a3bdcc;
    --color-light: rgba(0,0,0,0.4);
    --box-shadow: 0 2rem 3rem var(--color-light)
}
```

```
*{
    margin:0;
    padding: 0;
    text-decoration: none;
    list-style: none;
    box-sizing: border-box;
}

html{
    font-size: 14px;
    scroll-behavior: smooth;
}
body{
    font-family: 'Poppins', sans-serif;
    font-size: .88rem;
    background: var(--color-background);
    user-select: none;
    overflow-x: hidden;
    color: var(--color-dark);
}
*{
    color: var(--color-dark);
}
img{
    display: block;
    width: 100%;
}
h1{
    font-weight: 800;
    font-size: 1.8rem;
}
h2{font-size: 1.4rem;}
h3{font-size: .87rem;}
```

```
h4{font-size: .8rem;}
h5{font-size: .77rem;}
small{font-size: .75rem;}

.text-muted{color: var(--color-info);}
p{color: var(--color-dark-varient);}
b{color: var(--color-dark);}

.primary{color: var(--color-primary);}
.danger{color: var(--color-danger);}
.success{color: var(--color-success)}
.warning{color: var(--color-warning);}

.container{
    position: relative;
    display: grid;
    width: 93%;
    margin: 0 3rem;
    gap: 1.8rem;
    grid-template-columns: 14rem auto 23rem;
    padding-top: 4rem;
}
header h3{font-weight: 500;}
header{
    position: fixed;
    width: 100vw;
    z-index: 1000;
    background-color: var(--color-background);
}
header.active{box-shadow: var(--box-shadow);}
header .logo{
    display: flex;
    gap: .20rem;
    margin-right: auto;
```

```
}
header .logo img{
    width: 6rem;
    height: 4rem;
}

header,
header .navbar{
    display: flex;
    align-items: center;
    justify-content: flex-end;
    padding: 0 3rem;
    color: var(--color-info);
}
header .navbar a{
    display: flex;
    margin-left: 2rem;
    gap: 1rem;
    align-items: center;
    justify-content: space-between;
    position: relative;
    height: 3.7rem;
    transition: all 300ms ease;
    padding: 0 2rem;
}
header .navbar a:hover {
    padding-top: 1.5rem;
}
header .navbar a.active{
    background: var(--color-light);
    color: var(--color-primary);
}
header .navbar a.active::before{
    content: "";
```

```
    background-color: var(--color-primary);
    position: absolute;
    height: 5px;
    width: 100%;
    left: 0;top: 0;
}
header #profile-btn{
    display: none;
    font-size: 2rem;
    margin: .5rem 2rem 0 0;
    cursor: pointer;
}
header .theme-toggler{
    background: var(--color-light);
    display: flex;
    justify-content: space-between;
    align-items: center;
    height: 1.6rem;
    width: 4.2rem;
    cursor: pointer;
    border-radius: var(--border-radius-1);
    margin-right: 2rem;
}
header .theme-toggler span{
    font-size: 1.2rem;
    width: 50%;
    height: 100%;
    display: flex;
    align-items: center;
    justify-content: center;
}
header .theme-toggler span.active{
    background-color: var(--color-primary);
    color: white;
```

```
    border-radius: var(--border-radius-1);
}

/* Profile section  */
aside .profile{
    margin-top: 2rem;
    width: 13rem;
    position: fixed;
}
aside .profile .top{
    display: flex;
    align-items: center;
    gap: 1rem;
    border-bottom: 1px solid var(--color-light);
    padding-bottom: 1rem;
}
aside .profile .top:hover .profile-photo{
    scale: 1.05;
}
aside .profile .top .profile-photo{
    width: 6rem;
    height: 6rem;
    border-radius: 50%;
    overflow: hidden;
    border: 5px solid var(--color-light);
    transition: all 400ms ease;
}
aside .profile .about p{
    padding-bottom: 1rem;
}
aside .profile .about{
    margin-top: 1rem;
}
```

