Govt. Graduate College for Women Gujranwala

Bs.4-year Program: 8th Semester---2025 Roll No.……

Paper: Virtual System and services Course Code:DI-421L

Marks: 50

Q.1. Use a GCC compiler to compile a C program on Ubuntu.

- Create program file in files directory.
- Write all commands that are used to create ,compile and run C program on GCC compiler .
- Write some commands that we run on ubuntu command prompt.

Q.2 Implement the following.

- Use GAE launcher .
- Create a simple Web application.
- Display result on GAE.
- Write all commands that use during this process.

Q.3. Create a new virtual machine and configure hypervisor on it.
Write all steps in detail.

Solution

Q.1. Use a GCC compiler to compile a C program on Ubuntu

Create a C Program File in files Directory

1. **Open Terminal**
2. **Go to the files directory:**
3. cd ~/files
4. **Create a new C file:**
5. nano myprogram.c
6. **Write the following C code:**
7. #include <stdio.h>
8. int main() {
9. printf("Hello from C program on Ubuntu!\n");
10. return 0;
11. }
12. **Save and exit:**
    - Press Ctrl + O → Enter → Ctrl + X

Compile and Run Using GCC Compiler

1. **Compile the code:**
2. gcc myprogram.c -o myprogram
3. **Run the compiled program:**
4. ./myprogram

Common Commands Used in Ubuntu Terminal

- List files:
- ls
- Print current directory:
- pwd
- Create directory:
- mkdir new_folder
- Move file:
- mv source.txt destination_folder/
- Delete file:
- rm file.txt
- Install GCC (if not installed):
- sudo apt update
- sudo apt install gcc

Q.2. Google App Engine (GAE) – Using GAE Launcher

Note: GAE Launcher is available only for **older SDKs and mostly on Windows/Mac**. On Ubuntu, we now use **Google Cloud SDK (gcloud CLI)**. But here's a guide assuming the GAE Launcher or SDK approach:

Step 1: Install GAE Launcher or Cloud SDK

For modern apps:
sudo apt update
sudo apt install google-cloud-sdk

Initialize:
gcloud init

Step 2: Create a Simple Web Application

1. **Create a folder and enter it:**
2. mkdir mywebapp
3. cd mywebapp
4. **Create a file named app.yaml:**
5. nano app.yaml

Paste the following:

runtime: python39
entrypoint: python main.py

1. **Create main.py:**
2. nano main.py

Paste:

```
from flask import Flask
app = Flask(__name__)
@app.route('/')
def home():
   return 'Hello from GAE!'
```

1. **Install Flask (only needed once):**
2. pip install flask

Step 3: Deploy and Display Result

1. **Deploy to GAE:**
2. gcloud app deploy
3. **After deployment, open it:**
4. gcloud app browse

You will now see "Hello from GAE!" in your browser.

Commands Used Summary

gcloud init
mkdir mywebapp
cd mywebapp
nano app.yaml
nano main.py
pip install flask
gcloud app deploy
gcloud app browse

Q.3. Create a Virtual Machine and Configure Hypervisor

Step-by-Step: Creating a VM & Configuring Hypervisor (on Windows using VirtualBox)

Step 1: Install a Hypervisor (VirtualBox)

1. Download and install **VirtualBox** from https://www.virtualbox.org
2. Open VirtualBox after installation.

Step 2: Create a New Virtual Machine

1. Click **New**
2. Enter a name (e.g., UbuntuVM)
3. Choose **Type: Linux**, Version: Ubuntu (64-bit)
4. Click **Next**

Step 3: Assign Memory (RAM)

1. Choose recommended memory (e.g., 2048 MB)

Step 4: Create a Virtual Hard Disk

1. Choose: **Create a virtual hard disk now**
2. Type: **VDI (VirtualBox Disk Image)**
3. Storage: **Dynamically allocated**
4. Size: (e.g., 20 GB)
5. Click **Create**

Step 5: Install Operating System (Ubuntu)

1. Go to Settings → Storage → Select Empty disk icon
2. Click “Choose a disk file” → Select downloaded Ubuntu ISO
3. Click **Start** to boot VM

Step 6: Complete Ubuntu Installation

1. Follow on-screen instructions to install Ubuntu OS inside the VM.

Step 7: Final Hypervisor Configuration

1. After installation, go to **Settings** of the VM:
    - **Enable network adapter** (Bridged or NAT)
    - **Enable 3D acceleration** (optional for graphics)
    - **Enable clipboard sharing** (optional)