VirtuManager

Virtual Disk and Virtual Machine Management Tool

Developed by:
Enjy Ramadan
Mariam Kandeel
Mazen Ashraf
Sohaila Ashraf
Omar Sherif

Project Demo

Project Overview:

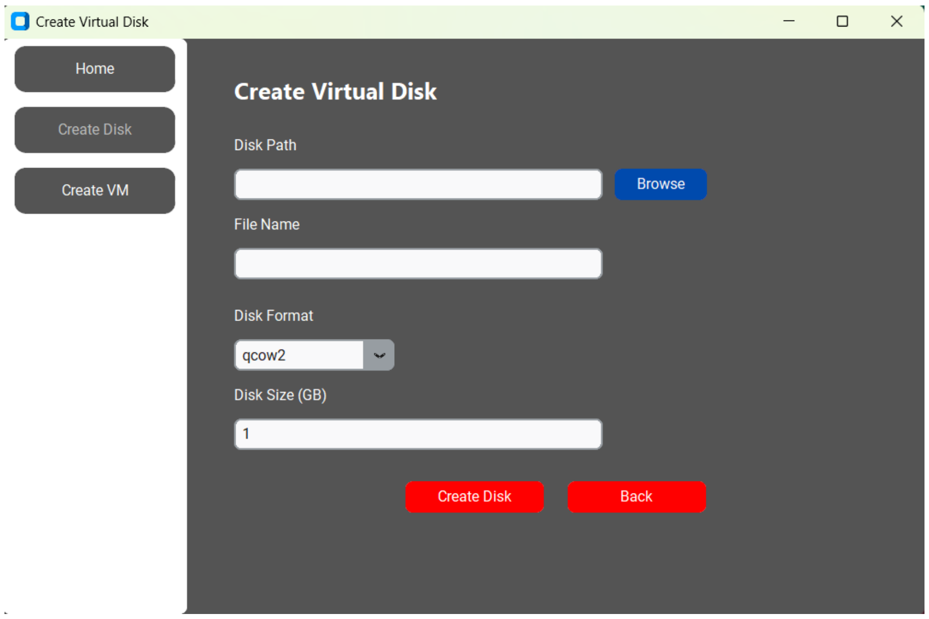
Overview:
VirtuManager is a Python-based graphical application designed for creating and managing virtual disks and virtual machines. It ensures optimal system configuration through validation checks for available CPU, RAM, and disk space before creating virtual machines (VMs). This project marks the first phase of a broader virtualization and container management tool, laying the groundwork for future enhancements like Docker container management.
Core Features (Phase 1):

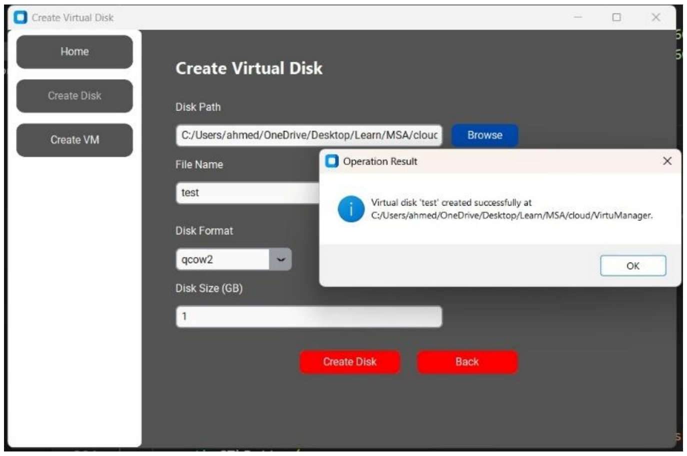
- Creation of virtual disks with customizable settings (name, path, format, size).
- Virtual machine creation with specified CPU, RAM, disk, and ISO image configurations.
- System validation to check available resources before VM creation (CPU cores, RAM, disk space).
- Support for a variety of virtual disk formats (qcow2, vmdk, vdi, raw, etc.).

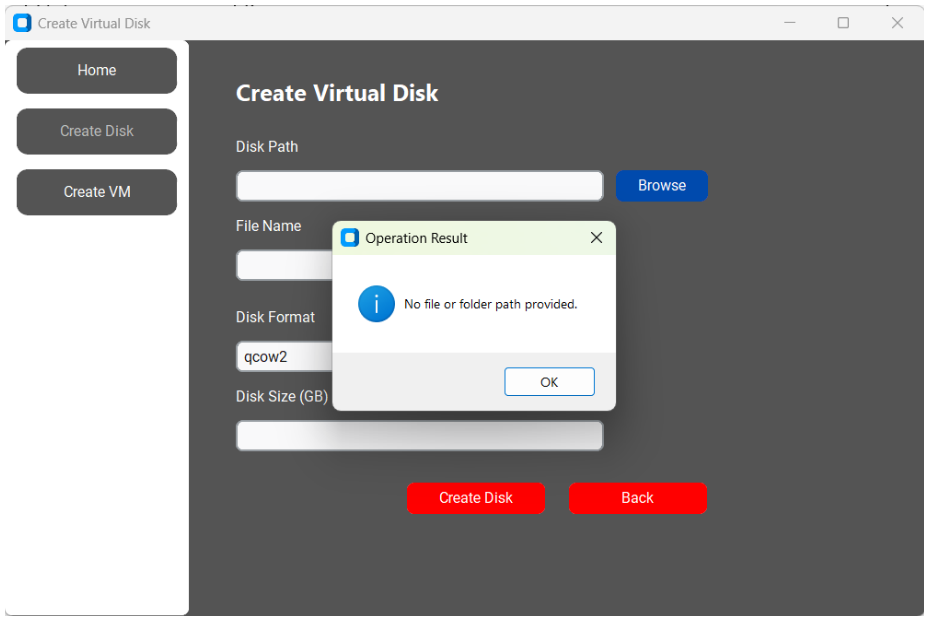
Implemented Features:

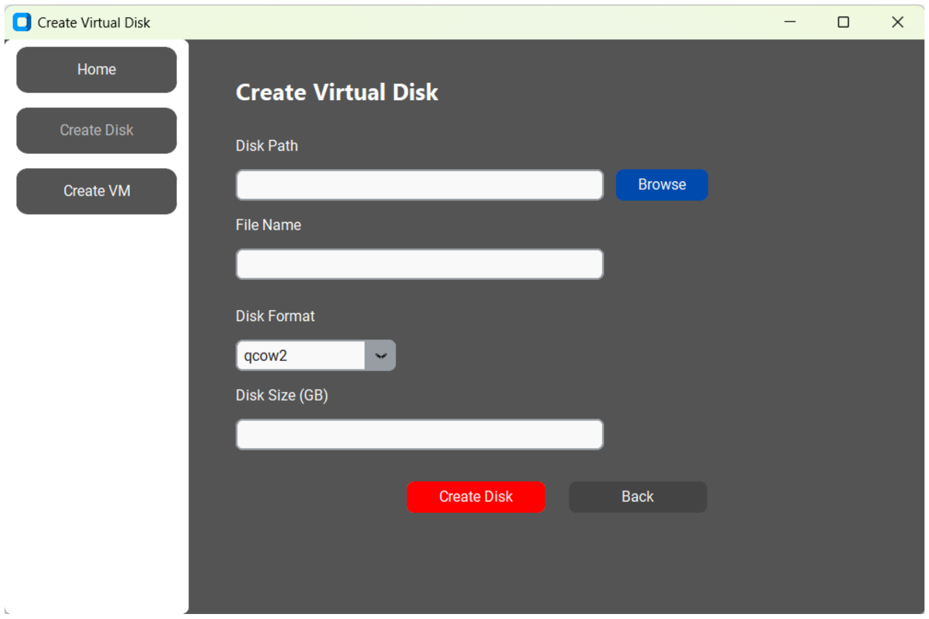
- **Virtual Disk Creation:** Allows users to create virtual disks with specified parameters such as name, path, format, and size.
- **Virtual Machine Creation:** Facilitates creating VMs by selecting the required CPU, RAM, disk, and ISO image.
- **System Resource Validation:** Ensures that the system has sufficient CPU, RAM, and disk space before VM creation to prevent resource shortages.
- **Support for Multiple Disk Formats:** Includes various virtual disk formats like qcow2, vmdk, vdi, raw, vhd, vhdx, and more, enabling flexibility in virtual machine setups.

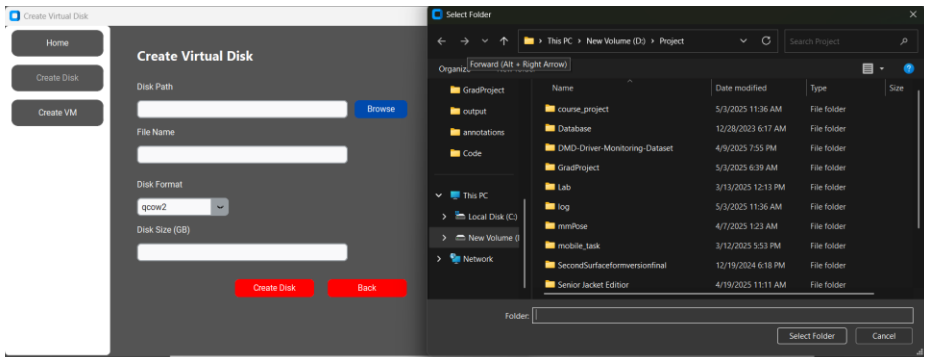
Test Casses:

Test Case Name	TVD1: Verify Page Loads Successfully
Test Scenario	Ensure the Create Virtual Disk page opens correctly.
Prerequisites	-
Test Input	Open the Create Disk page
Execution Steps	1. Launch the app. 2. Click on "START VD"
Expected Behavior	The Create Virtual Disk form loads without errors
Assumptions	UI and navigation work
Actual Results	UI and navigation work
Status	Pass
Real Life Testing	 Disk Format: qcow2 Disk Size (GB): 1