```
/* Home Section  */
main{
    position: relative;
    margin-top: 1.4rem;
}
main .subjects{
    display: grid;
    grid-template-columns: repeat(5, 1fr);
    gap: 1.6rem;
}

main .subjects > div{
    background-color: var(--color-white);
    padding: var(--card-padding);
    border-radius: var(--card-border-radius);
    margin-top: 1rem;
    box-shadow: var(--box-shadow);
    transition: all 300ms ease;
}
main .subjects > div:hover{
    box-shadow: none;
}
main .subjects > div span{
    background-color: var(--color-primary);
    padding: .5rem;
    border-radius: 50%;
    color: var(--color-white);
    font-size: 1.5rem;
}
main .subjects > div.mth span,main .subjects > div.cg span{background: var(--color-danger);}
main .subjects > div.cs span{background: var(--color-success);}

main .subjects h3{
    margin: 1rem 0 0.6rem;
```

```
    font-size: 1rem;
}
main .subjects .progress{
    position: relative;
    width: 89px;
    height: 89px;
    border-radius: 50%;
    margin: auto;
}
main .subjects svg circle{
    fill: none;
    stroke: var(--color-primary);
    stroke-width: 8;
    stroke-linecap: round;
    transform: translate(5px, 5px);
    stroke-dasharray: 110;
    stroke-dashoffset: 92;
}
main .subjects .eg svg circle{
    stroke-dashoffset: 25;
    stroke-dasharray: 210;
}
main .subjects .mth svg circle{
    stroke-dashoffset: 7;
    stroke-dasharray: 210;
}
main .subjects .cs svg circle{
    stroke-dashoffset: 35;
    stroke-dasharray: 210;
}
main .subjects .cg svg circle{
    stroke-dashoffset: 0;
    stroke-dasharray: 210;
}
```

```
main .subjects .net svg circle{
    stroke-dashoffset: 5;
    stroke-dasharray: 210;
}
main .subjects .progress .number{
    position: absolute;
    top: 0;left: 0;
    height: 100%;
    width: 100%;
    display: flex;
    justify-content: center;
    align-items: center;
}
main .subjects small{
    margin-top: 1rem;
    display: block;
}


/* Right  */
.right{margin-top: 2.2rem;padding-left: 1.5rem;}

.right .announcements h2{margin-bottom: .8rem;}
.right .announcements .updates{
    background-color: var(--color-white);
    padding: var(--card-padding);
    border-radius: var(--card-border-radius);
    box-shadow: var(--box-shadow);
    transition: all 300ms ease;
}
.right .announcements .updates:hover{box-shadow: none;}
.right .announcements .updates .message{
    gap: 1rem;
    line-height: 1.5;
```

```
    padding: .5rem 0;
}

.right .leaves{margin-top: 2rem;}
.right .leaves h2{margin-bottom: .8rem;}
.right .leaves .teacher{
    background: var(--color-white);
    display: flex;
    align-items: center;
    gap: 1rem;
    margin-bottom: .7rem;
    padding: 1.4rem var(--card-padding);
    border-radius: var(--border-radius-2);
    transition: all 300ms ease;
    box-shadow: var(--box-shadow);
}
.right .profile-photo{
    width: 2.5rem;
    height: 2.5rem;
    border-radius: 50%;
    overflow: hidden;
}
.right .leaves .teacher:hover{box-shadow: none;}

/* MEDIA QUERIES  */
@media screen and (max-width: 1200px) {
    html{font-size: 12px;}
    .container{
        grid-template-columns: 13rem auto 20rem;
    }
    header{position: fixed;}
    .container{padding-top: 4rem;}
    header .logo h2{display: none;}
    header .navbar h3{display: none;}
```

```
    header .navbar a{width: 4.5rem; padding: 0 1rem;}

    main .subjects{
        grid-template-columns: repeat(2, 1fr);
        gap: 1;
    }
    /*main .timetable{
        width: 150%;
        position: absolute;
        padding: 4rem 0 0 0;
    }*/
}


