Worcester Polytechnic Institute
Department of Computer Science

Module 4: Android Emulator

Objectives

- Create a virtual Android phone in Santoku Linux using Android emulator.
- Replace the user data on the emulator with the data taken from the real device.

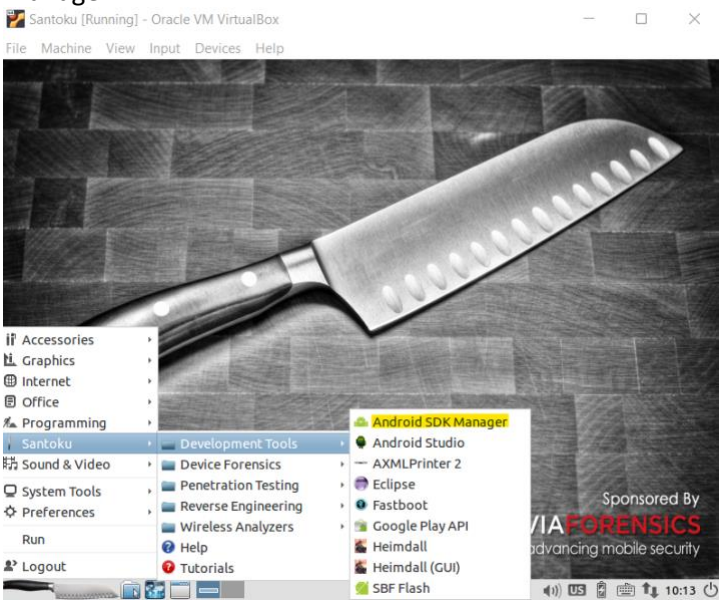
Task

Task 1. Software Preparation

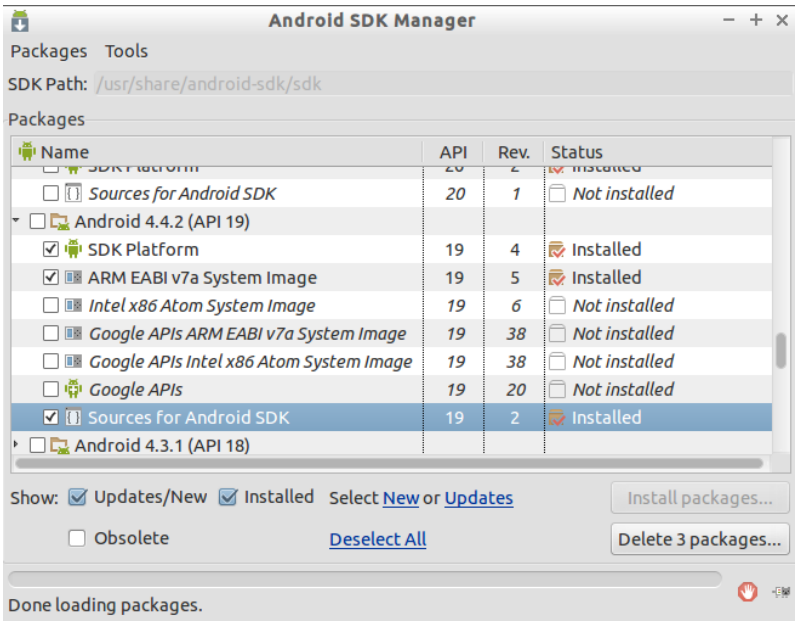
1. Download Santoku. Both the username and password are **santoku**. (Note: lowercase)

Task 2. Create a virtual Android device.

