Graded Assignment on Networking and Servers

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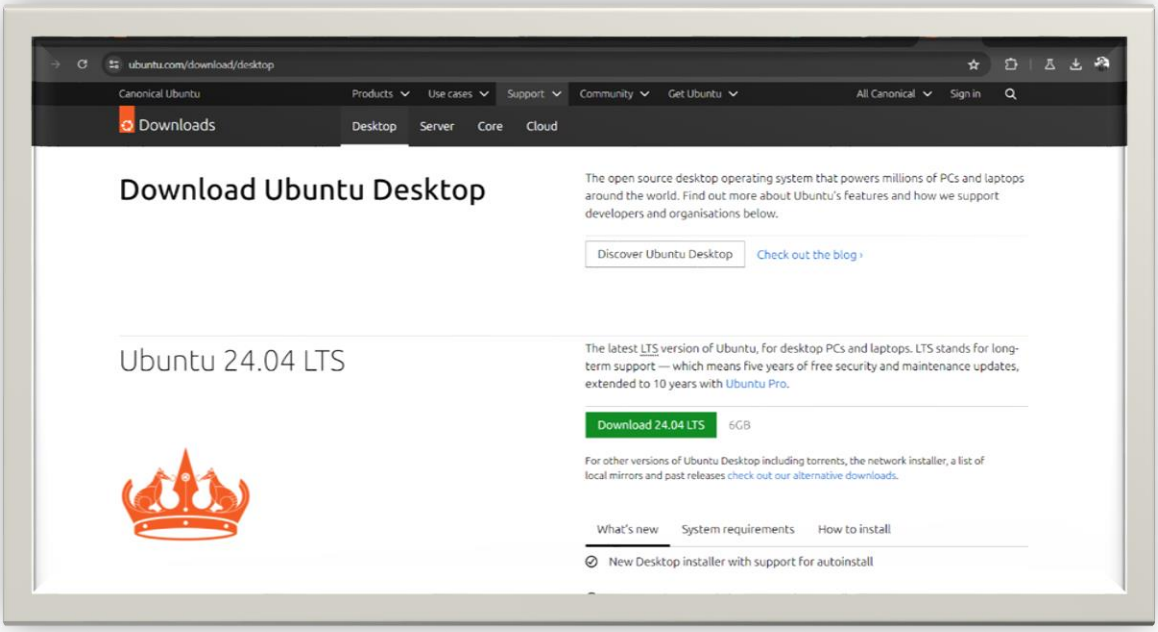
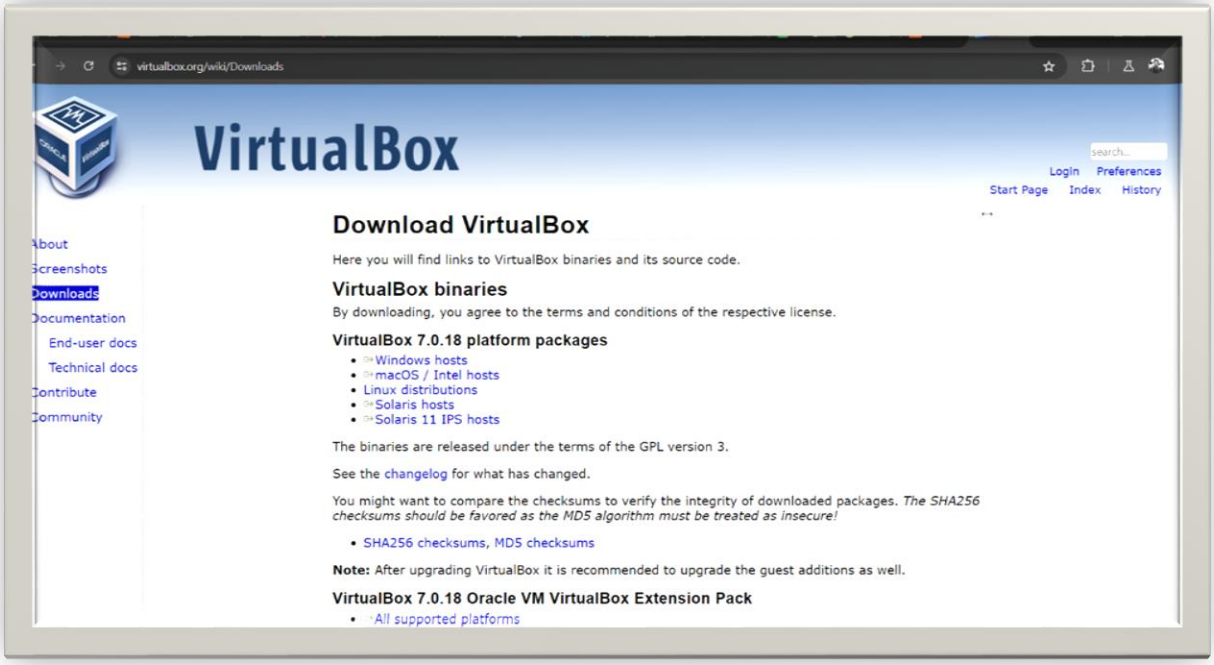
Task Q3