@media screen and (max-width: 768px){
    html{font-size: 10px;}
    header{padding: 0 .8rem;}
    .container{width: 100%; grid-template-columns: 1fr;margin: 0;}
    header #profile-btn{display: inline;}
    header .navbar{padding: 0;}
    header .navbar a{margin: 0 .5rem 0 0;}
    header .theme-toggler{margin: 0;}
    aside{
        position: absolute;
        top: 4rem;left: 0;right: 0;
        background-color: var(--color-white);
        padding-left: 2rem;
        transform: translateX(-100%);
        z-index: 10;
        width:18rem;
        height: 100%;
        box-shadow: 1rem 3rem 4rem var(--color-light);
        transition: all 2s ease;
    }
```

```
    aside.active{
        transform: translateX(0);
    }
    main{padding: 0 2rem;}
    main .timetable{
        position: relative;
        margin: 3rem 0 0 0;
        width: 100%;
    }
    main .timetable table{
        width: 100%;
        margin: 0;
    }
    .right{
        width: 100%;
        padding: 2rem;
    }
}
```

CHAPTER – 4

OUTPUT SNAPSHOTS

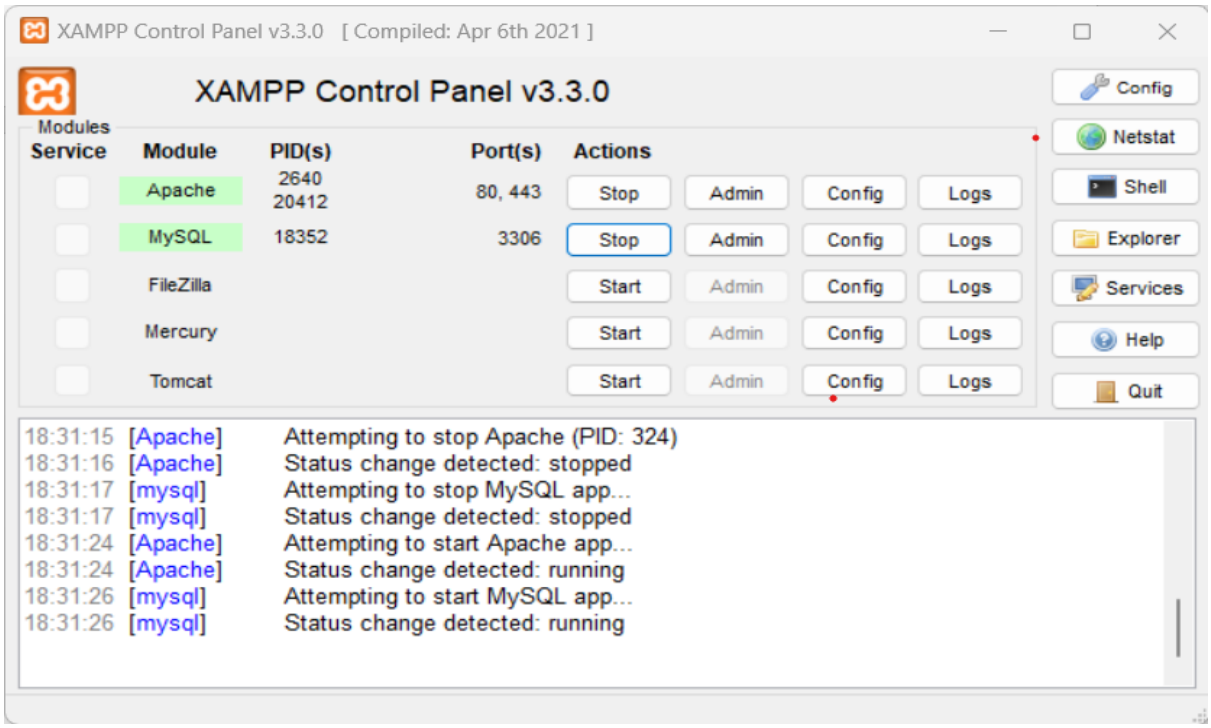


Fig: 4.1 Start action of Apache, MySQL on XAMPP Control Panel

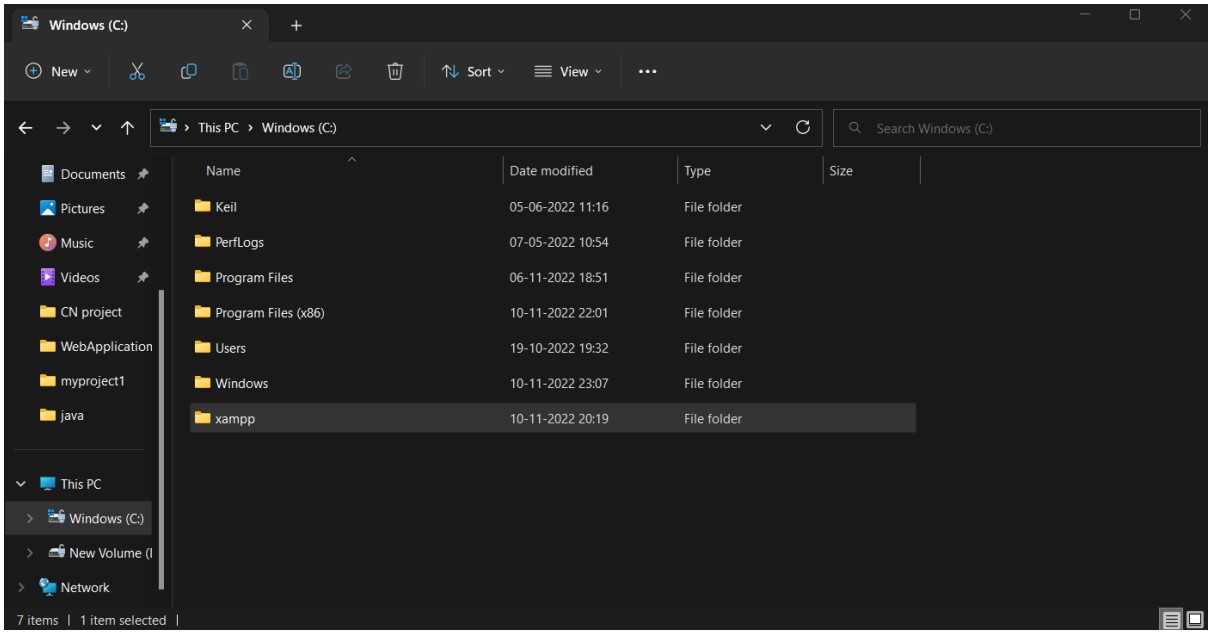


Fig: 4.2 xampp folder

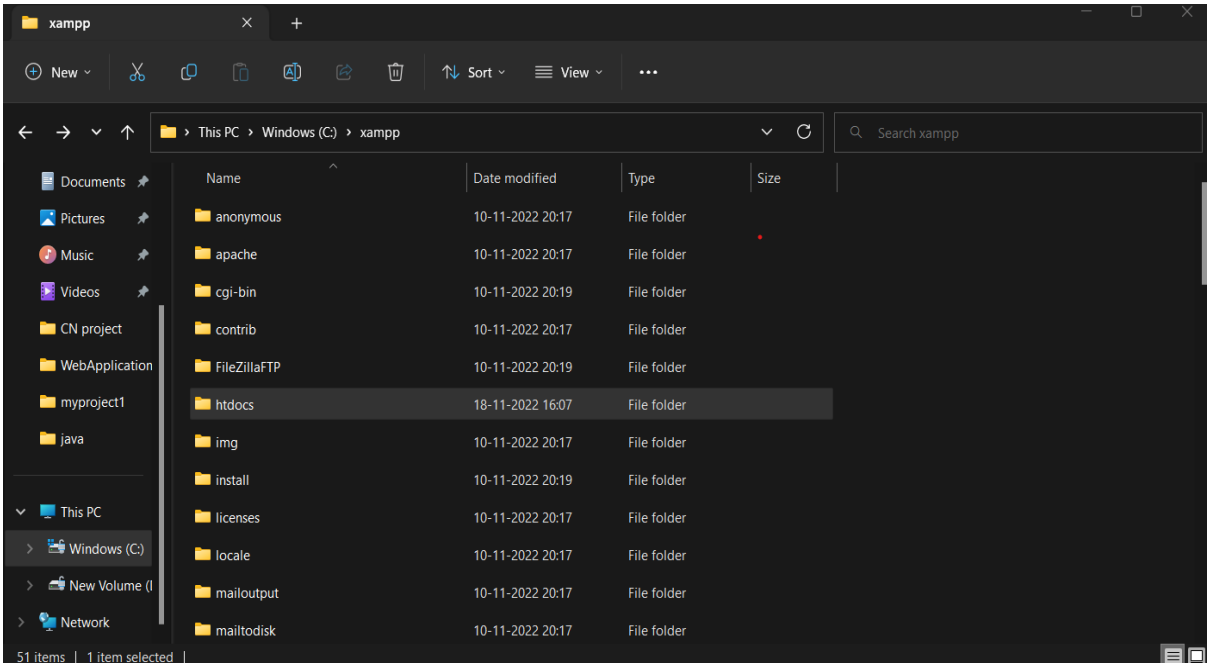


Fig: 4.3 Files inside xampp software

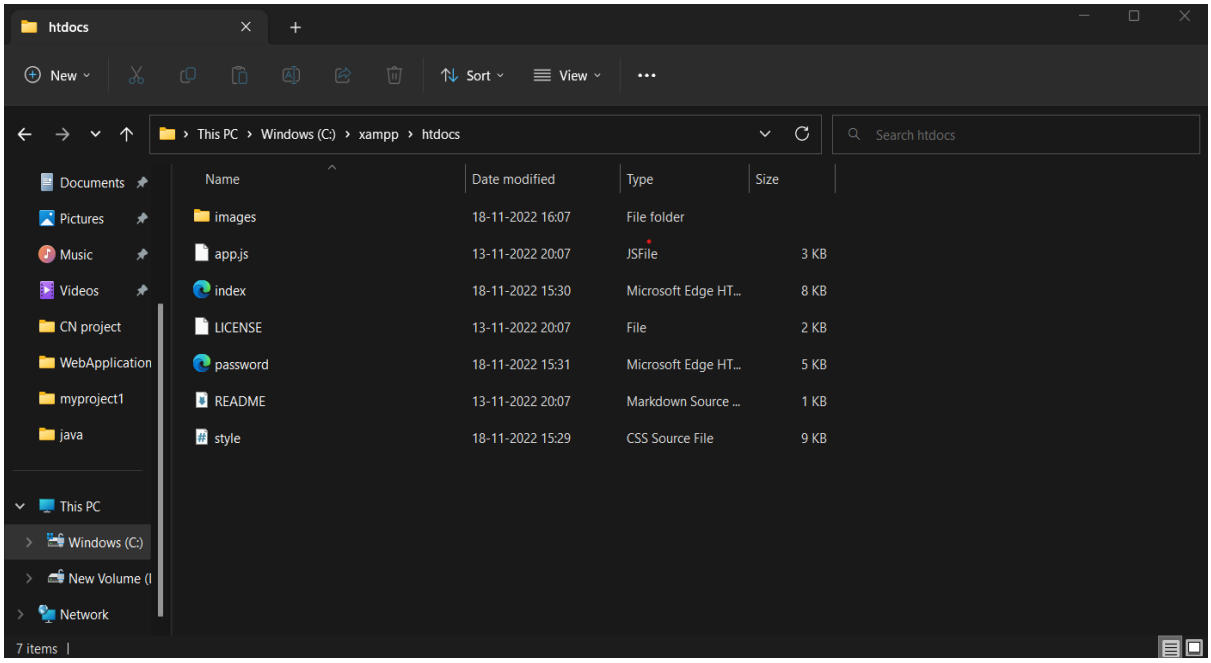