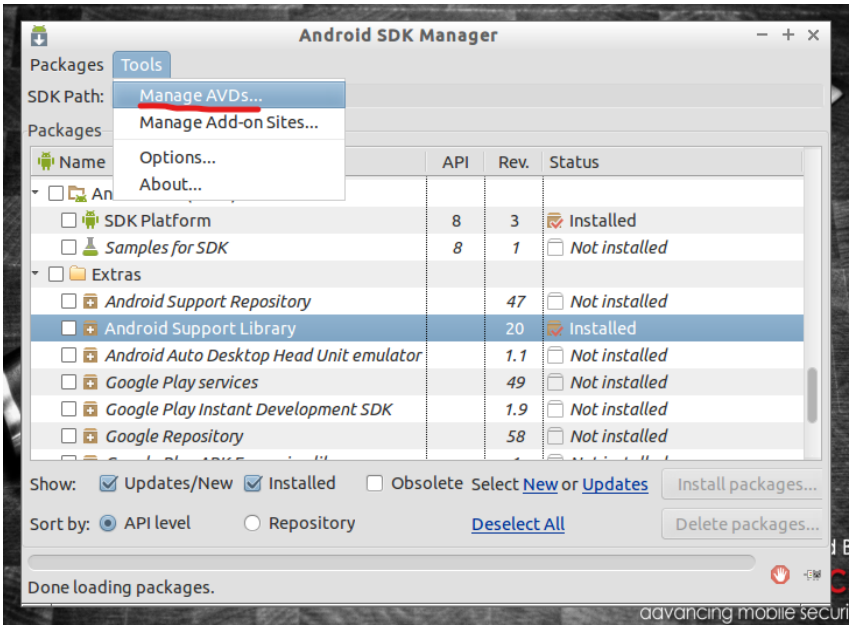
2. Click the 'knife' icon on the left corner and choose 'Santoku' -> 'Development Tools' -> 'Android SDK Manager'.

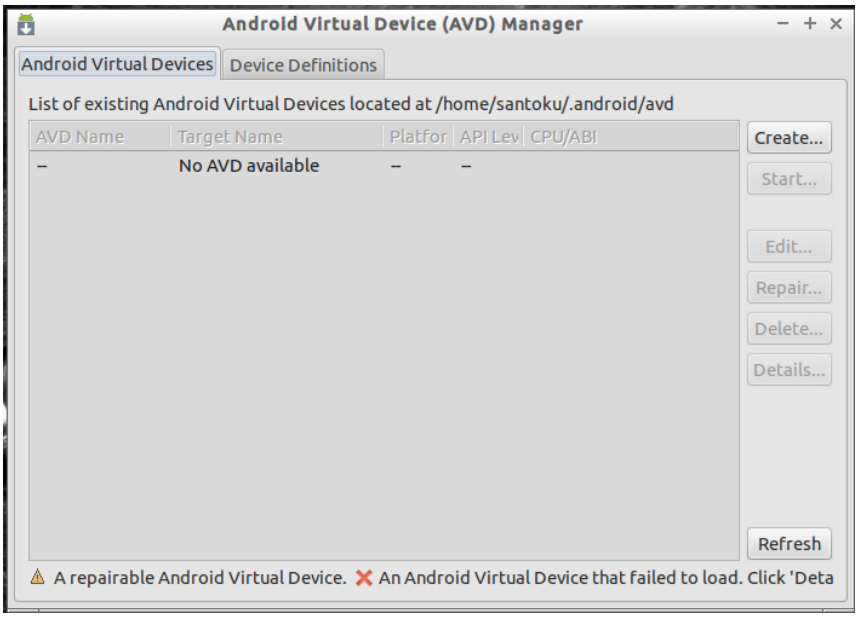


3. After opening the Android SDK Manager, install these three packages. You can use Android 4.4.2 (API 19), please remember that the API version must be greater than API 19 which is the real device's API version. Android 4.4.2 (API 19) is used in this document. Check the boxes to download and install SDK Platform, ARM EABI v7a System Image, and Sources for Android SDK.