- Installing ubuntu ISO https://ubuntu.com/download/desktop

- Installing virtualbox

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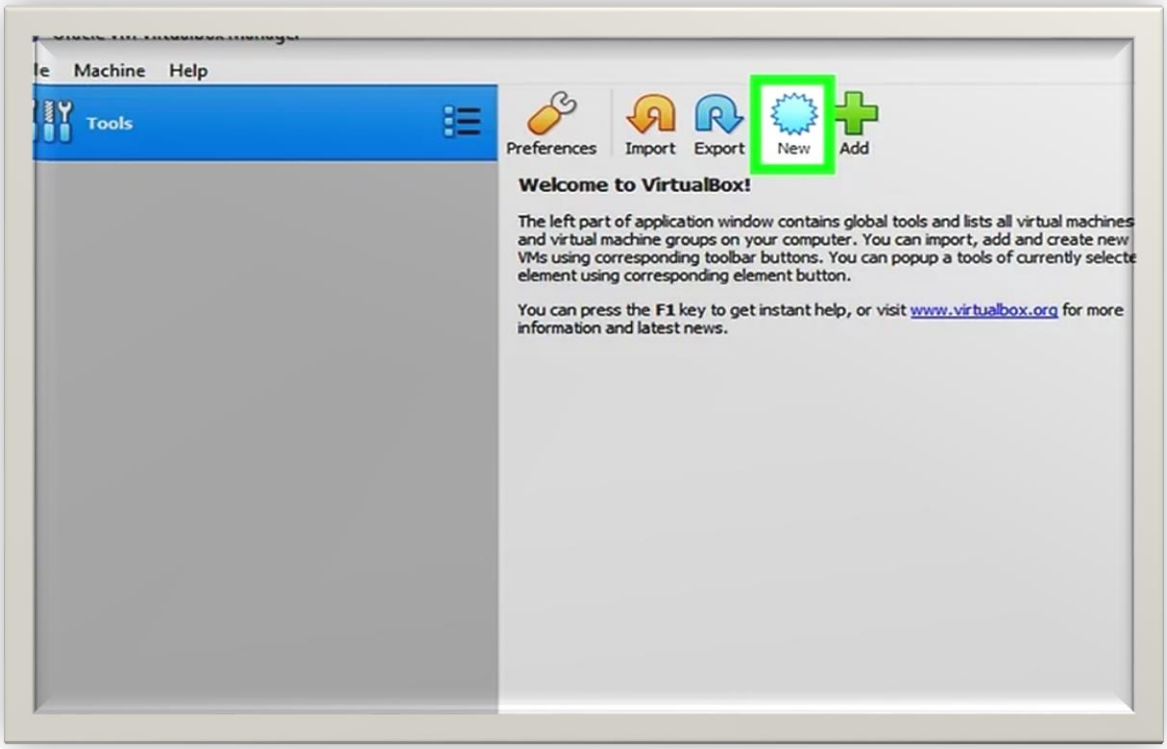
https://www.virtualbox.org/wiki/Downloads

- Open virtual box



- Click on new and fill the basic data

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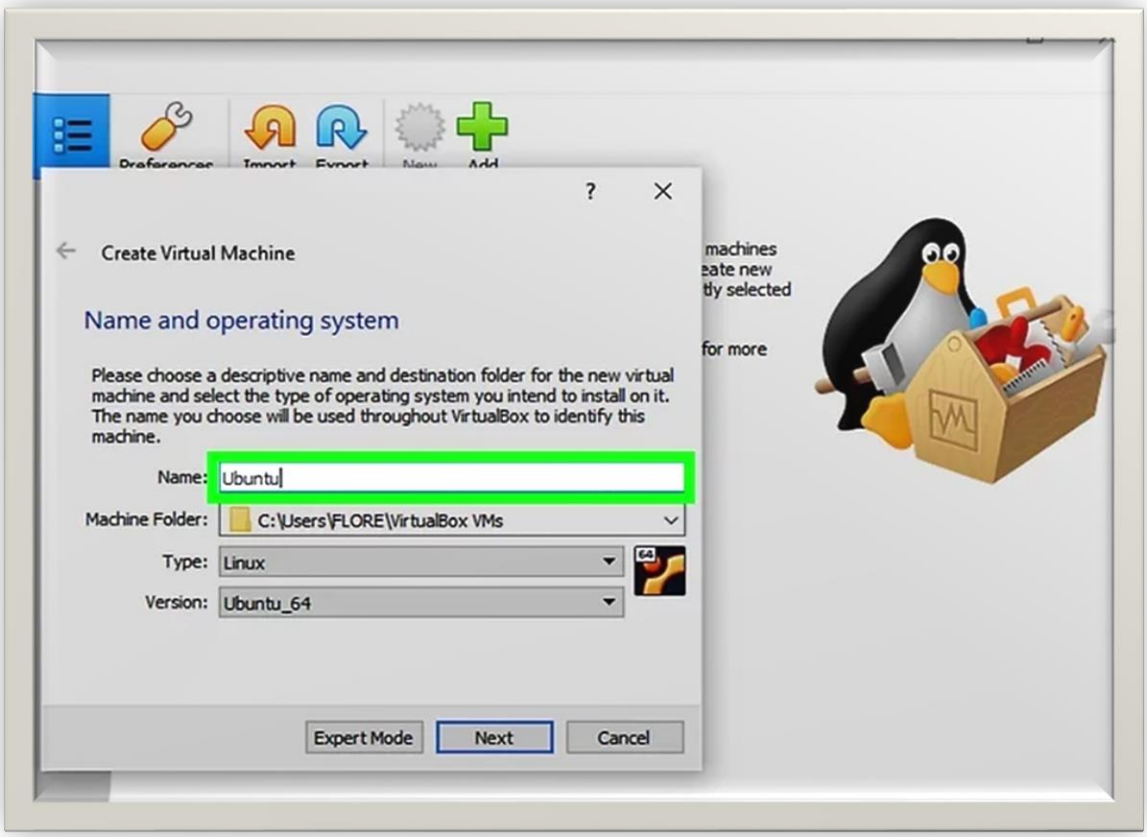