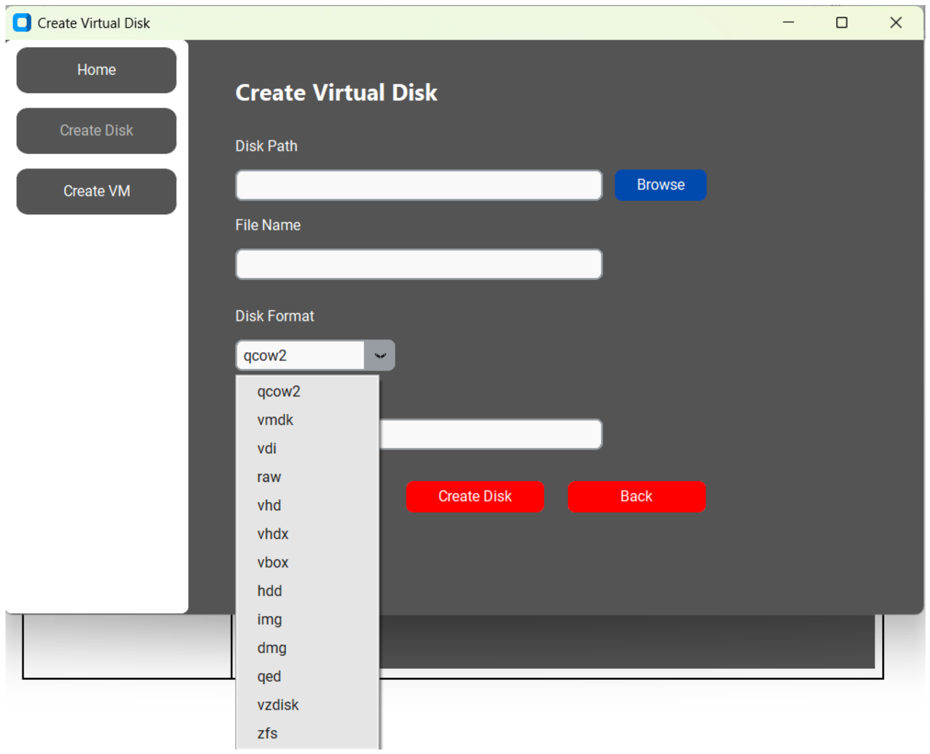
Test Case Name	TVD2: Submit with All Valid Data
Test Scenario	It should create a disk successfully.
Prerequisites	Virtualization engine functional
Test Input	1. Valid path 2. Valid format 3. Valid size
Execution Steps	1. Fill all fields correctly 2. Click “Create Disk”
Expected Behavior	Disk is created
Assumptions	Backend supports operation
Actual Results	Disk is created successfully and ready to function
Status	Pass
Real Life Testing	 Create Virtual Disk — Disk Path: C:/Users/ahmed/OneDrive/Desktop/Learn/MSA/clouc — File Name: test — Disk Format: qcow2 — Disk Size (GB): 1 — Operation Result: Virtual disk 'test' created successfully at C:/Users/ahmed/OneDrive/Desktop/Learn/MSA/cloud/VirtuManager.

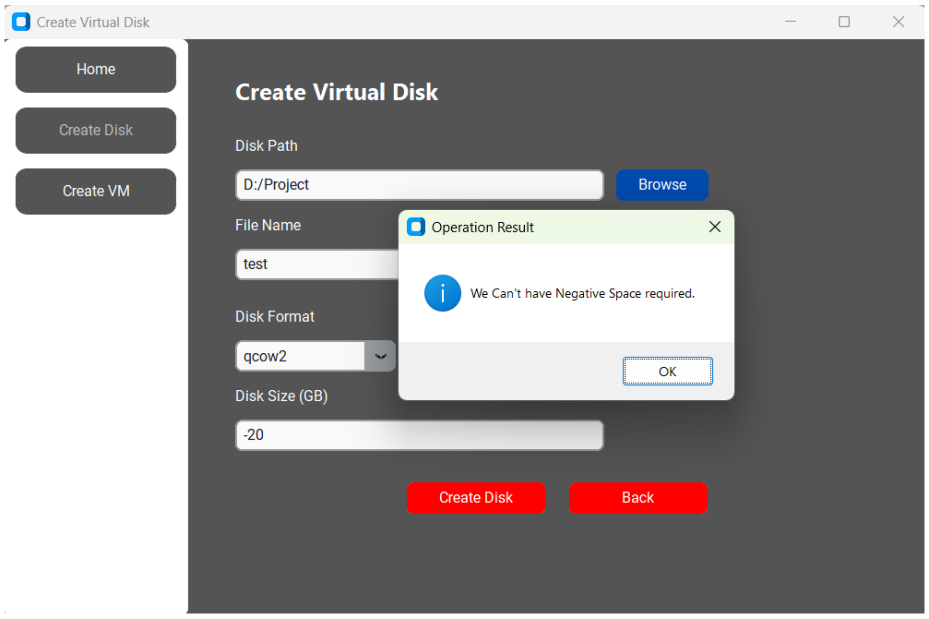
Test Case Name	TVD3: Submit with Empty Fields
Test Scenario	Submit button should validate empty input.
Prerequisites	The form is visible
Test Input	Leave all fields blank
Execution Steps	1. Click "Create Disk" without filling anything
Expected Behavior	Error shown or disk not created
Assumptions	Validation is present
Actual Results	Validation is present
Status	Pass
Real Life Testing	 Create Virtual Disk — Disk Path — File Name — Disk Format: qcow2 — Disk Size (GB) — Operation Result: No file or folder path provided.

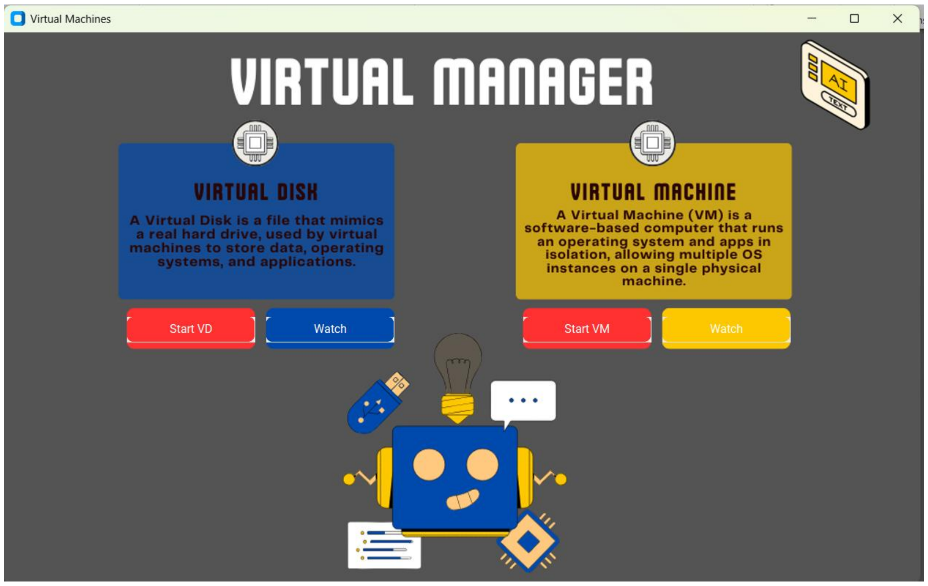
Test Case Name	TVD4: Verify Active States of Buttons
Test Scenario	Ensure that all buttons show appropriate visual feedback when clicked.
Prerequisites	The "Create Virtual Disk" page is fully loaded
Test Input	Interaction clicks with all buttons
Execution Steps	1. Hover and click on the “Browse” button. 2. Hover and click on the “Back” button. 3. Hover and click on the “Create Disk” button.
Expected Behavior	Each button should visually be active
Assumptions	UI framework handles button states
Actual Results	Functioning buttons
Status	Pass
Real Life Testing	 Create Virtual Disk Home Create Disk Create VM Create Virtual Disk Disk Path Browse File Name Disk Format qcow2 Disk Size (GB) Create Disk Back

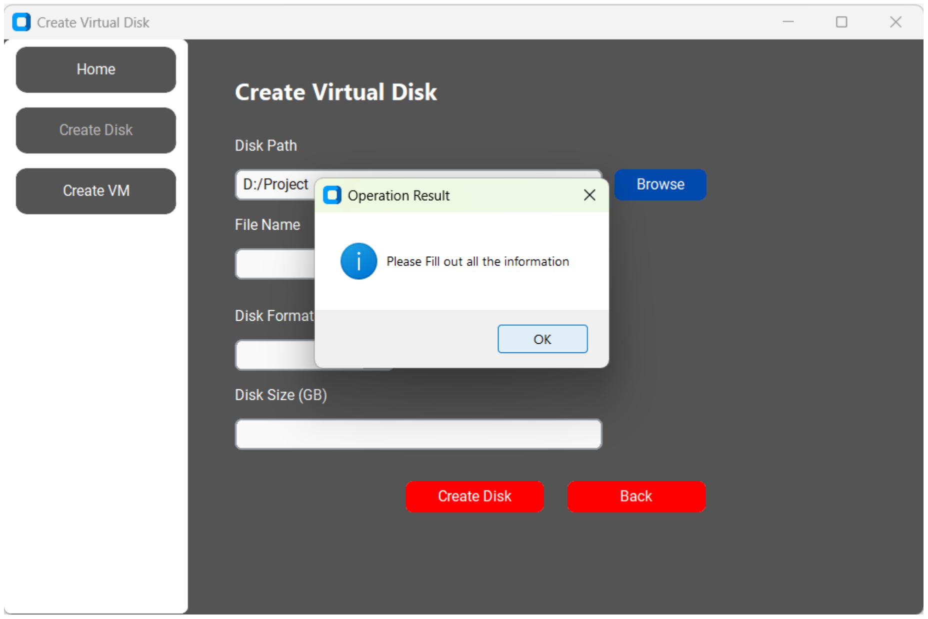
Test Case Name	TVD5: Verify “Disk Path” Browse Button Functionality
Test Scenario	Clicking “Browse” opens laptop search
Prerequisites	The form is visible
Test Input	Click “Browse”
Execution Steps	1. Click on “Browse”
Expected Behavior	File dialog opens for path selection
Assumptions	OS-level file dialog is supported
Actual Results	OS-level file dialog is supported
Status	Pass
Real Life Testing	