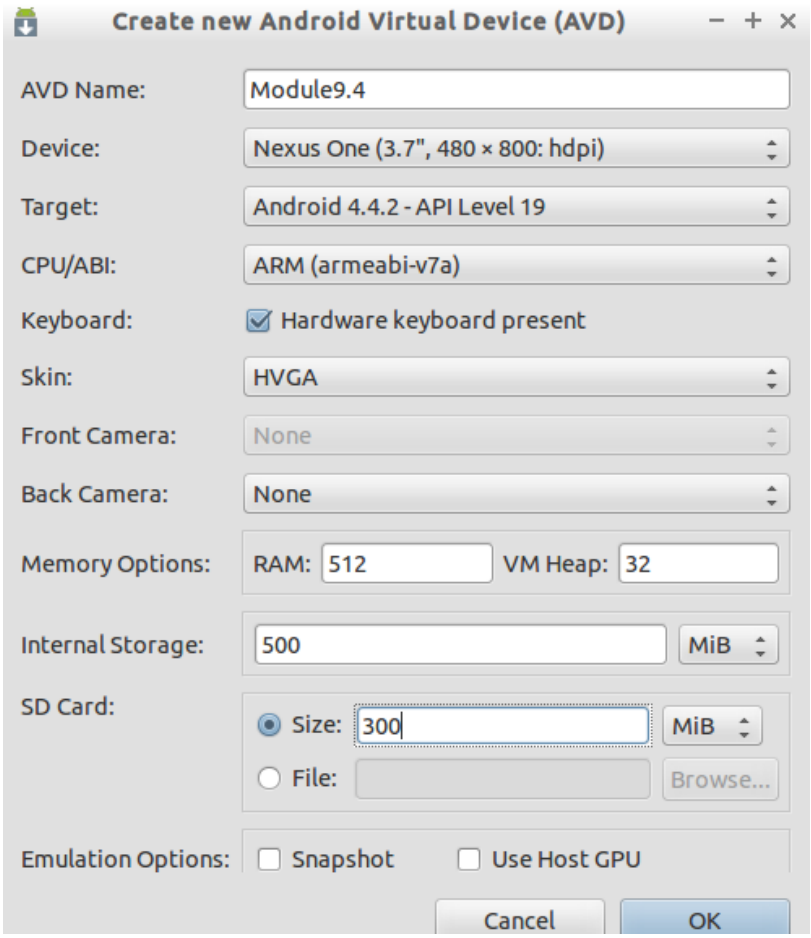


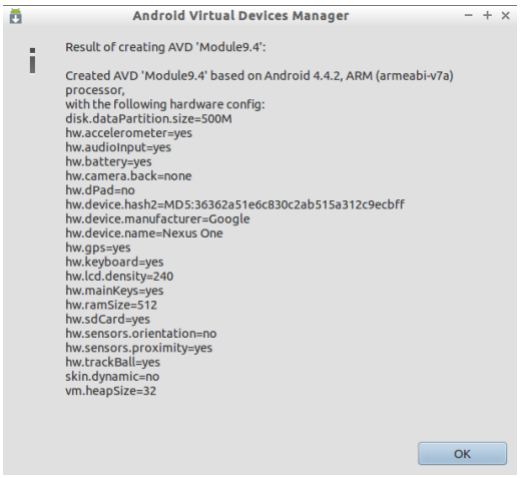
4. Then click on ‘Tools’ -> ‘Manage AVDs…’ to open Android Virtual Device (AVD) Manager. And then click ‘Create..’ on the right column.





5. Follow the screenshot below to set up the virtual device. After setting up the device, click ‘OK’ but do not start the machine now. (Please Note, the Target is Android 4.4.2-API Level 19, this setting is different from other settings before). Screenshot

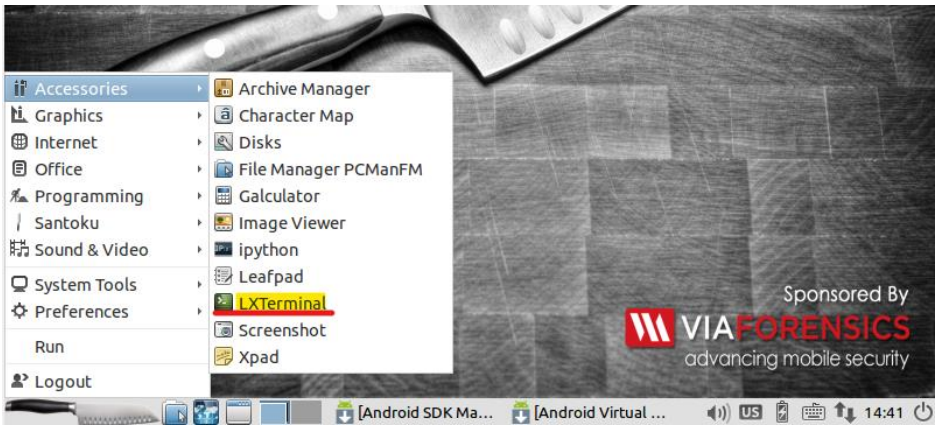




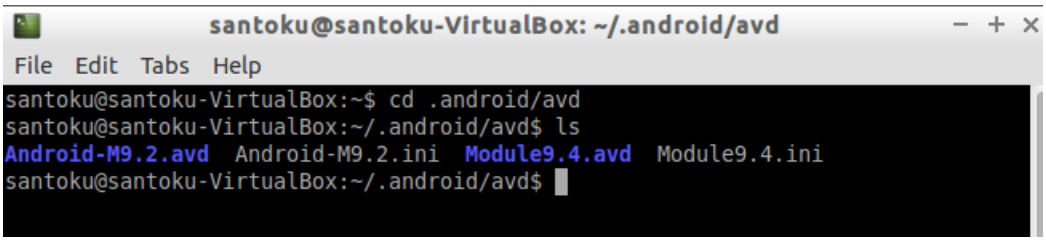
Virtual Android Device called Module9.4 is created successfully.