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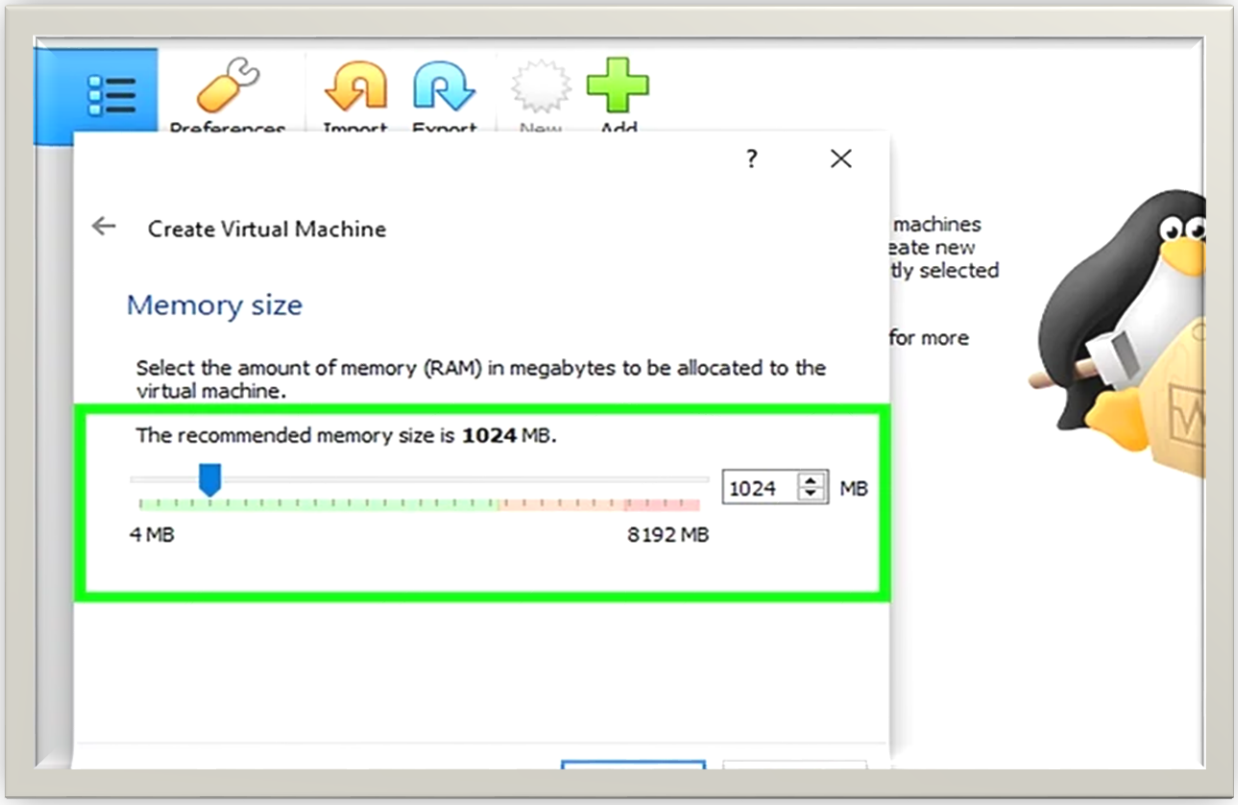

- Set memory size favorable and depending up your host recommended to have 2GB of ram atleast

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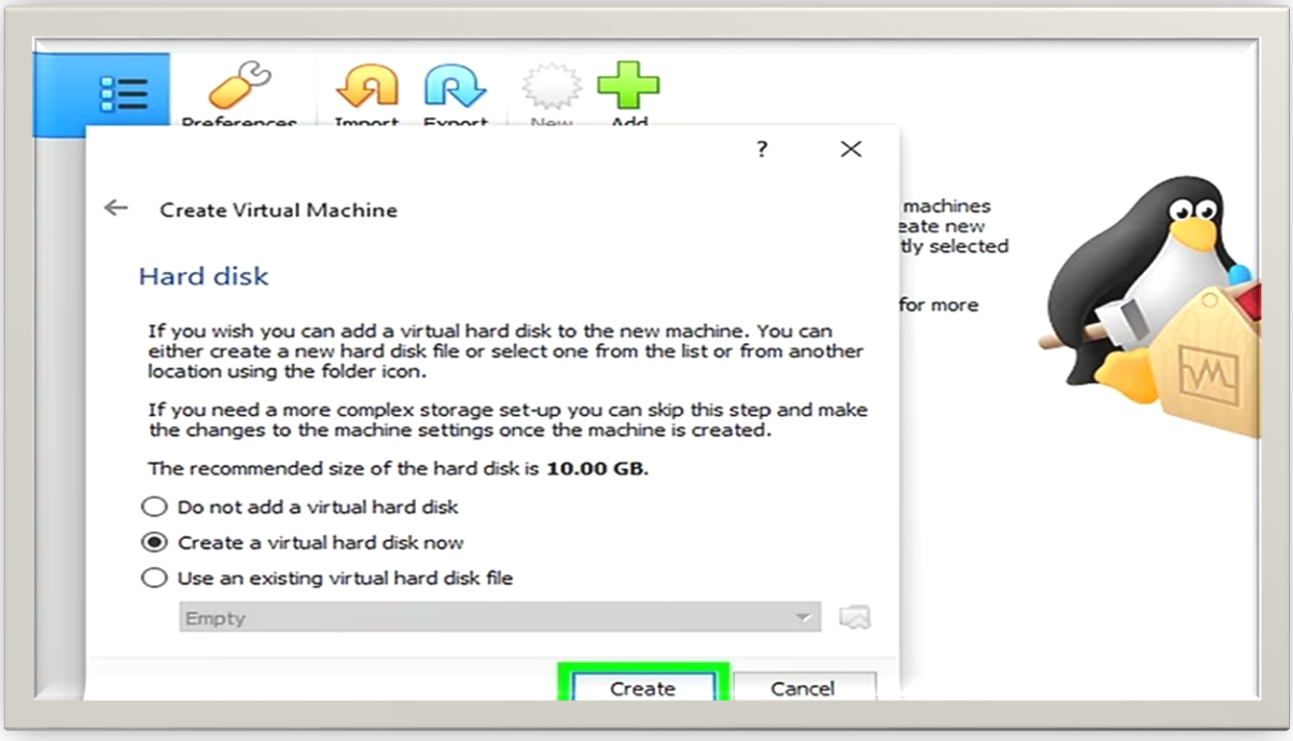
- Set Vdisk size (virtual disk) The storage is recommended to have 20 GB normally for linux I suggest you to have size of 32 GB atleast
- Click on start