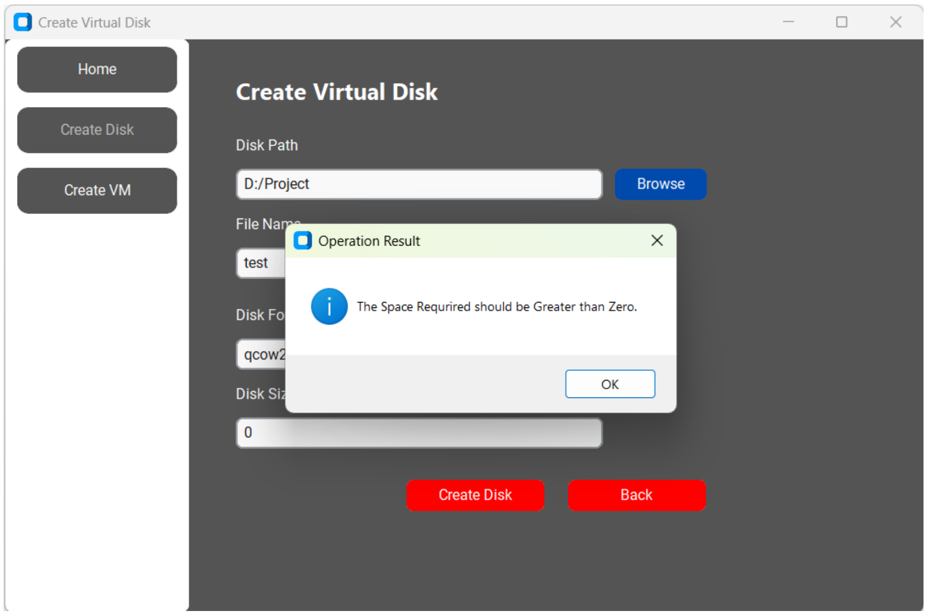
Name	Date modified	Type	Size
course_project	5/3/2025 11:36 AM	File folder	
Database	12/28/2023 6:17 AM	File folder	
DMD-Driver-Monitoring-Dataset	4/9/2025 7:55 PM	File folder	
GradProject	5/3/2025 6:39 AM	File folder	
Lab	3/13/2025 12:13 PM	File folder	
log	5/3/2025 11:36 AM	File folder	
mmPose	4/7/2025 1:23 AM	File folder	
mobile_task	3/12/2025 5:53 PM	File folder	
SecondSurfaceformversionfinal	12/19/2024 6:18 PM	File folder	
Senior Jacket Editior	4/19/2025 11:11 AM	File folder	

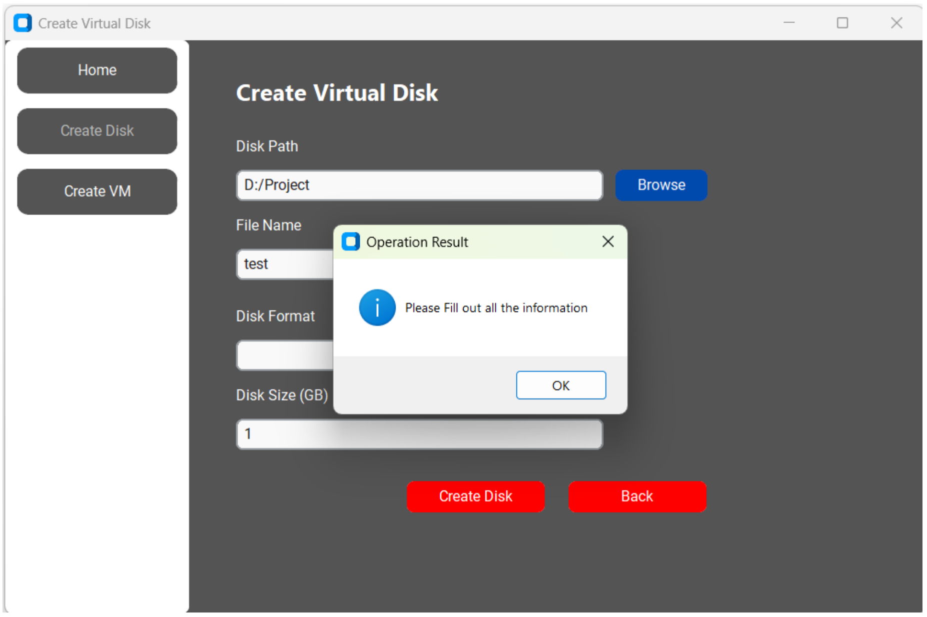
Test Case Name	TVD6: Verify Disk Format Dropdown Options
Test Scenario	Dropdown should list available formats.
Prerequisites	The form is visible
Test Input	Click on the dropdown
Execution Steps	1. Click the "Disk Format" dropdown
Expected Behavior	Shows valid formats like qcow2, vdi, vmdk, raw
Assumptions	Options are hardcoded or loaded correctly
Actual Results	Options are hardcoded or loaded correctly
Status	Pass
Real Life Testing	 Create Virtual Disk; Disk Path; File Name; Disk Format: qcow2; options: qcow2, vmdk, vdi, raw, vhd, vhdx, vbox, hdd, img, dmg, qed, vzdisk, zfs

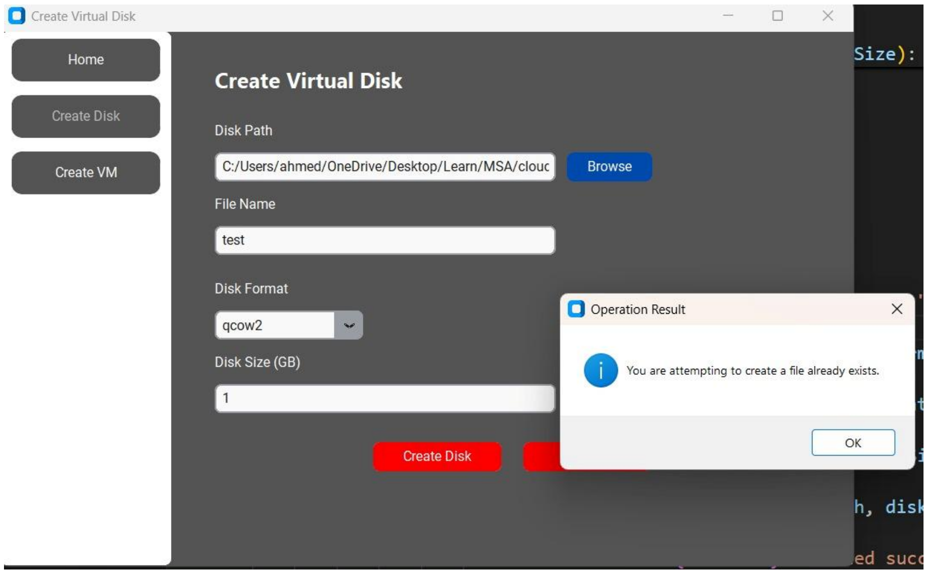
Test Case Name	TVD7: Verify Disk Size Spinner Limits
Test Scenario	Only valid sizes can be selected.
Prerequisites	The form is visible
Test Input	Use arrows to change size
Execution Steps	1. Adjust disk size
Expected Behavior	Only positive integers allowed
Assumptions	Spinner has limits set
Actual Results	Spinner has limits set
Status	Pass
Real Life Testing	 Create Virtual Disk Disk Path: D:/Project File Name: test Disk Format: qcow2 Disk Size (GB): -20 Operation Result We Can't have Negative Space required.

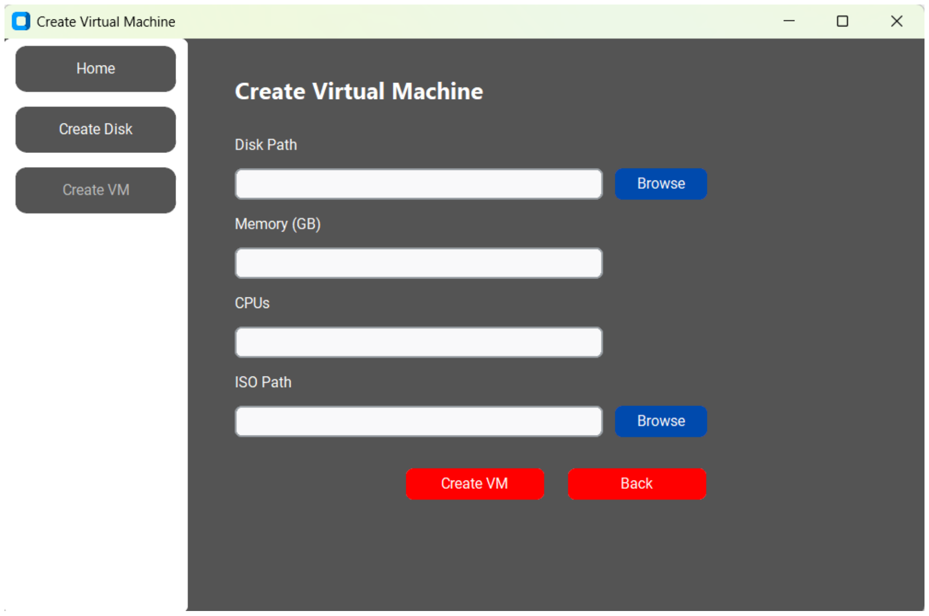
Test Case Name	TVD8: Verify Back Button Functionality
Test Scenario	Clicking “Back” returns to the previous page.
Prerequisites	Page is open
Test Input	Click Back
Execution Steps	1. Click “Back”
Expected Behavior	Redirects back
Assumptions	Navigation handler works
Actual Results	Goes back to the previous page
Status	Pass
Real Life Testing	 Virtual Machines VIRTUAL MANAGER VIRTUAL DISK A Virtual Disk is a file that mimics a real hard drive, used by virtual machines to store data, operating systems, and applications. VIRTUAL MACHINE A Virtual Machine (VM) is a software-based computer that runs an operating system and apps in isolation, allowing multiple OS instances on a single physical machine.