Task 3. Replace the user data on the emulator with the data taken from the real device.

6. Go back to desktop, click the 'knife icon' on the left bottom corner, and then click 'Accessories' -> 'LXTerminal' to open the terminal.

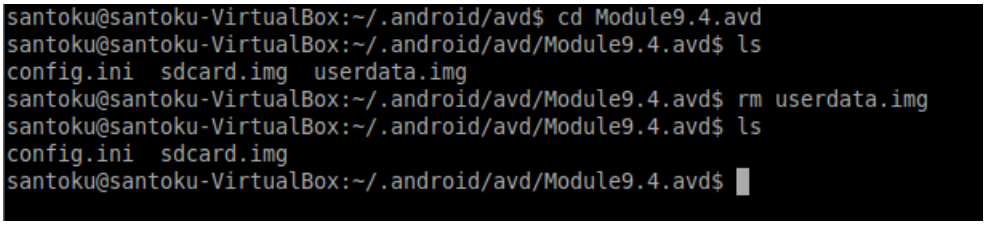


7. After opening the terminal, enter command ***cd .android/avd*** to open the avd folder. Then enter command ***ls*** to list all the virtual devices, and as shown on the picture below, the device called Module9.4.avd which created in previous steps is shown.



And then type command ***cd Module9.4.avd*** and ***ls*** to list the files inside the Module9.4 folder.

8. Then enter command rm userdata.img to delete the original user data image. And then type command ls, as shown in the screenshot, the userdata.img is deleted.



9. Make sure the image.img file is on the Desktop. Screenshot

Then type the following command on the Terminal page:

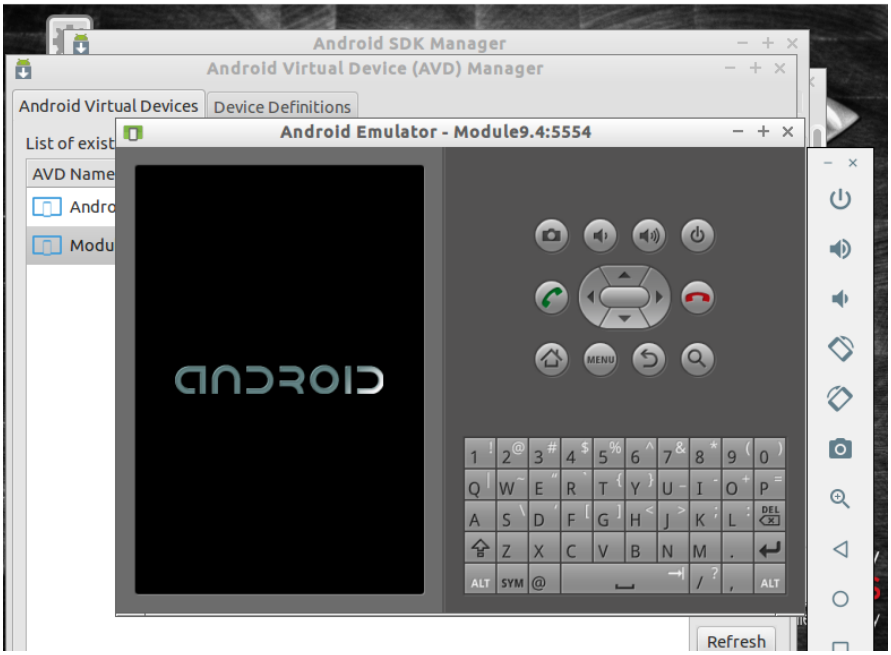
cp ~/Desktop/image.img ~/.android/avd/Module9.4.avd/userdata.img

This command is to copy the image.img to the Module9.4 device folder and change the name to userdata.img so that the device can run normally. (Note: After image.img, there is a blank space).

10. Then open the folder by entering the command ***cd .android/avd/Module9.4.avd***, and then type ***ls*** to check if the file is copied successfully.