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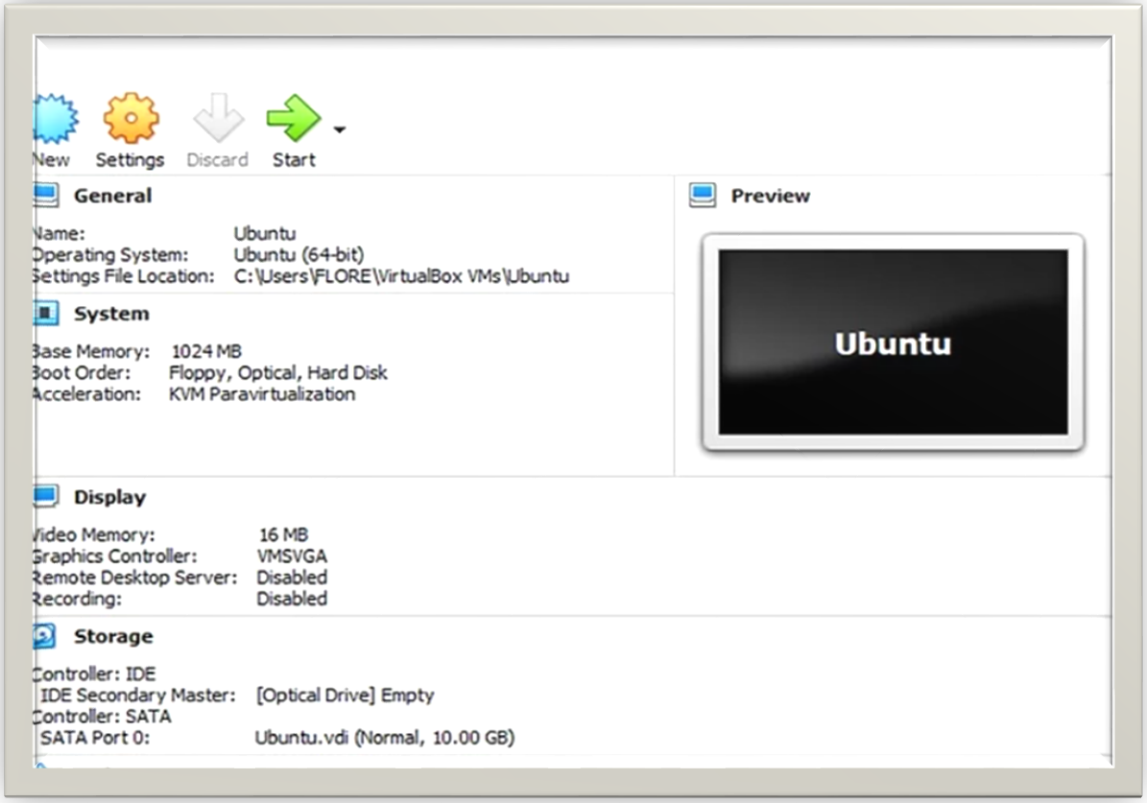

- Click on folder symbol and add path to your downloaded ubuntu iso

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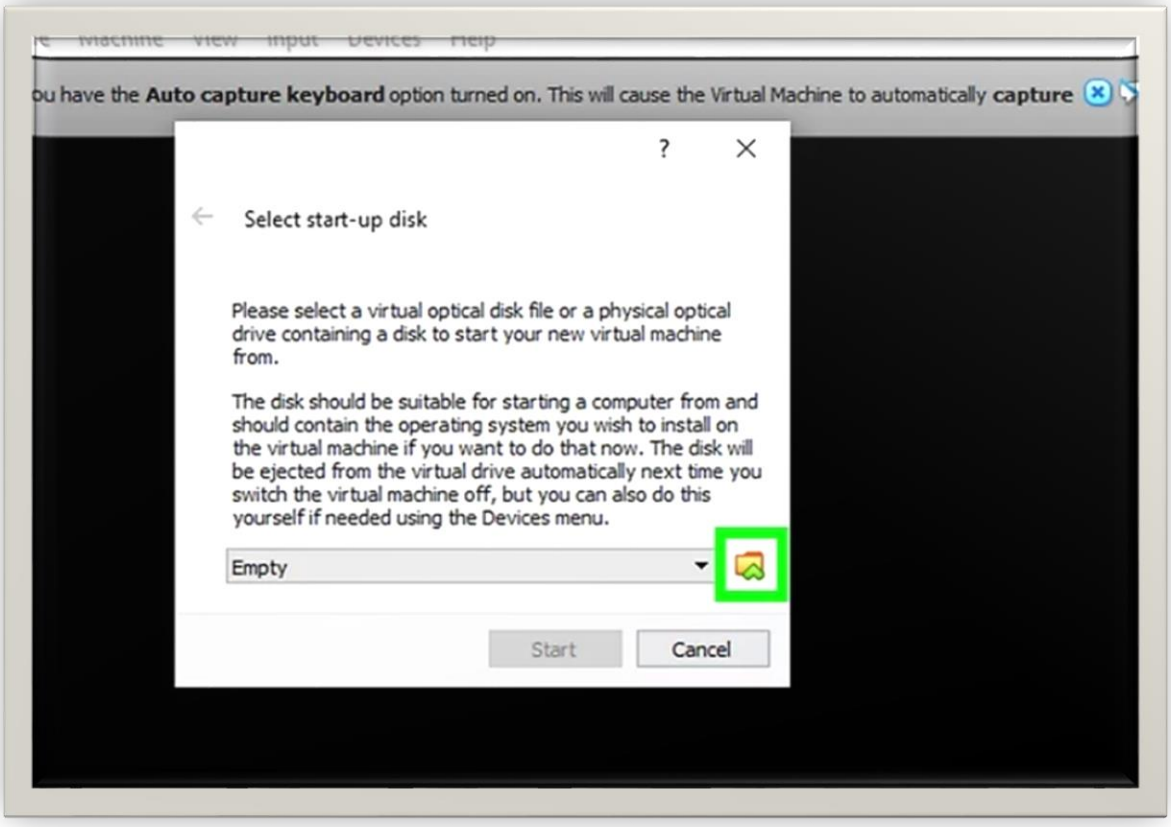