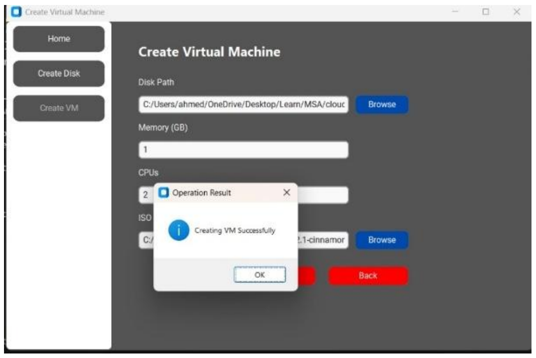
Test Case Name	TVD9: Submit with Only Disk Path Filled
Test Scenario	Incomplete submission should be rejected.
Prerequisites	The form is visible
Test Input	Only browse path
Execution Steps	1. Enter disk path 2. Click "Create Disk"
Expected Behavior	Error due to missing fields
Assumptions	Form requires all fields
Actual Results	Error message box pops up informing user about missing fields
Status	Pass
Real Life Testing	 Create Virtual Disk Disk Path: D:/Project Operation Result Please Fill out all the information OK Home Create Disk Create VM File Name Disk Format Disk Size (GB) Browse Create Disk Back

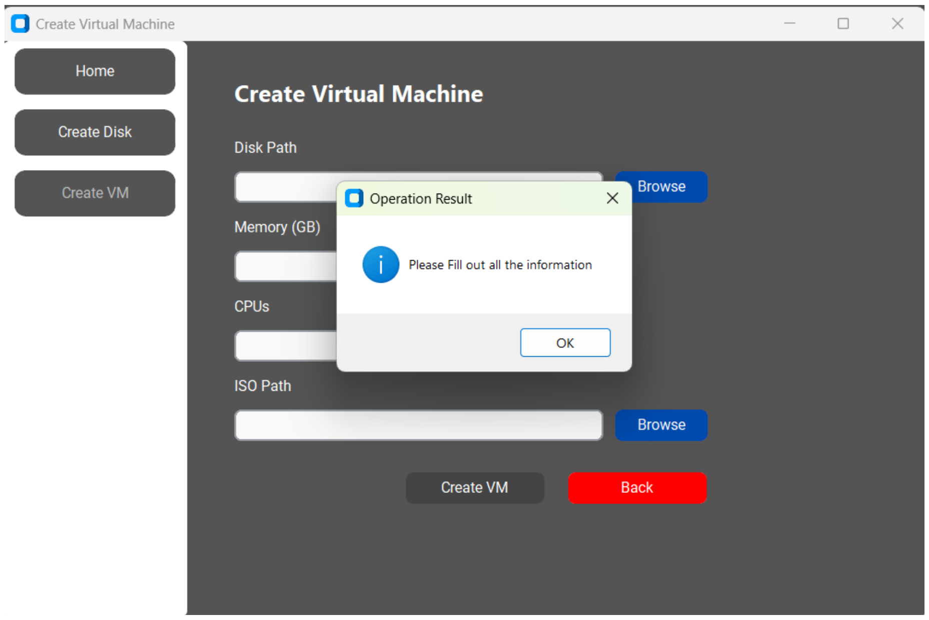
Test Case Name	TVD10: Disk Size Field with Zero
Test Scenario	Zero GB should not be allowed.
Prerequisites	The form is visible
Test Input	0 in Disk Size
Execution Steps	1. Set size to 0 2. Submit
Expected Behavior	Validation error
Assumptions	Size must be >0
Actual Results	Message box pops up informing the user about the disk size error
Status	Pass
Real Life Testing	 Create Virtual Disk Create Virtual Disk Disk Path: D:/Project File Name: test Disk Format: qcow2 Disk Size: 0 Operation Result The Space Requrired should be Greater than Zero.

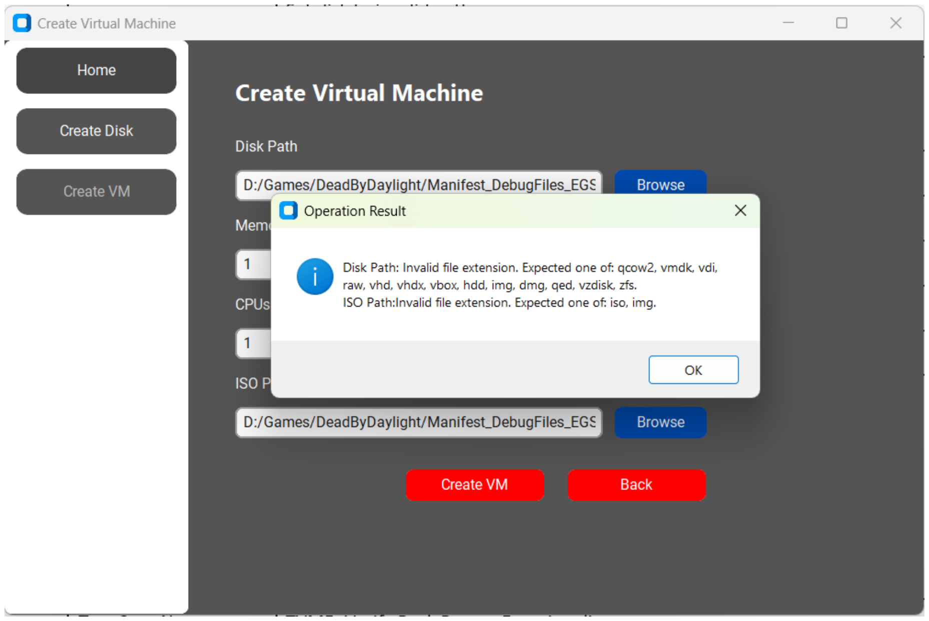
Test Case Name	TVD11: Disk Format Not Selected
Test Scenario	Must require a format.
Prerequisites	Other fields filled
Test Input	Leave format blank
Execution Steps	1. Enter path and size 2. Leave format 3. Submit
Expected Behavior	Validation error
Assumptions	Size must be > 0
Actual Results	Message box pops up informing the user about the missing information error
Status	Pass
Real Life Testing	 Create Virtual Disk Disk Path: D:/Project File Name: test Disk Format: Disk Size (GB): 1 Operation Result Please Fill out all the information Home Create Disk Create VM Browse OK Create Disk Back

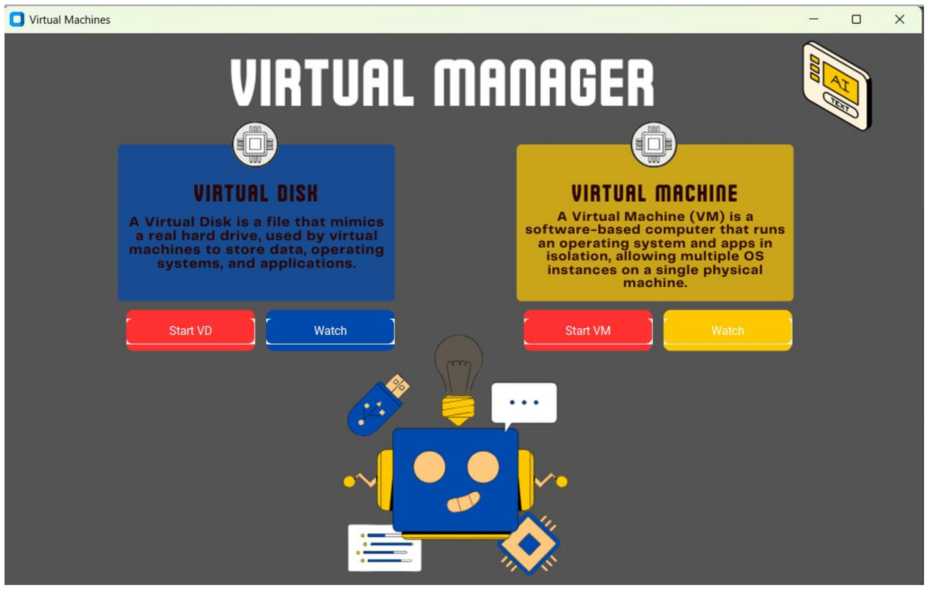
Test Case Name	TVD12: Disk Already Exists at Path
Test Scenario	Duplicate disk path should raise an error.
Prerequisites	File already exists at given path
Test Input	Use the same path as previous disk
Execution Steps	1. Enter existing path 2. Submit form
Expected Behavior	“File already exists” error
Assumptions	System checks for file existence
Actual Results	Message box pops up informing the user about the existing file
Status	Pass
Real Life Testing	 Create Virtual Disk Disk Path: C:/Users/ahmed/OneDrive/Desktop/Learn/MSA/clouc File Name: test Disk Format: qcow2 Disk Size (GB): 1 Operation Result You are attempting to create a file already exists.

