SNS COLLEGE OF ENGINEERING

Kurumbapalayam(Po), Coimbatore – 641 107

Accredited by NAAC-UGC with 'A' Grade

Approved by AICTE, Recognized by UGC & Affiliated to Anna University, Chennai

Department of Information Technology

Course Name – Internet of Things & AI

III Year / V Semester

Unit 2- DESIGN METHODOLOGY

Arduino

▶ Open-Source Electronics Prototyping Platform based on flexible, easy-to-use hardware and software.

▶ Single-Board Microcontroller.

▶ Programmed using Wiring-based language similar to C++ and comes with a Processor-based Integrated Development Environment (IDE)
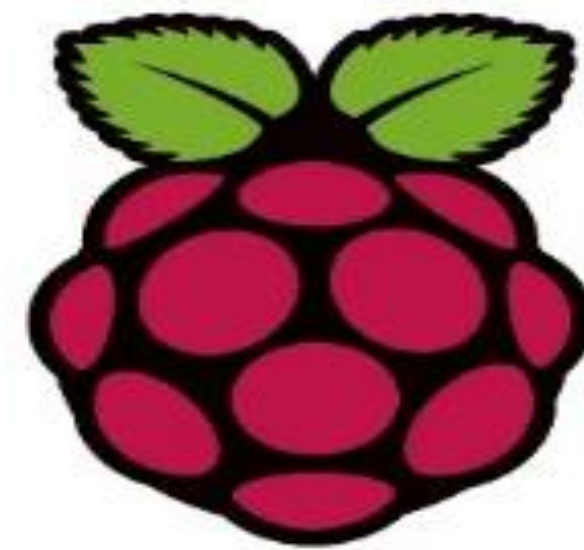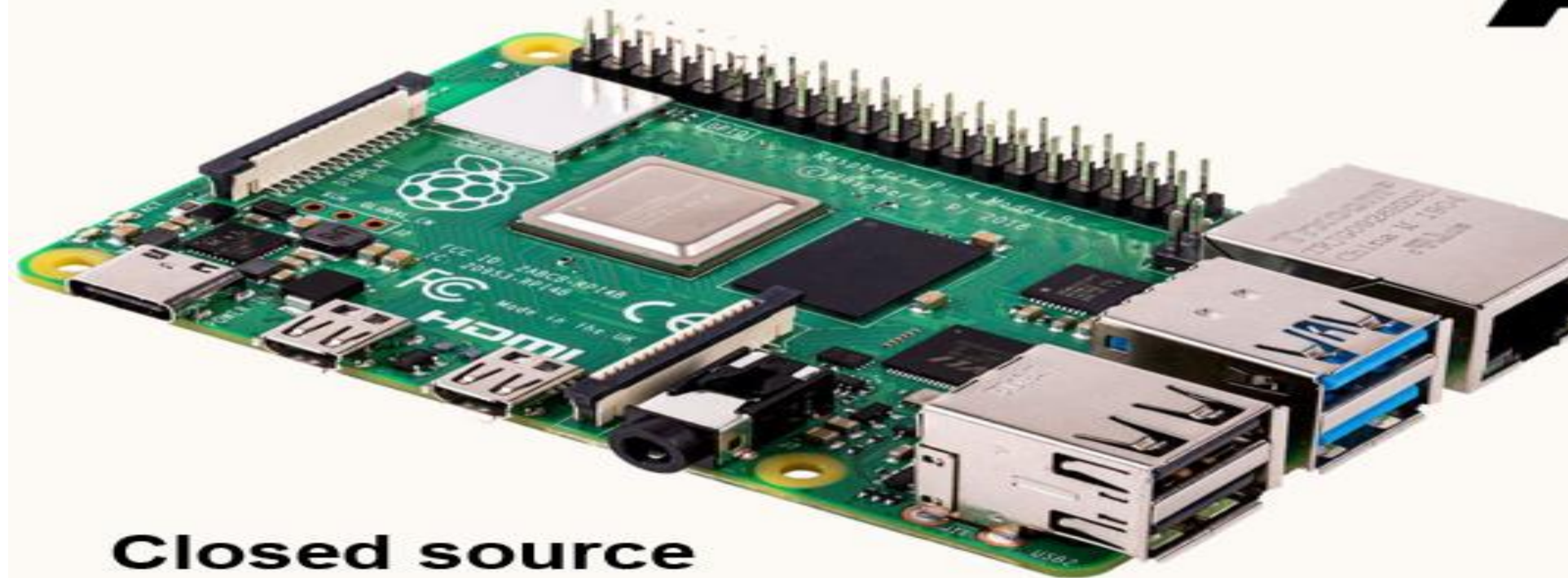
ARDUINO:

