Experiment No:02

Title: Study of different operating systems for Raspberry-Pi /Arduino. Understanding the process of OS installation on Raspberry-Pi /Arduino

What is the difference between the Raspberry-Pi, Arduino **?**

A Raspberry Pi is a general-purpose computer, usually with a Linux operating system, and the ability to run multiple programs. It is more complicated to use than an Arduino.

The BeagleBoard is a low-power open-source single-board computer produced by Texas Instruments in association with Digi-Key and Newark element14. The BeagleBoard was also designed with open source software development in mind, and as a way of demonstrating the Texas Instrument's OMAP3530 system-on-a-chip.

Why would I use each for?

Raspberry pi

The Raspberry Pi is the ultimate, affordable computer for anyone who likes to tinker and doesn't mind doing some legwork to get it up and running.

If you order a Raspberry Pi without an SD card preloaded with New Out Of Box Software (NOOBS), you will need to provide your own SD card and manually install an operating system.

There are many to choose from -- like Raspbian or OSMC for media streaming-- and they're all quick and easy to install. There are even operating systems that turn your Raspberry Pi into a music streamer.

Begin by downloading the software that you want to install on the Raspberry Pi. In this case, we're using Raspbian, a Raspberry Pi-optimized version of the Linux distribution called Debian, which you can find by going to

1) raspberrypi.org/downloads. Click **Raspbian** (instead of NOOBS) and download the full Raspbian Jessie ZIP. The file is approximately 1.3GB, so it may take several minutes to download, depending on your internet speeds.

2) You'll also need a freshly-formatted SD card (microSD cards are required for the Raspberry Pi 2 or 3). The format used by Raspberry Pi is FAT32 (or MS-DOS), not exFAT. If you have an SD card larger than 32GB, make sure it is using the proper format, as anything larger than 32GB defaults to exFAT.

3) Use Etcher Software to upload the downloaded file.

BeagleBoard

What is BeagleBone Black?

BeagleBone Black is a low-cost, community-supported development platform for developers and hobbyists. Boot Linux in under 10 seconds and get started on development in less than 5 minutes with just a single USB cable.

Installation of BeagleBoard

Step 1:

1) Open terminal
2) Install minicom by using apt-get install Mincom

Step 2:

Using Minicom

1. Start minicom on your host machine in configuration mode. As root:
2. # minicom -s
3. A menu of configuration should appear. Use the Down-arrow key to scroll down and select the **Serial port setup option**, and press Enter.
4. Verify that the listed serial port is the same one that is connected to the target board. If it is not, press A, and enter the correct device. This is **/dev/ttyACM0** on most Linux distributions and press Enter.
5. Set Hardware flow control to No using the F key.
6. Set Software flow control to YES using the G key.
7. Press Enter to return to the main configuration menu, and then press Esc to exit this menu.
8. Reset the board, and wait for a moment. If you do not see output from the board, press Enter several times until you see the prompt. If you do not see any output from the board, and have verified that the serial terminal connection is setup correctly, contact your board vendor.
9. Save setup as default & exit
10. Target will boot & will ask login&password
11. After login switch to super user ($ su)
12. Create source file in the folder, use vi Text Editor create source file
13. Execute output file
14. Verify output

Question :

1) Explain the features of Raspberry-Pi.

2) Difference between RISC and CISC processor.

3) List various advanced features of ARM processor.

4) List and explain various operating modes of ARM processor.