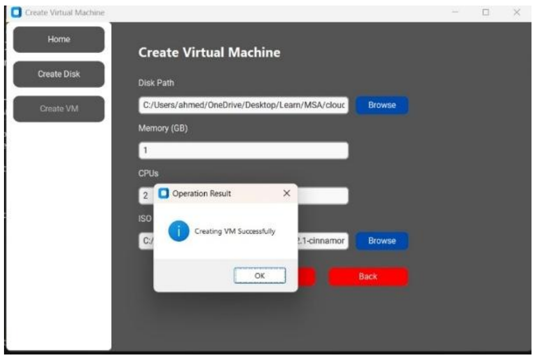
Test Case Name	TVM1: Verify Page Load
Test Scenario	Ensure the "Create Virtual Machine" page loads successfully.
Prerequisites	-
Test Input	Open the "Create VM" tab
Execution Steps	1. Launch the app. 2. Click on "START VM"
Expected Behavior	The Create Virtual Machine form loads without errors
Assumptions	UI and navigation work
Actual Results	UI and navigation work
Status	Pass
Real Life Testing	 Create Virtual Machine Home Create Disk Create VM Create Virtual Machine Disk Path Browse Memory (GB) CPUs ISO Path Browse Create VM Back

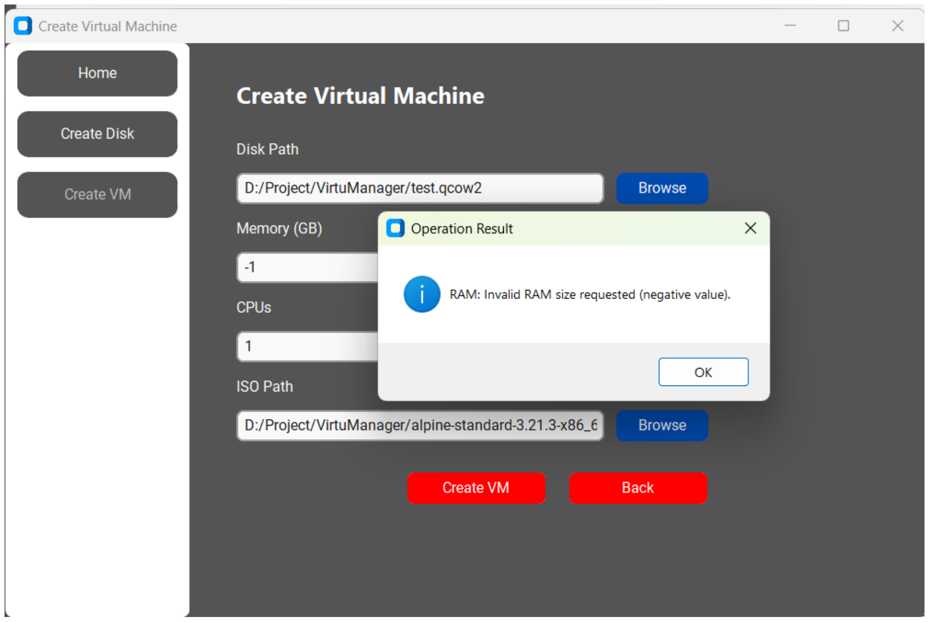
Test Case Name	TVM2: Submit with All Valid Data
Test Scenario	It should create a machine successfully.
Prerequisites	Virtualization engine functional
Test Input	1. Disk input 2. Memory (GB) 3. Number of CPUs 4. ISO file
Execution Steps	1. Fill all fields correctly 2. Click "Create Machine"
Expected Behavior	Machine is created
Assumptions	Backend supports operation
Actual Results	Machine is created successfully and ready to function
Status	Pass
Real Life Testing	 Create Virtual Machine Home Create Disk Create VM Browse Browse OK Back Create Virtual Machine Disk Path: C:/Users/ahmed/OneDrive/Desktop/Learn/MSA/clouc Memory (GB): 1 CPUs: 2 ISO: C:/ .1-cinnamor Operation Result Creating VM Successfully

Test Case Name	TVM3: Submit with Empty Fields
Test Scenario	Submit button should validate empty input.
Prerequisites	The Form is visible
Test Input	Leave all fields blank
Execution Steps	1. Click “Create Machine” without filling anything
Expected Behavior	Error shown or machine not created
Assumptions	Validation is present
Actual Results	Validation is present
Status	Pass
Real Life Testing	 Operation Result: Please Fill out all the information

Test Case Name	TVM4: Validate Feedback on VM Creation Failure
Test Scenario	Show clear message if VM creation fails (e.g., missing folder or insufficient disk).
Prerequisites	Known failure scenario exists (like in image: not enough space)
Test Input	Set disk to invalid path ” D:/Games/DeadByDaylight/Manifest_NonUFSFiles_EGS.txt”
Execution Steps	1. Fill form with faulty disk path. 2. Click "Create VM".
Expected Behavior	An error message box pops up informing the user.
Assumptions	Errors returned from backend
Actual Results	Errors returned from backend
Status	Pass
Real Life Testing	 Create Virtual Machine Home Create Disk Create VM Create Virtual Machine Browse Mem CPUs ISO P Browse Create VM Back Disk Path D:/Games/DeadByDaylight/Manifest_DebugFiles_EGS 1 1 D:/Games/DeadByDaylight/Manifest_DebugFiles_EGS Operation Result Disk Path: Invalid file extension. Expected one of: qcow2, vmdk, vdi, raw, vhd, vhdx, vbox, hdd, img, dmg, qed, vzdisk, zfs. ISO Path:Invalid file extension. Expected one of: iso, img. OK

Test Case Name	TVM5: Verify Back Button Functionality
Test Scenario	Clicking “Back” returns to the previous page.
Prerequisites	Page is open
Test Input	Click Back
Execution Steps	2. Click “Back”
Expected Behavior	Redirects back
Assumptions	Navigation handler works
Actual Results	Goes back to the previous page
Status	Pass
Real Life Testing	 Virtual Machines VIRTUAL MANAGER VIRTUAL DISK A Virtual Disk is a file that mimics a real hard drive, used by virtual machines to store data, operating systems, and applications. VIRTUAL MACHINE A Virtual Machine (VM) is a software-based computer that runs an operating system and apps in isolation, allowing multiple OS instances on a single physical machine. Start VD Watch Start VM Watch

Test Case Name	TVM6: Validate Memory Field (Positive Integer)
Test Scenario	Ensure the user can only enter a positive integer for memory.
Prerequisites	Input box for Memory is active
Test Input	“1”
Execution Steps	1. Click on the Memory field. 2. Enter a value like 1.
Expected Behavior	Field accepts the number and stores it as an integer
Assumptions	Validation is present
Actual Results	Validation is present
Status	Pass
Real Life Testing	 Create Virtual Machine — Disk Path: C:/Users/ahmed/OneDrive/Desktop/Learn/MSA/clouc — Memory (GB): 1 — CPUs: 2 — ISO: C:/ …2.1-cinnamor — Operation Result: Creating VM Successfully Create Virtual Machine Home Create Disk Create VM Browse Browse OK Back

Test Case Name	TVM7: Validate Memory Field (Invalid Input)
Test Scenario	Ensure the field rejects negative values.
Prerequisites	Memory field input not restricted by default
Test Input	“-1”
Execution Steps	1. Click Memory field. 2. Enter invalid input.
Expected Behavior	Field blocks invalid input or displays error
Assumptions	Validation is present
Actual Results	Validation is present
Status	Pass
Real Life Testing	