Fig: 4.4 Storing All the codes in htdocs of xampp

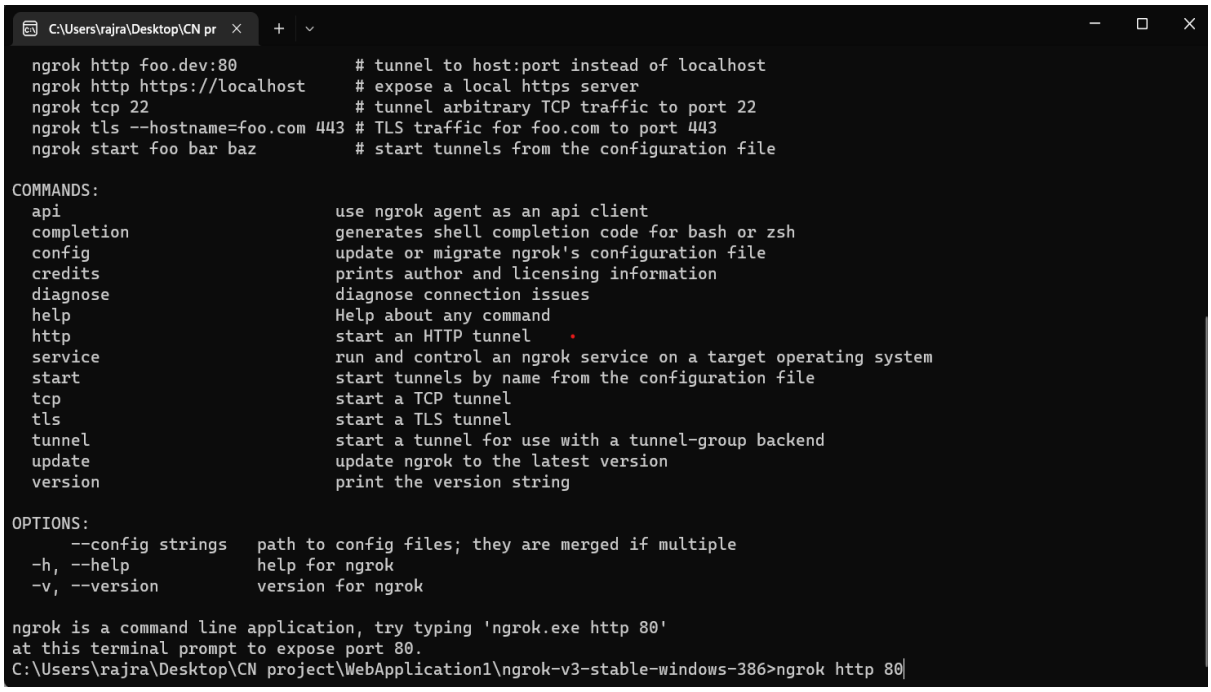


Fig: 4.5 Command Prompt of NGROK

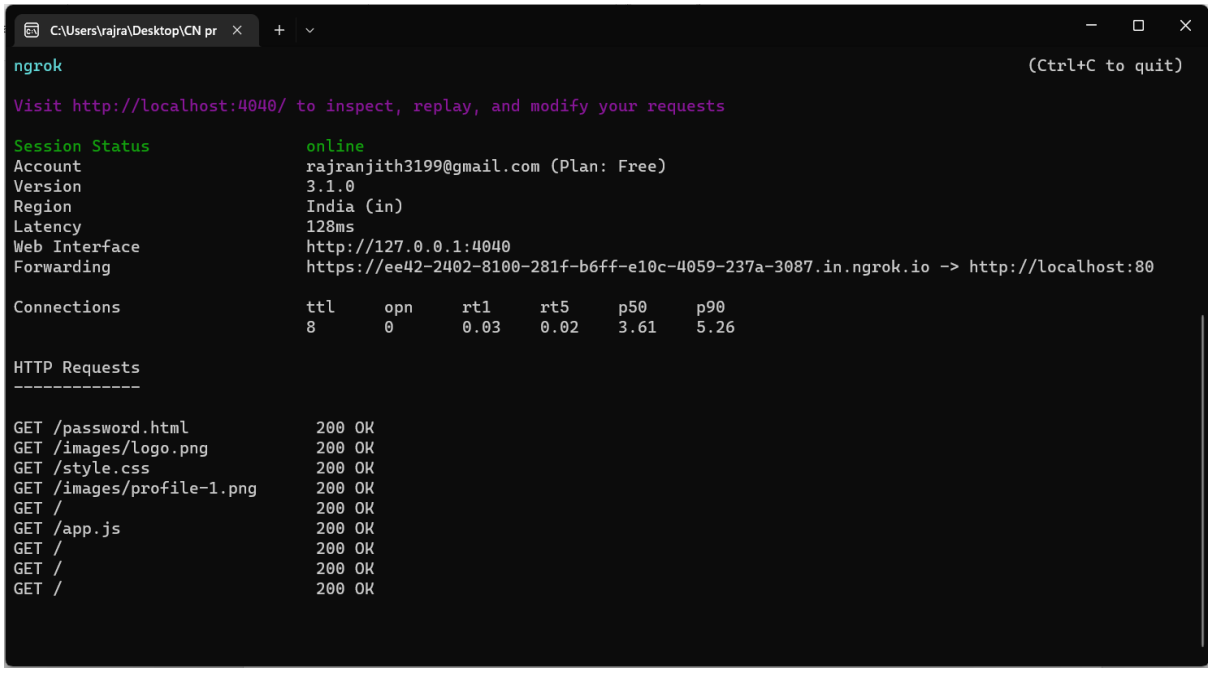


Fig:4.6 Activating the NGROK part to make the website accessible in LAN

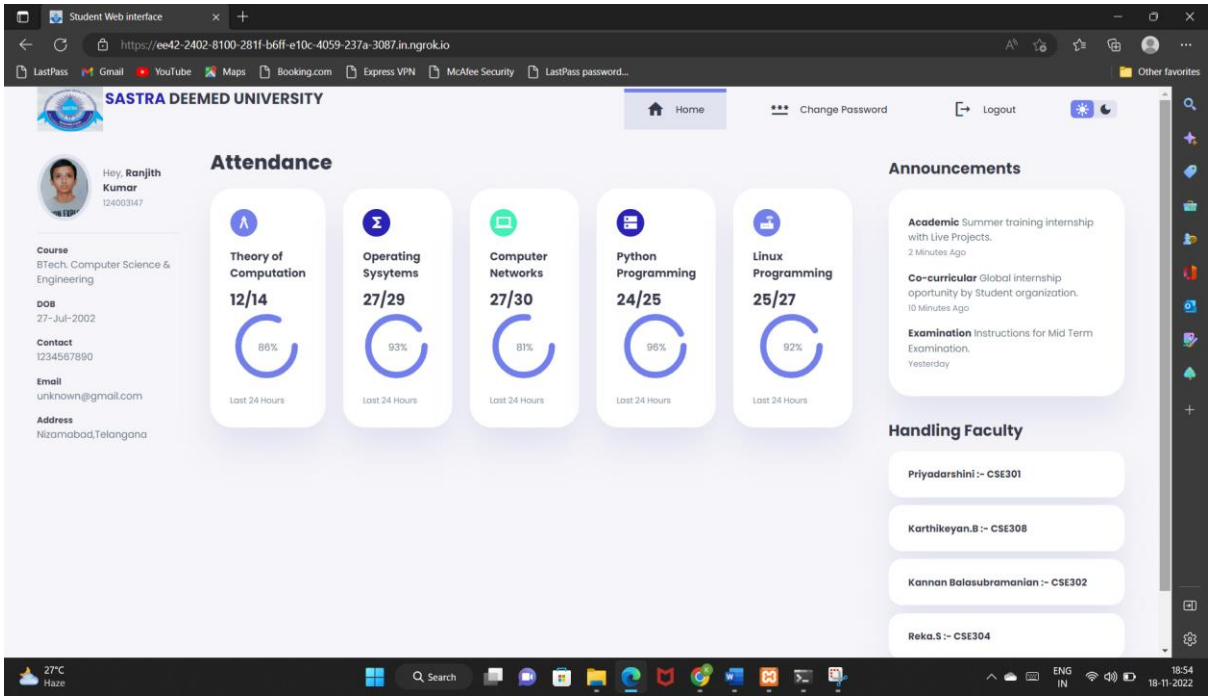
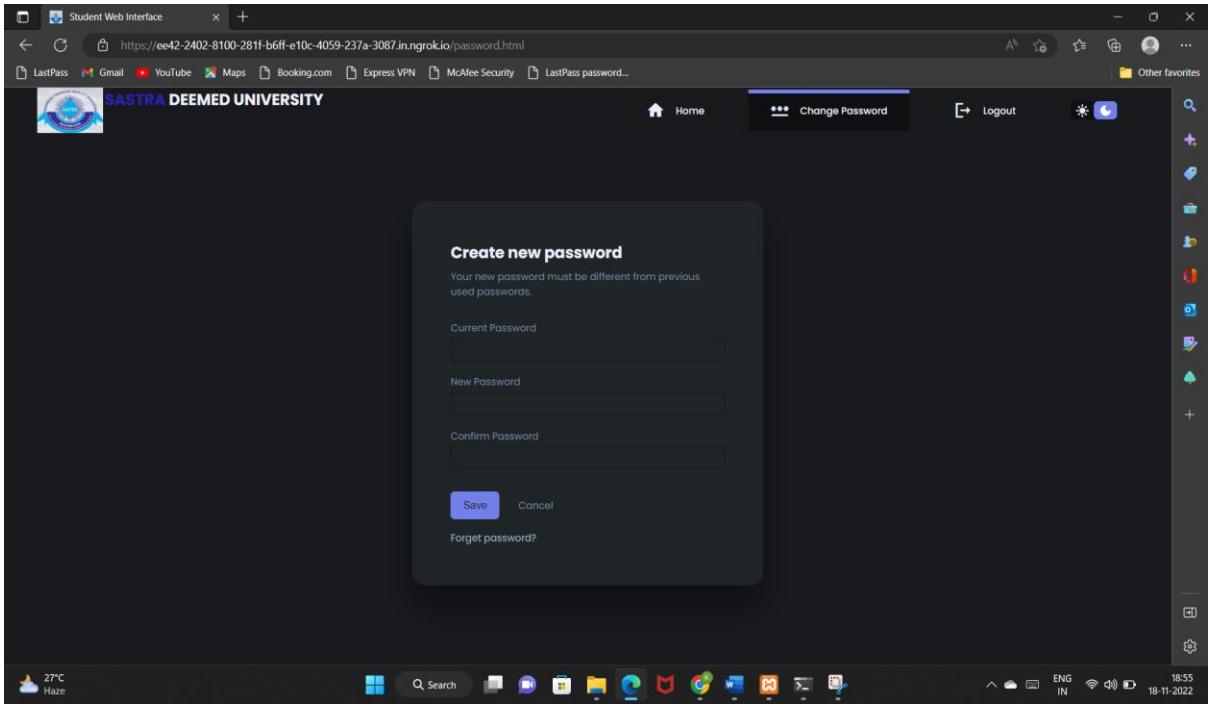


Fig: 4.7 Executed Output of Program



CHAPTER 5

CONCLUSION AND FUTURE WORKS

A comprehensive study and a practical knowledge are very important in this particular project and in the real world. The most commonly platform used by developers that furnishes a suitable environment to test and verify working of their projects based on Apache, MySQL etc through the system of host itself. HTML is used to design the webpage and to insert programs. As it is connected to the LAN, it takes some time to connect to the server as it is connected. Once it is completed, the project has been done using the help of the Port forwarding technique and NGROK. This protocol gives the effective simulation results of this part of the work in the term of packet delivery ratio, loss packet ratio and router reliability. I will carry out more and more webpages like this to the entire world. This scheme is more effective output in terms of execution and also considered parameters.

CHAPTER 6

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