

User Manual: Cloud Management System

1. Introduction

The Cloud Management System is a command-line interface (CLI) tool designed to simplify the management of Virtual Machines (using QEMU/KVM) and Containerization (using Docker). It allows users to create, monitor, and manage cloud resources through a unified, interactive menu.

2. Prerequisites

Before running the system, ensure the following are installed:

- OS: Linux (Ubuntu 20.04+) or Windows WSL2
- Python: Version 3.8 or higher
- Virtualization: QEMU/KVM installed (`sudo apt install qemu-kvm`)
- Containerization: Docker installed and running (`sudo service docker start`)

3. How to Run

1. Open your terminal.
2. Navigate to the project directory:

```
cd CloudManager
```

3. Start the application:

```
python3 main.py
```

4. Features Guide

A. Virtual Machine Operations (Option 1)

This module uses QEMU to emulate hardware.

- **Create VM (Interactive):**
 - Select Option 1
 - Enter a name for your VM (e.g., `test_vm`)
 - Specify RAM (in MB) and CPU cores
 - Define disk size (in GB)
 - Result: A QEMU window will launch booting the virtual hardware
- **Create VM (Config File):**
 - Select Option 1
 - Ensure a `vm_config.json` file exists in the folder
 - The system will automatically read the file and launch the VM with the defined settings

B. Docker Operations (Option 2)

This module uses the Docker Engine to manage containers.

- **Create Dockerfile:** Select Option 1 then Enter a folder name and type instructions (e.g., `FROM ubuntu`) to generate a recipe file.
- **Build Image:** Select Option 2 then Point to the folder you just created to compile it into a usable image.
- **List Resources:**
 - Option 3: Displays all locally stored Docker images.
 - Option 4: Displays currently active containers.
- **Manage Containers:**
 - Option 5: Stops a running container (requires Container ID or Name)
 - Option 6: Searches DockerHub for images (e.g., `nginx`)
 - Option 7: Downloads a new image from DockerHub to your local machine