Create Virtual Machine

Disk Path: D:/Project/VirtuManager/test.qcow2

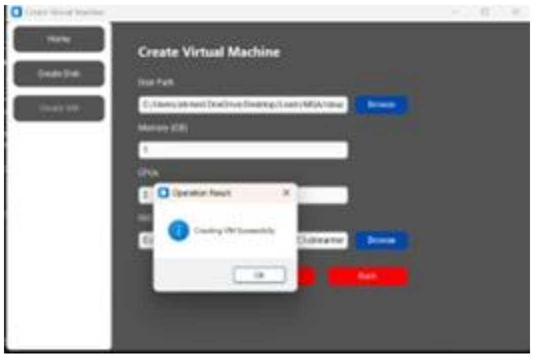
Memory (GB): -1

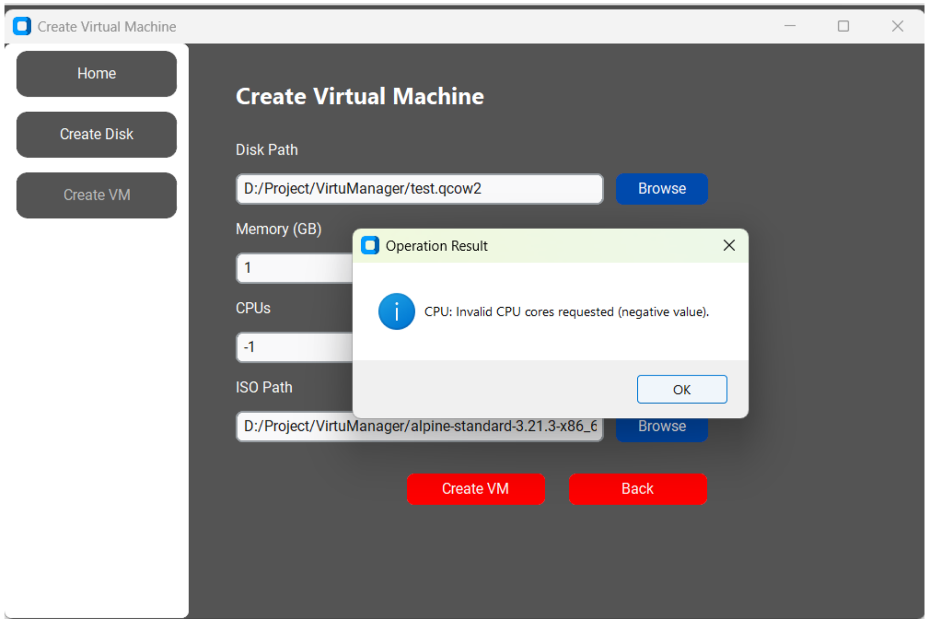
CPUs: 1

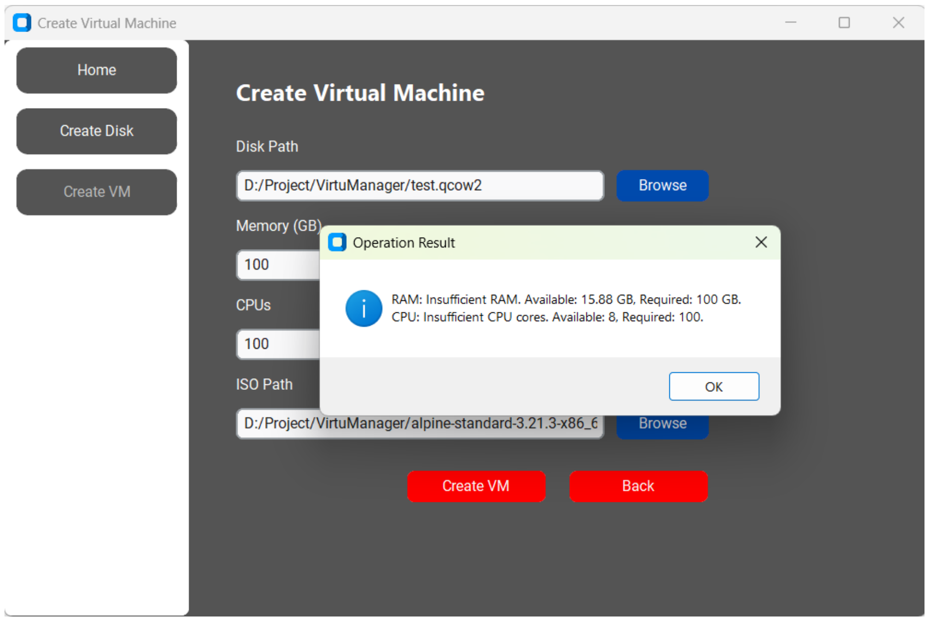
ISO Path: D:/Project/VirtuManager/alpine-standard-3.21.3-x86_6

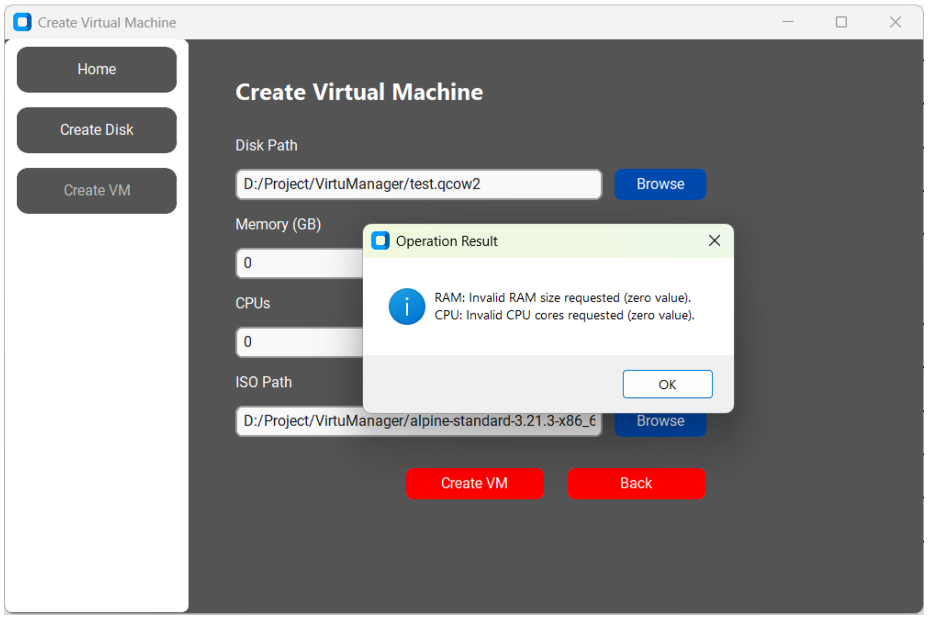
Operation Result

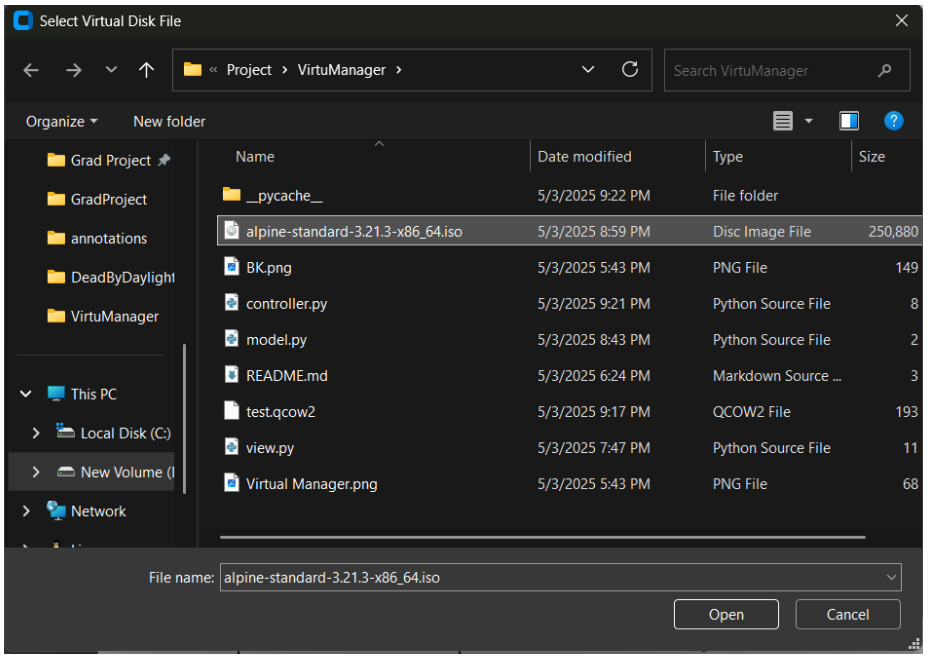
RAM: Invalid RAM size requested (negative value).

Test Case Name	TVM8: Validate CPUs Field (Positive Integer)
Test Scenario	Ensure the user can only enter valid CPU core counts.
Prerequisites	The CPU field is editable
Test Input	“1”
Execution Steps	1. Enter value in CPUs field.
Expected Behavior	Field accepts integer values
Assumptions	Validation is present
Actual Results	Validation is present
Status	Pass
Real Life Testing	 Create Virtual Machine; Operation Result: Creating VM Successfully Home Create Disk Create VM Disk Path Browse Memory (GB) CPUs Ok Run

Test Case Name	TVM9: Validate CPUs Field (Negative Integer)
Test Scenario	Ensure the user can only enter valid CPU core counts.
Prerequisites	The CPU field is editable
Test Input	"-1"
Execution Steps	1. Enter value in CPUs field.
Expected Behavior	Field does not accept negative integer values
Assumptions	Validation is present
Actual Results	Validation is present
Status	Pass
Real Life Testing	 Create Virtual Machine; Disk Path: D:/Project/VirtuManager/test.qcow2; Memory (GB): 1; CPUs: -1; ISO Path: D:/Project/VirtuManager/alpine-standard-3.21.3-x86_6; Operation Result: CPU: Invalid CPU cores requested (negative value). Create Virtual Machine Home Create Disk Create VM Browse Operation Result OK Browse Create VM Back

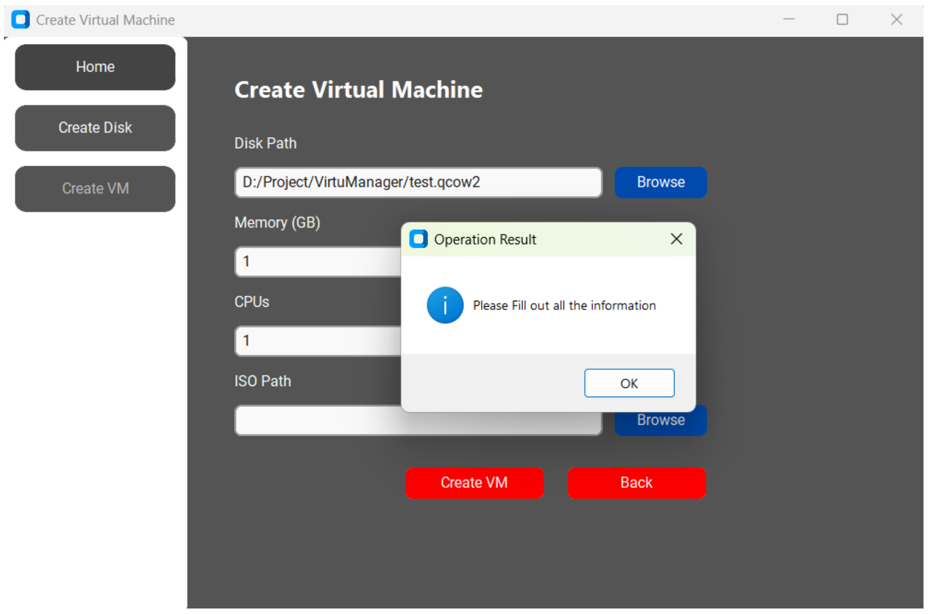
Test Case Name	TVM10: Verify Memory and CPU Limits
Test Scenario	Ensure application restricts memory and CPU input to realistic values.
Prerequisites	Limits defined in code
Test Input	Enter extreme values Memory= “9999”, CPU= “128”
Execution Steps	1. Enter large numbers in both fields.
Expected Behavior	Error message is shown
Assumptions	Validation is present
Actual Results	Validation is present
Status	Pass
Real Life Testing	 Create Virtual Machine Disk Path: D:/Project/VirtuManager/test.qcow2 Memory (GB): 100 CPUs: 100 ISO Path: D:/Project/VirtuManager/alpine-standard-3.21.3-x86_6 Operation Result RAM: Insufficient RAM. Available: 15.88 GB, Required: 100 GB. CPU: Insufficient CPU cores. Available: 8, Required: 100.