Open source

Raspberry Pi

► A credit card sized single-board computer plugs into your TV and keyboard.

► Developed by the Raspberry Pi Foundation in UK.

► Main objective is to stimulate the teaching of basic computer science in schools.

Raspberry Pi Specifications

▸ARM 11 Single Core – 700 MHz

▸Broadcom VideoCore IV, OpenGL ES 2.0, MPEG-2 and VC-1, 1080P h.264/MPEG-4 AVC.

▸512 MB Shared Memory

▸Video Outputs – HDMI, Composite RCA, raw LCD Panels via DSI

▸Audio Outputs – Stereo 3.5mm jack, HDMI

▸Storage – SD Card

▸Onboard Network – 10/100 Ethernet RJ45 via USB Hub

THE BOARDS

Arduino Uno

Raspberry Pi

THE COMPARISON

Arduino Uno

- Micro-controllers, not full computers.

- Does not run a full operating system, but simply execute written code as their firmware interprets it.

- Directly executing simple code is easier, and is accomplished with no operating system overhead.

- Main purpose of the Arduino board is to interface with sensors and devices

- Great for hardware projects in which you simply want things to respond to various sensor readings and manual input.

- Great for interfacing with other devices and actuators, where a full operating system would be overkill for handling simple read and response actions.

Raspberry Pi

- A fully functional computer.

- Has all the trappings of a computer, with a dedicated processor, memory, and a graphics driver for output through HDMI.

- Runs a specially designed version of the Linux operating system.

- Easy to install most Linux software.

- Doesn't offer internal storage but you can use SD cards as the flash memory for the entire system.

- Independent network connectivity allows it to be set up for access via SSH, or transfer files to it using FTP.

THE THUMB RULE

Is there a simple rule of thumb to help me decide?

Yes, there is! Think about what you want your project to do. If you can describe it with less than two 'and's, get an Arduino. If you need more than two 'and's, get a Raspberry Pi.

"I want to monitor my plants and have them Tweet me when they need water."

That can best be done by an Arduino.

"I want to monitor my plants and have them Tweet me when they need water and check the National Weather Service and, if the forecast is for fair weather, turn on the irrigation system and if the forecast is for rain, do nothing."

That would best be handled by a Raspberry Pi.

WORKING TOGETHER

Can Arduino and Raspberry Pi work together?

"Yes, they work great together"

The Arduino is best for motor driving, sensor reading, LED driving, etc.

while

You can have an Internet-connected Pi drive it, storing and processing data send from the sensors.

The possibilities are infinite –

You could homebrew beer, with the Arduino controlling the sensors and the Pi managing the brains of the operation.

WORKING TOGETHER

Can Arduino and Raspberry Pi work together?

"Yes, they work great together"

The Arduino is best for motor driving, sensor reading, LED driving, etc.

while

You can have an Internet-connected Pi drive it, storing and processing data send from the sensors.

The possibilities are infinite –

You could homebrew beer, with the Arduino controlling the sensors and the Pi managing the brains of the operation.

WORKING TOGETHER

Can Arduino and Raspberry Pi work together?

"Yes, they work great together"

The Arduino is best for motor driving, sensor reading, LED driving, etc.

while

You can have an Internet-connected Pi drive it, storing and processing data send from the sensors.

The possibilities are infinite –

You could homebrew beer, with the Arduino controlling the sensors and the Pi managing the brains of the operation.