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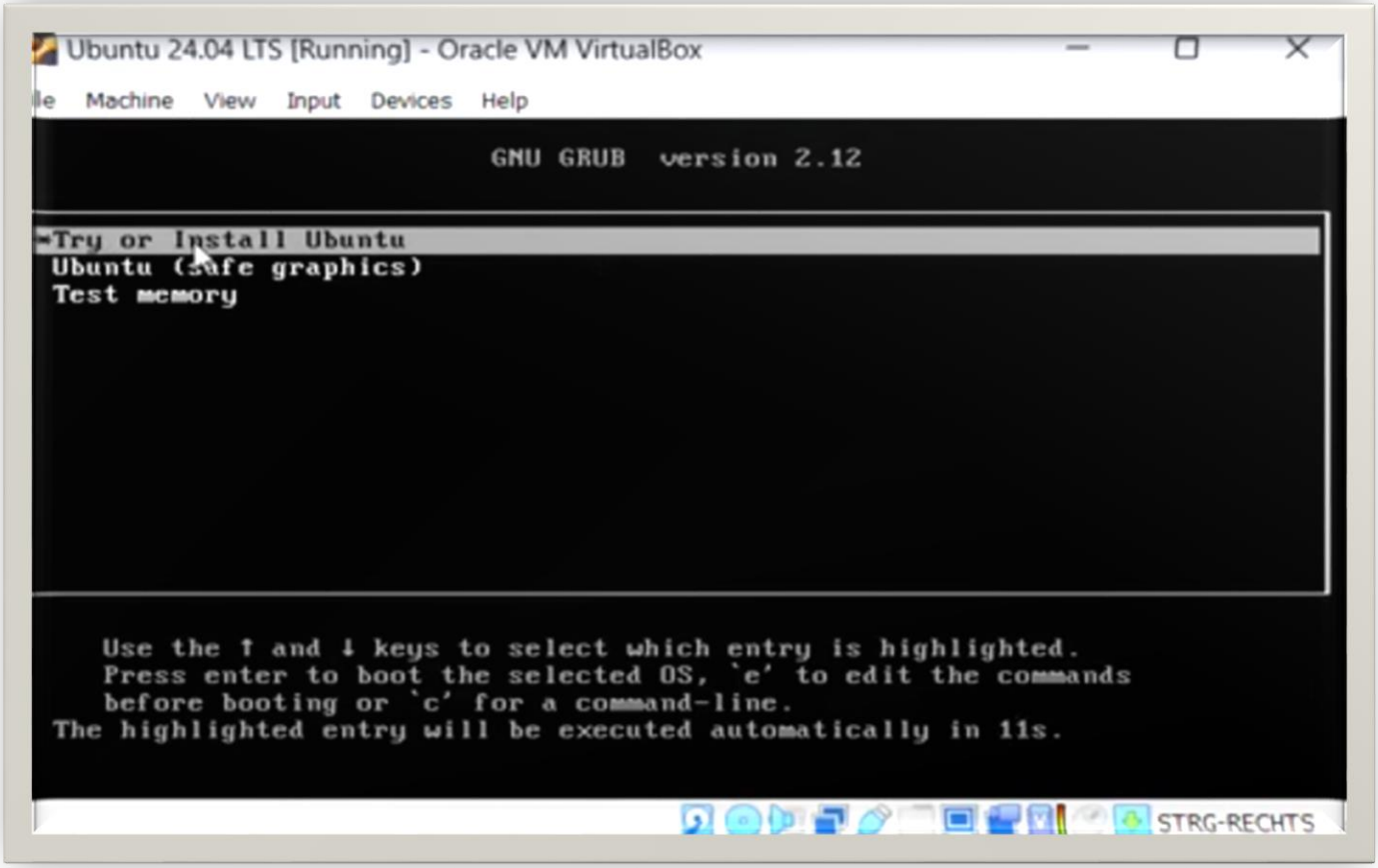