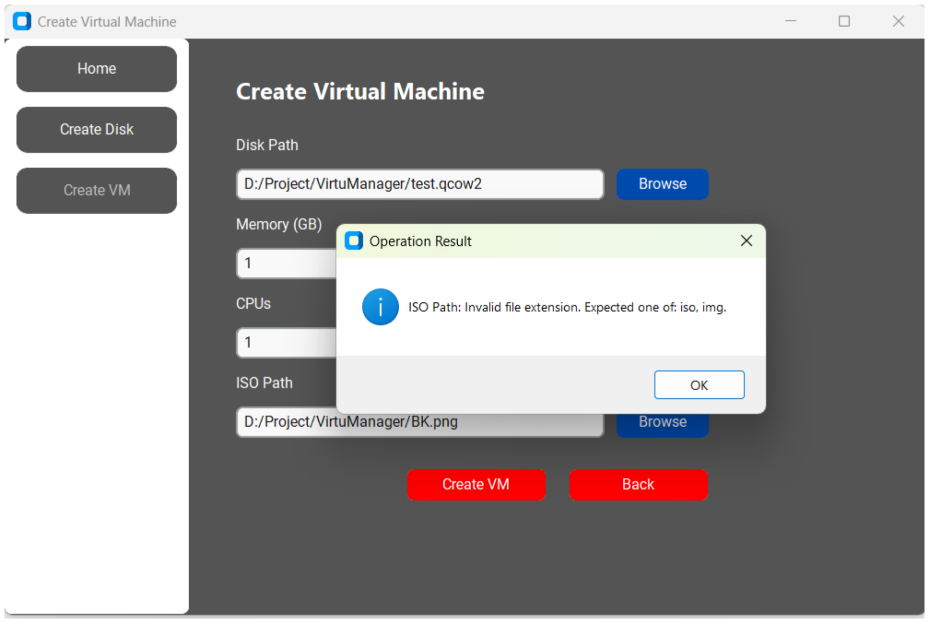
Test Case Name	TVM11: Verify Minimum Memory/CPU Requirement
Test Scenario	Prevent VM creation if memory/CPU value is below minimum allowed.
Prerequisites	Backend enforces min values.
Test Input	Memory: 0 / CPU: 0
Execution Steps	1. Set memory and CPU values to 0. 2. Click Create VM.
Expected Behavior	Error message is shown
Assumptions	Error message informing the user about the incorrect value
Actual Results	Error message informing the user about the incorrect value
Status	Pass
Real Life Testing	 Create Virtual Machine Disk Path: D:/Project/VirtuManager/test.qcow2 Memory (GB): 0 CPUs: 0 ISO Path: D:/Project/VirtuManager/alpine-standard-3.21.3-x86_6 Operation Result RAM: Invalid RAM size requested (zero value). CPU: Invalid CPU cores requested (zero value). Create Virtual Machine Home Create Disk Create VM Browse Browse OK Create VM Back

Test Case Name	TVM12: Validate ISO Path Selection
Test Scenario	Ensure users can select ISO file.
Prerequisites	ISO files are available in file system
Test Input	Click "Browse"
Execution Steps	1. Click "Browse" next to ISO Path. 2. Select the ISO file.
Expected Behavior	ISO Path field updates with file location
Assumptions	ISO file format supported
Actual Results	ISO file format supported
Status	Pass
Real Life Testing	

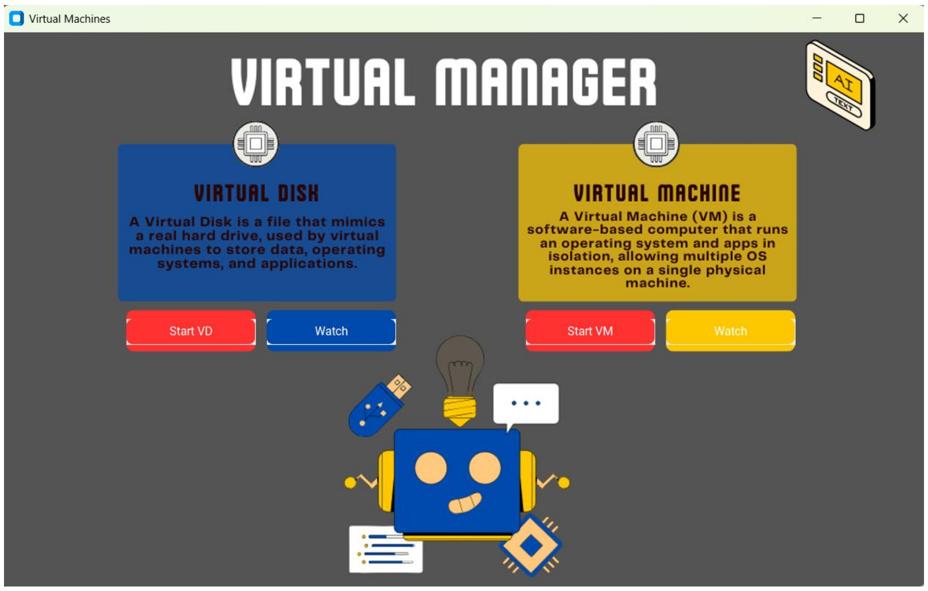
Name	Date modified	Type	Size
__pycache__	5/3/2025 9:22 PM	File folder	
alpine-standard-3.21.3-x86_64.iso	5/3/2025 8:59 PM	Disc Image File	250,880
BK.png	5/3/2025 5:43 PM	PNG File	149
controller.py	5/3/2025 9:21 PM	Python Source File	8
model.py	5/3/2025 8:43 PM	Python Source File	2
README.md	5/3/2025 6:24 PM	Markdown Source ...	3
test.qcow2	5/3/2025 9:17 PM	QCOW2 File	193
view.py	5/3/2025 7:47 PM	Python Source File	11
Virtual Manager.png	5/3/2025 5:43 PM	PNG File	68

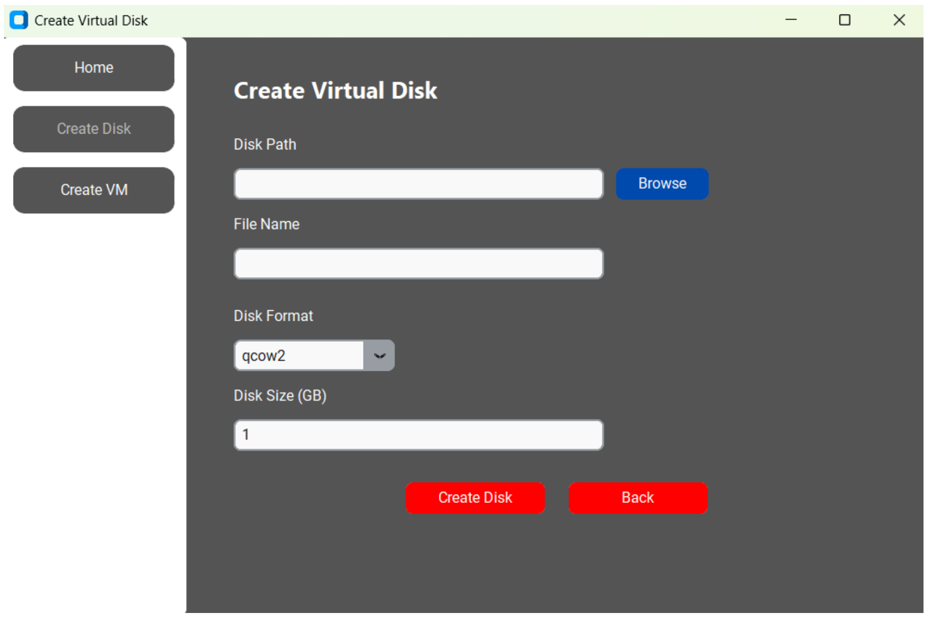
File name: alpine-standard-3.21.3-x86_64.iso

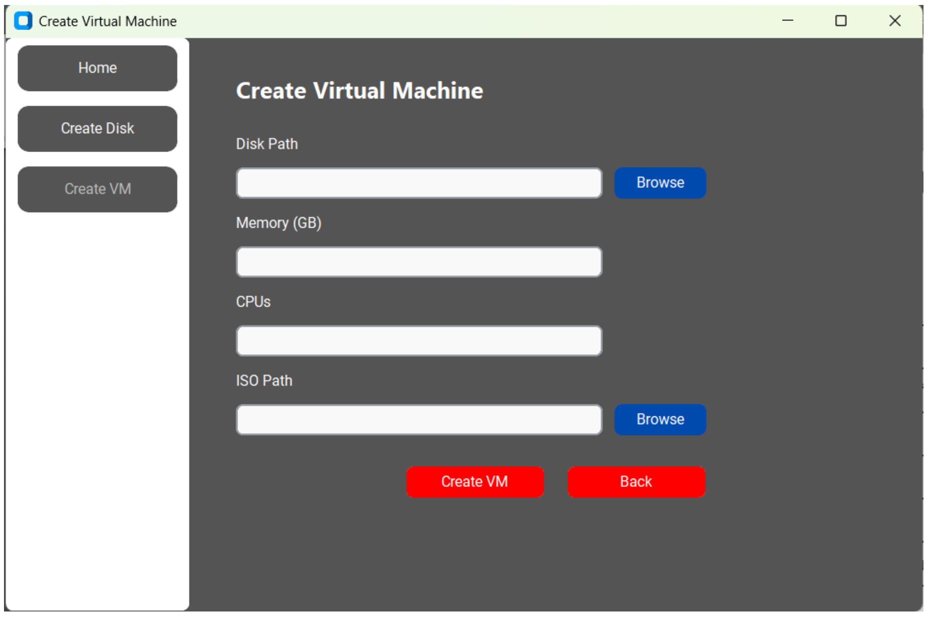
Test Case Name	TVM13: Verify ISO Path is Optional
Test Scenario	Check behavior when ISO path is left blank.
Prerequisites	ISO optional
Test Input	Leave ISO empty, fill rest
Execution Steps	1. Fill required fields. 2. Leave ISO blank. 3. Click Create VM.
Expected Behavior	VM creation succeeds without ISO
Assumptions	Validation is present
Actual Results	Validation is present
Status	Pass
Real Life Testing	 Create Virtual Machine Disk Path: D:/Project/VirtuManager/test.qcow2 Memory (GB): 1 CPUs: 1 ISO Path: Operation Result: Please Fill out all the information Create Virtual Machine Home Create Disk Create VM Browse OK Browse Create VM Back

