

**User manual for the virtual machine management system**

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**Introduction**

The Virtual Machine Management System is a user-friendly application designed to simplify the management of virtual machines and containers using QEMU and Docker. This manual provides comprehensive instructions for using the system, explaining each feature and its correct usage.

**Prerequisites**

* Install Docker on your system.
* Install QEMU on your system.
* Python 3 must be installed.
* Ubuntu isoimage must be installed.
* Required Python libraries: docker, os, tkinter, ttk, requests, subprocess, atexit and DockerException.

**Getting Started**

1. **Launch the Application**:
   * Run the script app.py to open the virtual machine interface.
2. **Main Interface**:
   * The application opens with a window containing buttons for different operations and a small log output area to display system messages.

**Features and Usage**

* **Docker Management**

**1. Create Dockerfile**

* **Purpose**: Create a Dockerfile for defining Docker image specifications.
* **Steps**:
  1. Click on **Create Dockerfile**.
  2. A popup appears for writing the Dockerfile contents.
  3. Pick a template for the app he wants to build or it loads the a ready Dockerfile.
  4. Choose from Upload/edit Dockerfile/edit additional fil.
  5. Write the required commands and click **Save**.
  6. Validates the Dockerfile before saving.
  7. The Dockerfile is saved on the local directory.

**2. Build Docker Image**

* **Purpose**: Build a Docker image using a Dockerfile.
* **Steps**:
  1. Click on **Build Docker Image**.
  2. Select a Dockerfile using the file dialog.
  3. Enter the image name.
  4. The system builds the image and displays logs.

**3. Pull Docker Image**

* **Purpose**: Pull an image from Docker Hub.
* **Steps**:
  1. Click on **Pull Docker Image**.
  2. Enter the image name.
  3. The system pulls the image and logs the status.

**4. Search Local Image**

* **Purpose**: Search for Docker images stored locally on your Docker application.
* **Steps**:
  1. Click on **Search Local Image**.
  2. Enter the name or Id of the image to search for.
  3. The results are displayed in the log output area.

**5. Search DockerHub Image**

* **Purpose**: Search for images on Docker Hub.
* **Steps**:
  1. Click on **Search DockerHub Image**.
  2. Enter the image name.
  3. The application takes the details from Docker Hub and logs the results.

**6. List Docker Images**

* **Purpose**: List all Docker images available locally.
* **Steps**:
  1. Click on **List Docker Images**.
  2. All local Docker images are displayed in the log output area.

**7. List Running Containers**

* **Purpose**: Display all running Docker containers.
* **Steps**:
  1. Click on **List Running Containers**.
  2. All active containers are displayed in the log output area.

**8. Stop a Container**

* **Purpose**: Stop a running Docker container.
* **Steps**:
  1. Click on **Stop a Container**.
  2. Enter the container ID or name.
  3. The selected container is stopped.
* **QEMU Management**

**1. Create a Disk Image**

* **Purpose**: Create a virtual disk image for use with QEMU.
* **Steps**:
  1. Use the create\_image function.
  2. Enter the following parameters:
     + name: Name of the disk image.
     + size: Size of the disk in MB.
     + location: Directory to save the image.
  3. The system creates the disk image.

**2. Boot a Virtual Machine**

* **Purpose**: Start a virtual machine using QEMU.
* **Steps**:
  1. Use the boot function.
  2. Enter the following parameters:
     + ram: RAM size in MB.
     + cores: Number of CPU cores.
     + imagefile: Path to the disk image.
     + isofile: Path to an ISO file (optional).
  3. The VM boots with the specified configuration.
* **Log Output**
* All system actions and their statuses are displayed in the **Log Output** area.
* After every successful action there is a pop up that tells you that you successfully done this action.

**Common Errors and Solutions**

* **Docker Daemon Error**:
  + Ensure the Docker service is running.
* **File Save Error**:
  + Check permissions and directory paths.
* **QEMU Boot Failure**:
  + Verify the image and ISO file paths.

**Support**

For any issues, contact the development team or refer to the Docker and QEMU documentation for additional guidance.

Thank you for using the Virtual Machine Management System!