- Click on install

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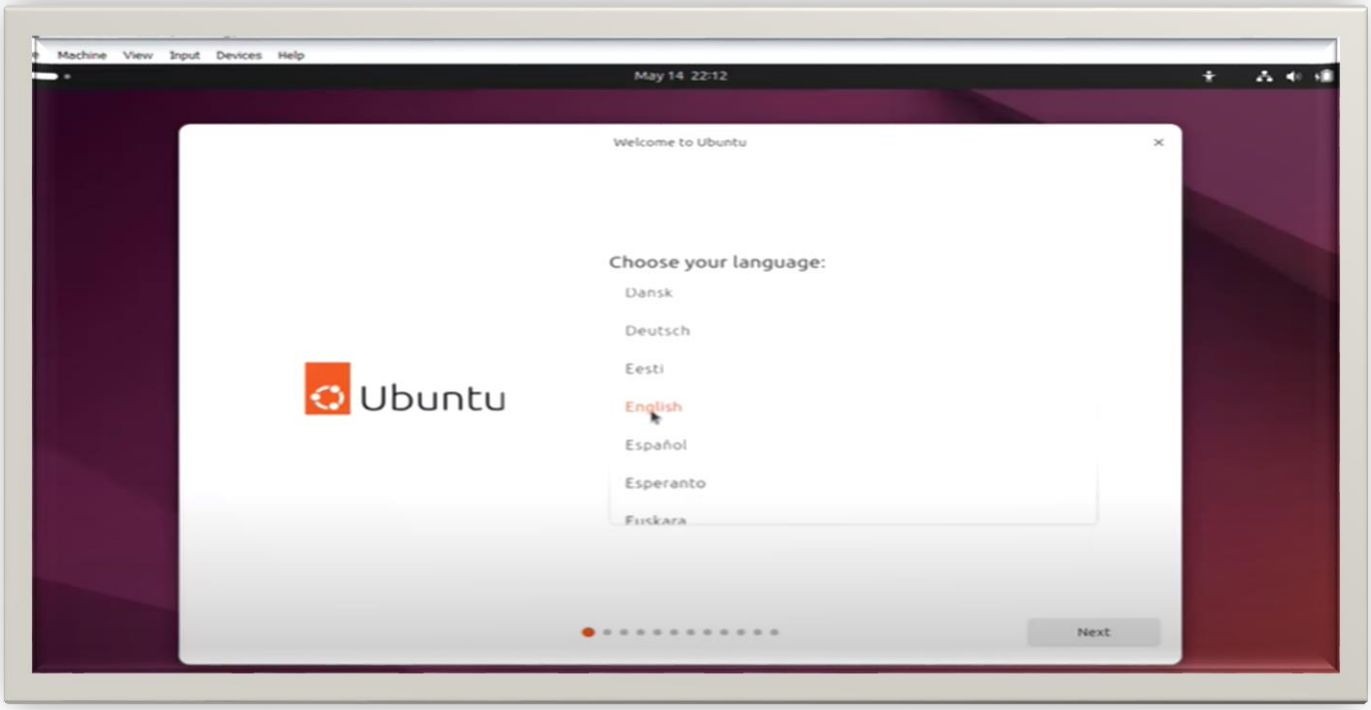
- Select install ubuntu icon
- Configure as per your requirements and do set the account and select rest of the packages



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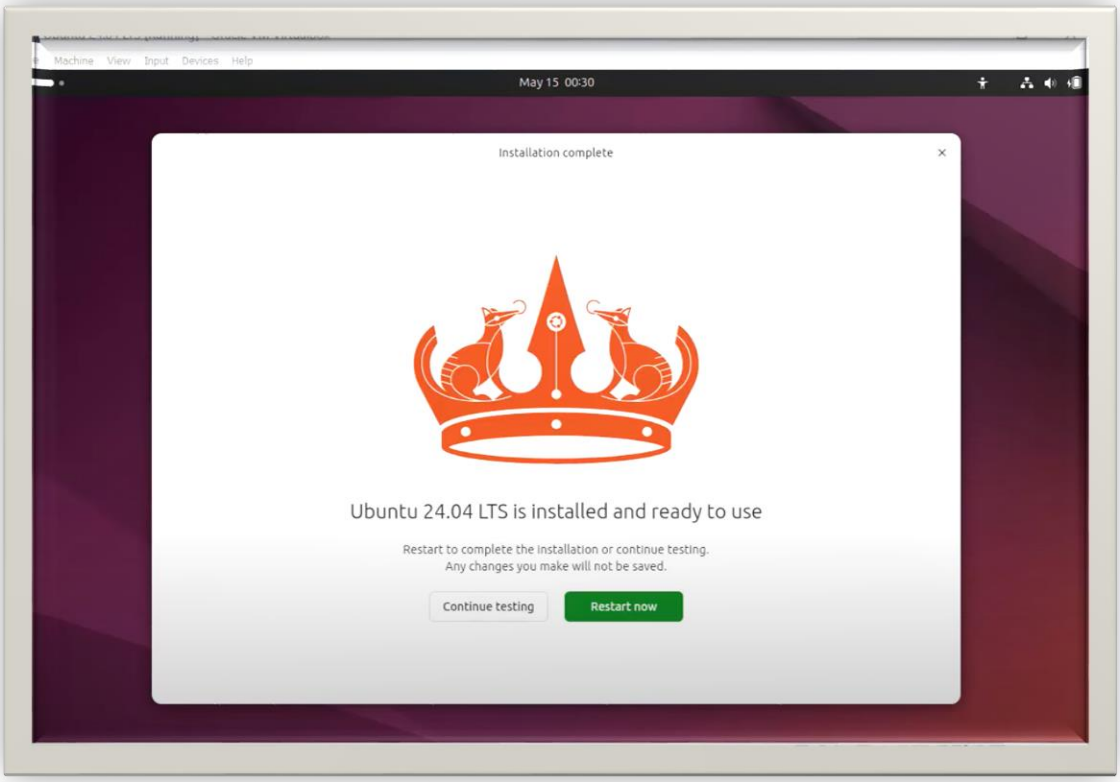
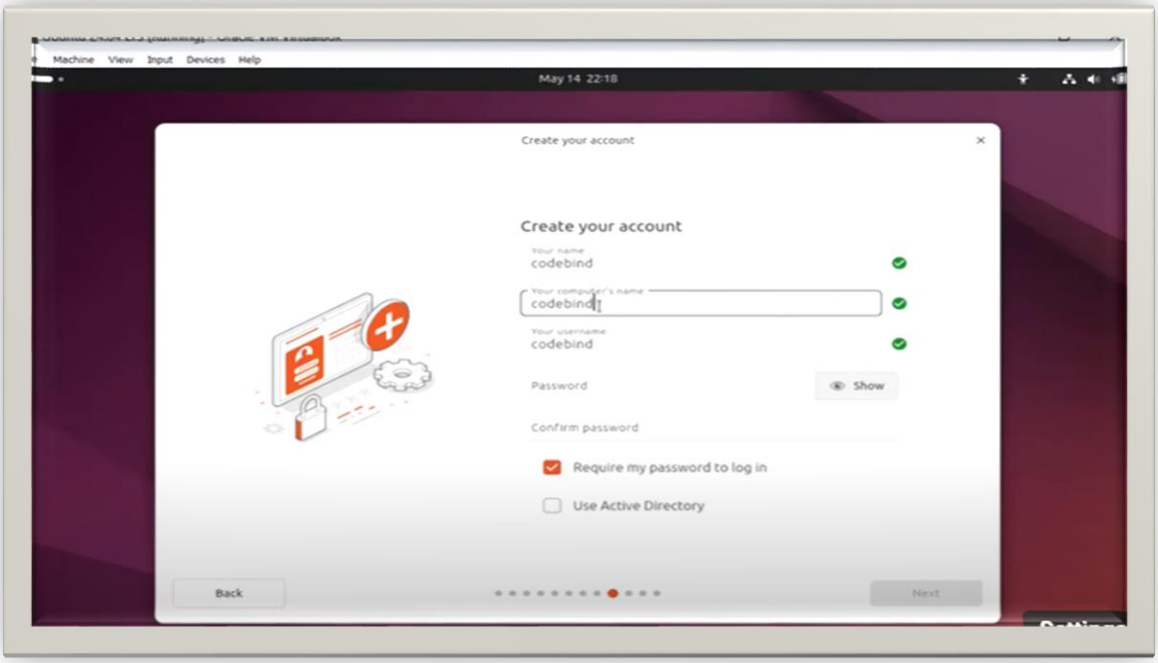