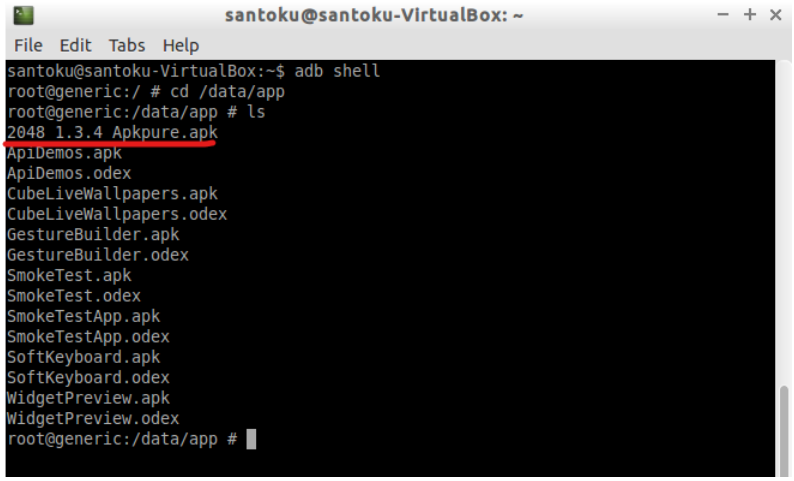
```
santoku@santoku-VirtualBox:~$ cd .android/avd/Module9.4.avd
santoku@santoku-VirtualBox:~/.android/avd/Module9.4.avd$ ls
config.ini  sdcard.img  userdata.img
santoku@santoku-VirtualBox:~/.android/avd/Module9.4.avd$
```

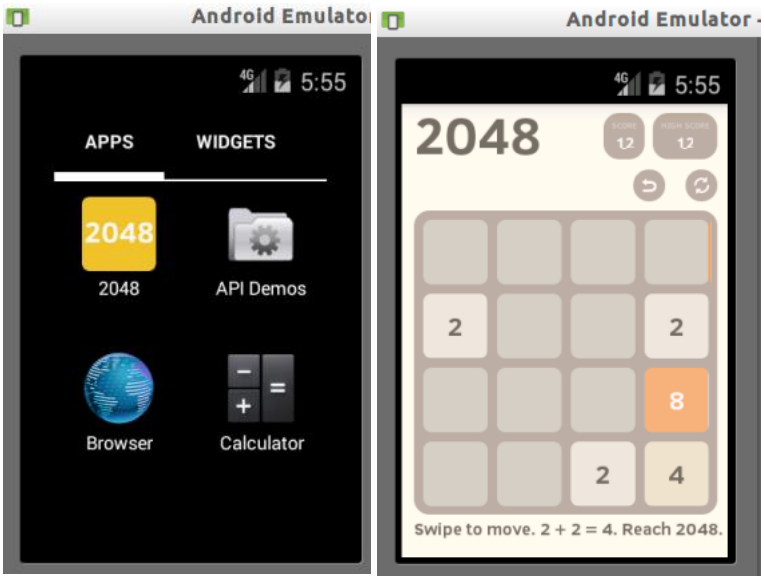
11. Then go to the Android Virtual Device (AVD) Manager and click 'Start' to start the device.