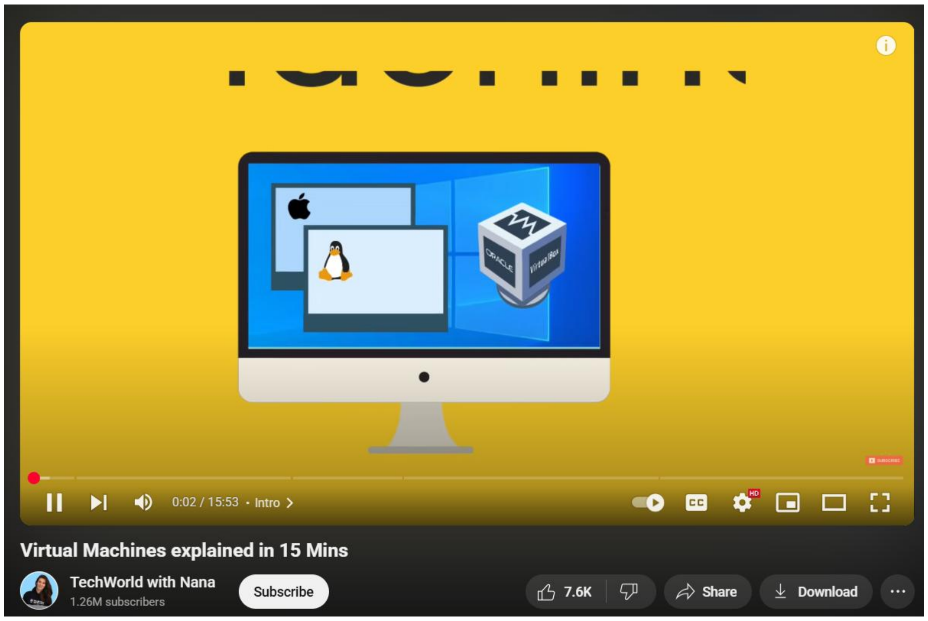
Test Case Name	TVM14: Validate File Format of ISO
Test Scenario	Only .iso files are allowed.
Prerequisites	File system has non-ISO files.
Test Input	Select non-ISO file.
Execution Steps	1. Click Browse. 2. Try selecting .txt or .exe file.
Expected Behavior	System restricts or warns user
Assumptions	Validation is present
Actual Results	Validation is present
Status	Pass
Real Life Testing	 Create Virtual Machine Disk Path: D:/Project/VirtuManager/test.qcow2 Memory (GB): 1 CPUs: 1 ISO Path: D:/Project/VirtuManager/BK.png Operation Result ISO Path: Invalid file extension. Expected one of: iso, img. Create Virtual Machine Home Create Disk Create VM Browse OK Browse Create VM Back

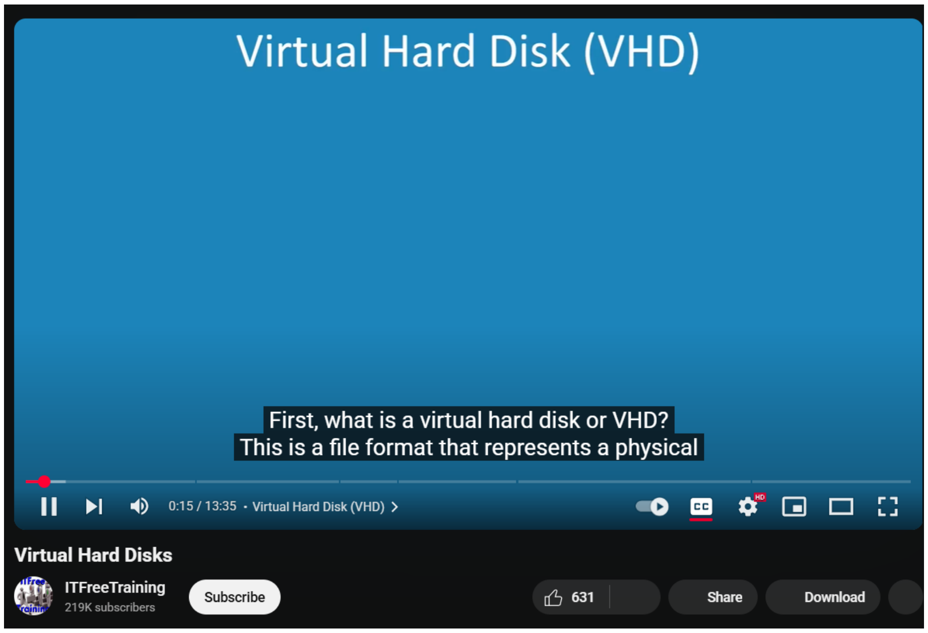
Test Case Name	THP1: Verify Page Load
Test Scenario	Ensure the "HOME" page loads successfully.
Prerequisites	-
Test Input	-

Execution Steps	1. Launch the app.
Expected Behavior	The home page loads without errors
Assumptions	UI and navigation work
Actual Results	UI and navigation work
Status	Pass
Real Life Testing	 VIRTUAL DISK A Virtual Disk is a file that mimics a real hard drive, used by virtual machines to store data, operating systems, and applications. VIRTUAL MACHINE A Virtual Machine (VM) is a software-based computer that runs an operating system and apps in isolation, allowing multiple OS instances on a single physical machine. Virtual Machines VIRTUAL MANAGER AI TEXT Start VD Watch Start VM Watch

Test Case Name	THP2: Verify “Start VD” button
Test Scenario	Ensure the “Start VD” button loads the “virtual disk page” correctly.
Prerequisites	-
Test Input	Button input
Execution Steps	1. Press on start VD
Expected Behavior	The “virtual disk” page loads without errors
Assumptions	Virtual disk page is loaded
Actual Results	Virtual disk page is loaded
Status	Pass
Real Life Testing	 Create Virtual Disk Create Virtual Disk Disk Path: File Name: Disk Format: qcow2 Disk Size (GB): 1 Home Create Disk Create VM Browse Create Disk Back

Test Case Name	THP3: Verify "Start VM" button
Test Scenario	Ensure the "Start VM" button loads the "virtual machine page" correctly.
Prerequisites	-
Test Input	Button input
Execution Steps	1. Press on start VM
Expected Behavior	The "virtual machine" page loads without errors
Assumptions	Virtual machine page is loaded
Actual Results	Virtual machine page is loaded
Status	Pass
Real Life Testing	 Create Virtual Machine Home Create Disk Create VM Create Virtual Machine Disk Path Browse Memory (GB) CPUs ISO Path Browse Create VM Back

Test Case Name	THP4: Verify the "Watch" button for the VM
Test Scenario	Ensure the "watch" button loads the "YouTube page" correctly.
Prerequisites	-
Test Input	Button input
Execution Steps	1. Press on "watch"
Expected Behavior	The "YouTube" page loads without errors
Assumptions	YouTube page is loaded
Actual Results	YouTube page is loaded
Status	Pass
Real Life Testing	 Virtual Machines explained in 15 Mins TechWorld with Nana 1.26M subscribers Subscribe 7.6K Share Download

Test Case Name	THP5: Verify the "Watch" button for the VD
Test Scenario	Ensure the "watch" button loads the "YouTube page" correctly.
Prerequisites	-
Test Input	Button input
Execution Steps	2. Press on "watch"
Expected Behavior	The "YouTube" page loads without errors
Assumptions	YouTube page is loaded
Actual Results	YouTube page is loaded
Status	Pass
Real Life Testing	 Virtual Hard Disk (VHD) First, what is a virtual hard disk or VHD? This is a file format that represents a physical 0:15 / 13:35 • Virtual Hard Disk (VHD) Virtual Hard Disks ITFreeTraining 219K subscribers Subscribe 631 Share Download

Testing:

Testing Approach:

- **Unit Testing:** Each module, including disk and VM creation, was unit tested to ensure accuracy in functionality.
- **System Validation Testing:** Ensured that the system resource checks (CPU, RAM, disk) work accurately before creating VMs.
- **User Interface Testing:** Verified the Tkinter GUI for proper user interaction, ensuring inputs are captured correctly and VM/disk creation flows smoothly.
- **Compatibility Testing:** Tested the tool with different virtual disk formats (qcow2, vmdk, etc.) to verify format compatibility.

Key Results:

- System resource validation: Ensured no VM creation occurred without sufficient resources.
- Multiple disk format handling: Ensured compatibility across formats without failure.
- GUI interaction: User inputs for VM and disk creation were processed seamlessly.

User Manual:

How to Use VirtuManager

1. **Installation:**
   - Install dependencies using the following command:
     pip install psutil
2. **Create Virtual Disk:**
   - Launch VirtuManager.
   - Enter the required parameters (disk name, path, format, and size).
   - Click on "Create Disk" to generate the virtual disk.
3. **Create Virtual Machine:**
   - In the GUI, the CPU, RAM, disk, and ISO image.
   - Click "Create VM." The system will validate available resources before proceeding.
   - If resources are insufficient, a warning will appear; otherwise, the VM will be created.
4. **Running the Application:**
   - Open the terminal and run the VirtuManager application.
   - The GUI will appear, allowing interaction with the disk and VM creation features.

Troubleshooting:

- **Error: Insufficient Resources**
  - Make sure your system has enough CPU cores, RAM, and disk space.
  - If validation fails, close unnecessary applications and try again.
- **Disk Format Issues:**
  - Ensure you're selecting a supported disk format (qcow2, vmdk, etc.).
  - If an unsupported format is selected, the tool will show an error message.