- Click on Restart/Reboot



Important commands

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```
sudo apt-get update -y
sudo apt-get upgrade -y
sudo apt install python3-full
sudo apt install python3-pip
python3 -m venv myenv
source myenv/bin/activate
pip install requests
pip install flask
sudo apt-get install nginx
sudo systemctl enable nginx
sudo systemctl nginx -t
sudo systemctl start nginx
sudo systemctl stop nginx
sudo ln -s /etc/nginx/sites-available/awesomeweb /etc/nginx/sites-enabled
sudo systemctl restart nginx
```

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Task Q1

Q1. Deploy a website on localhost using either apache2 or Nginx. Create a DNS name for this website as 'awesomeweb'. You can use any web template you want or can write your own simple HTML code.

This is nginx config file

```
root@elliot:/var/www/html# cat /etc/nginx/sites-available/awesomeweb
server {
    listen 80;
    listen [::]:80;
    server_name awesomeweb;

    location / {
        proxy_pass http://127.0.0.1:5000;
        proxy_set_header Host $host;
        proxy_set_header X-Real-IP $remote_addr;
        proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;
        proxy_set_header X-Forwarded-Proto $scheme;
    }
}
root@elliot:/var/www/html#
```

This is hosts file and it would be helpful to change domain name of the server/ machine

```
root@elliot:/etc# cat hosts
127.0.1.1 elliot
127.0.0.1 awesomeweb

# The following lines are desirable for IPv6 capable hosts
::1     ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
```

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Python Script

Task Q2

```python
from flask import Flask, jsonify, render_template, request
import requests
from threading import Thread
from time import sleep

app = Flask(__name__)

# List of subdomains to check
subdomains = [
    'http://www.google.com',
    'http://www.github.com',
    'http://www.facebook.com'
]

status_dict = {subdomain: 'Unknown' for subdomain in subdomains}

def check_status(url):
    try:
        response = requests.get(url, timeout=5)
        if response.status_code == 200:
            return 'Up'
        else:
            return 'Down'
    except requests.RequestException:
        return 'Down'

def update_status():
    while True:
        for subdomain in list(status_dict.keys()):
            status_dict[subdomain] = check_status(subdomain)
        sleep(5)

@app.route('/')
def index():
    return render_template('index.html')

@app.route('/status')
def status():
    return jsonify(status_dict)
```

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```
@app.route('/add_subdomain', methods=['POST'])
def add_subdomain():
    data = request.get_json()
    new_subdomain = data.get('subdomain')
    if new_subdomain and new_subdomain not in status_dict:
        status_dict[new_subdomain] = 'Unknown'
    return '', 204

if __name__ == "__main__":
    thread = Thread(target=update_status)
    thread.daemon = True
    thread.start()
    app.run(debug=True, host='0.0.0.0')
```

Frontend

In here I used tailwind css cdn link to style website

```
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <script src="../static/index.js" defer></script>
    <title>Subdomain Status</title>
    <link href="https://cdn.jsdelivr.net/npm/tailwindcss@2.2.19/dist/tailwind.min.css"
rel="stylesheet">
</head>

<body class="bg-gray-100">
    <div class="container mx-auto p-4">
        <h1 class="text-4xl font-bold text-center text-blue-600 mb-8">Subdomain Status
Monitor</h1>
        <div class="bg-white p-6 rounded-lg shadow-lg mb-8">
            <input id="subdomainInput" type="text" placeholder="Enter subdomain URL"
                class="border p-3 w-full rounded-lg focus:outline-none focus:ring-2
focus:ring-blue-500">
            <button id="addSubdomainButton"
                class="bg-blue-500 text-white p-3 mt-4 w-full rounded-lg hover:bg-blue-700
transition duration-300">Add
```