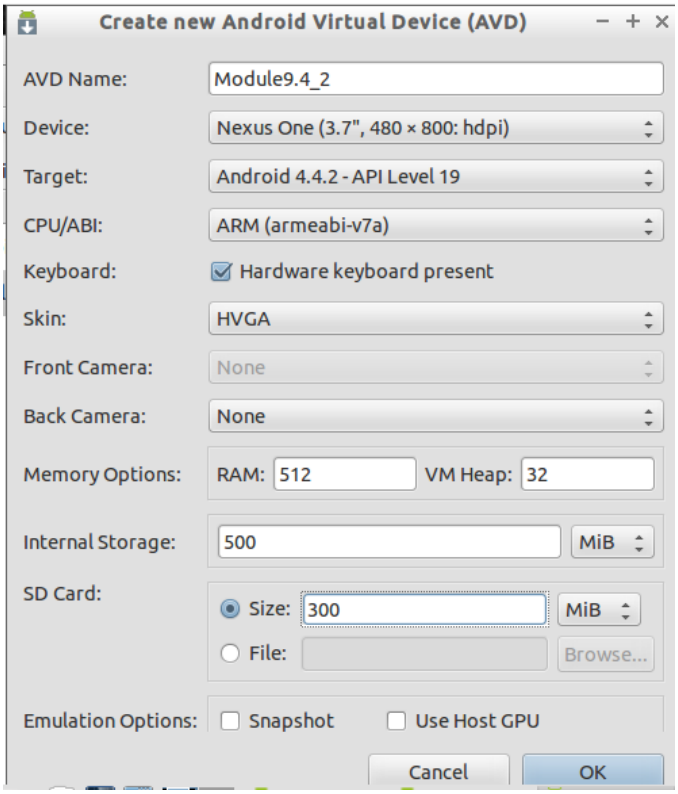
12. After opening the Module9.4 device, go back to the terminal and type command ***adb shell*** to open the adb command shell. And then type ***cd /data/app*** to check if the userdata.img is copied successfully. (Note: In the image.img, under the folder, there is an application called 2048_1.3.4_Apkpure.apk, if this application exists in /data/app, that indicates the image.img was copied successfully. And as shown in the screenshot below, the 2048_1.3.4_Apkpure.apk file is listed).

After the virtual device is opened, click on the icon in the middle, as shown in the screenshot, the application 2048 is listed and that application works well. Screenshot

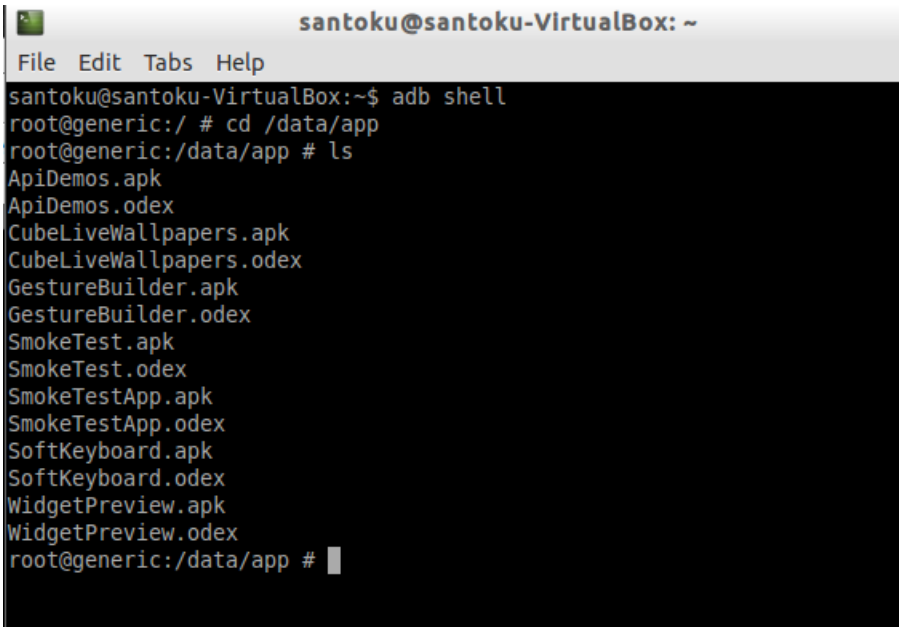




13. To prove the application ‘2048’ is not in the original userdata.img but from the image.img, create another virtual device following the same setting called Module9.4_2.



After creating the Module9.4_2, start that device and then enter the command ***adb shell,*** *and* ***cd /data/app*** As shown below, there is no application called 2048_1.3.4_Apkpure.apk which indicates that the application does not exist in the original userdata.img.



Deliverable:
You need to submit a lab report to Canvas. (You can submit a report with all the screenshots and questions for activity 8 in one file or you can submit several files for each module). Note: Your lab report should contain two parts.

1) Screenshots (3-4 screenshots in total for this module): Please take screenshots after you create the virtual device (step 5). Please take screenshots of step 9. Please take another screenshot of step 12 and prove 2048.apk is installed.

2) Please answer the following questions:

1. Which command did you use to copy the image.img to the avd device and renamed it as userdata.img? (Please also provide a screenshot).

2. When we copy the image.img to Module9.4.avd, why do we need to rename the image.img to userdata.img?

3. How do you make sure the image.img is copied to the virtual machine successfully?

4. What file only exists in the image.img file and not in the original userdata.img file?

5. Please provide a screenshot of the differences between these two .img files.