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```
                Subdomain</button>
            <p id="feedbackMessage" class="text-center mt-4"></p>
        </div>
        <div class="overflow-x-auto">
            <table class="min-w-full bg-white shadow-md rounded-lg">
                <thead>
                    <tr>
                        <th class="py-4 px-6 bg-gray-200 text-left text-gray-600 font-
semibold">Subdomain</th>
                        <th class="py-4 px-6 bg-gray-200 text-left text-gray-600 font-
semibold">Status</th>
                    </tr>
                </thead>
                <tbody id="statusTableBody">
                </tbody>
            </table>
        </div>
    </div>
</body>

</html>
```

Javascript

In here I used content stream to update the table using element id

```
document.addEventListener("DOMContentLoaded", function() {
    const statusTableBody = document.getElementById('statusTableBody');
    const subdomainInput = document.getElementById('subdomainInput');
    const addSubdomainButton = document.getElementById('addSubdomainButton');
    const feedbackMessage = document.getElementById('feedbackMessage');

    function fetchStatuses() {
        fetch('/status')
            .then(response => response.json())
            .then(data => {
                statusTableBody.innerHTML = '';
                for (const [subdomain, status] of Object.entries(data)) {
                    const row = document.createElement('tr');
                    row.innerHTML = `
                        <td class="py-4 px-6 border-b">${subdomain}</td>
                        <td class="py-4 px-6 border-b">${status}</td>
                    `;
```

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```
                    statusTableBody.appendChild(row);
                }
            });
    }

    function addSubdomain() {
        const subdomain = subdomainInput.value.trim();
        if (subdomain) {
            fetch('/add_subdomain', {
                method: 'POST',
                headers: {
                    'Content-Type': 'application/json'
                },
                body: JSON.stringify({ subdomain: subdomain })
            }).then(response => {
                if (response.ok) {
                    subdomainInput.value = '';
                    feedbackMessage.textContent = 'Subdomain added successfully!';
                    feedbackMessage.className = 'text-green-500';
                    fetchStatuses();
                } else {
                    feedbackMessage.textContent = 'Failed to add subdomain.';
                    feedbackMessage.className = 'text-red-500';
                }
            }).catch(() => {
                feedbackMessage.textContent = 'Error occurred while adding subdomain.';
                feedbackMessage.className = 'text-red-500';
            });
        } else {
            feedbackMessage.textContent = 'Please enter a valid subdomain.';
            feedbackMessage.className = 'text-red-500';
        }
    }

    addSubdomainButton.addEventListener('click', addSubdomain);
    setInterval(fetchStatuses, 5000);
    fetchStatuses();
});
```

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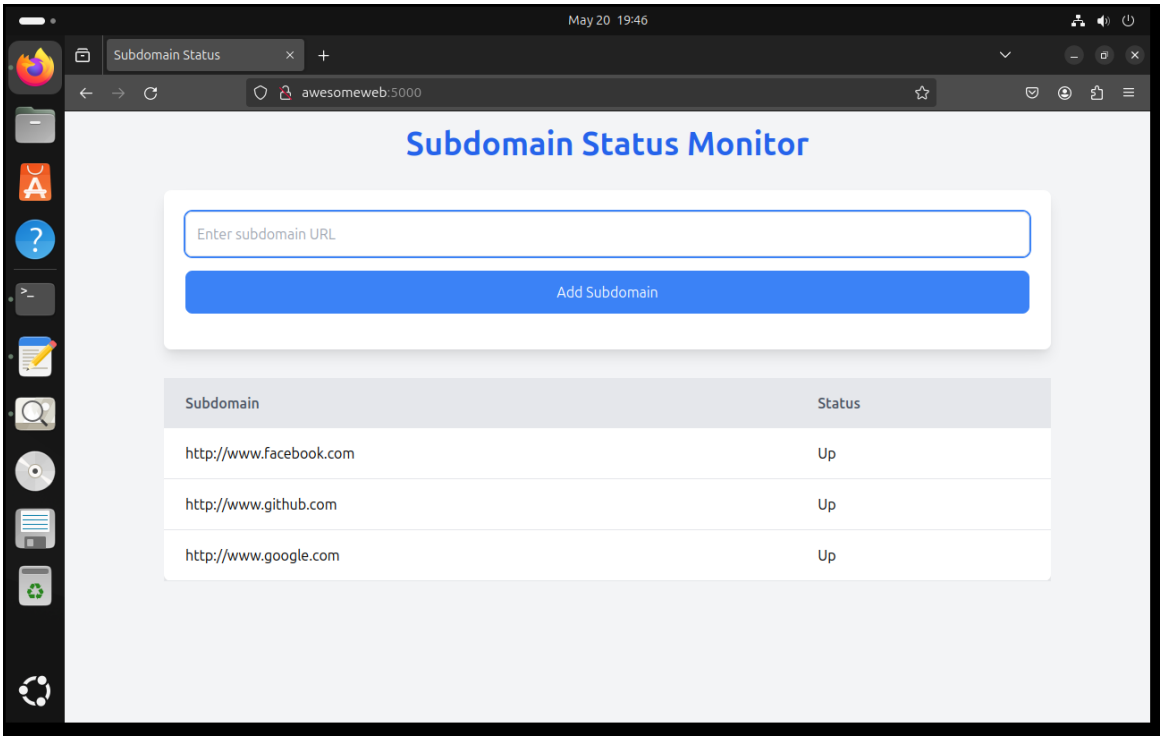
Output

To check if systems substems are online



Example of down server

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