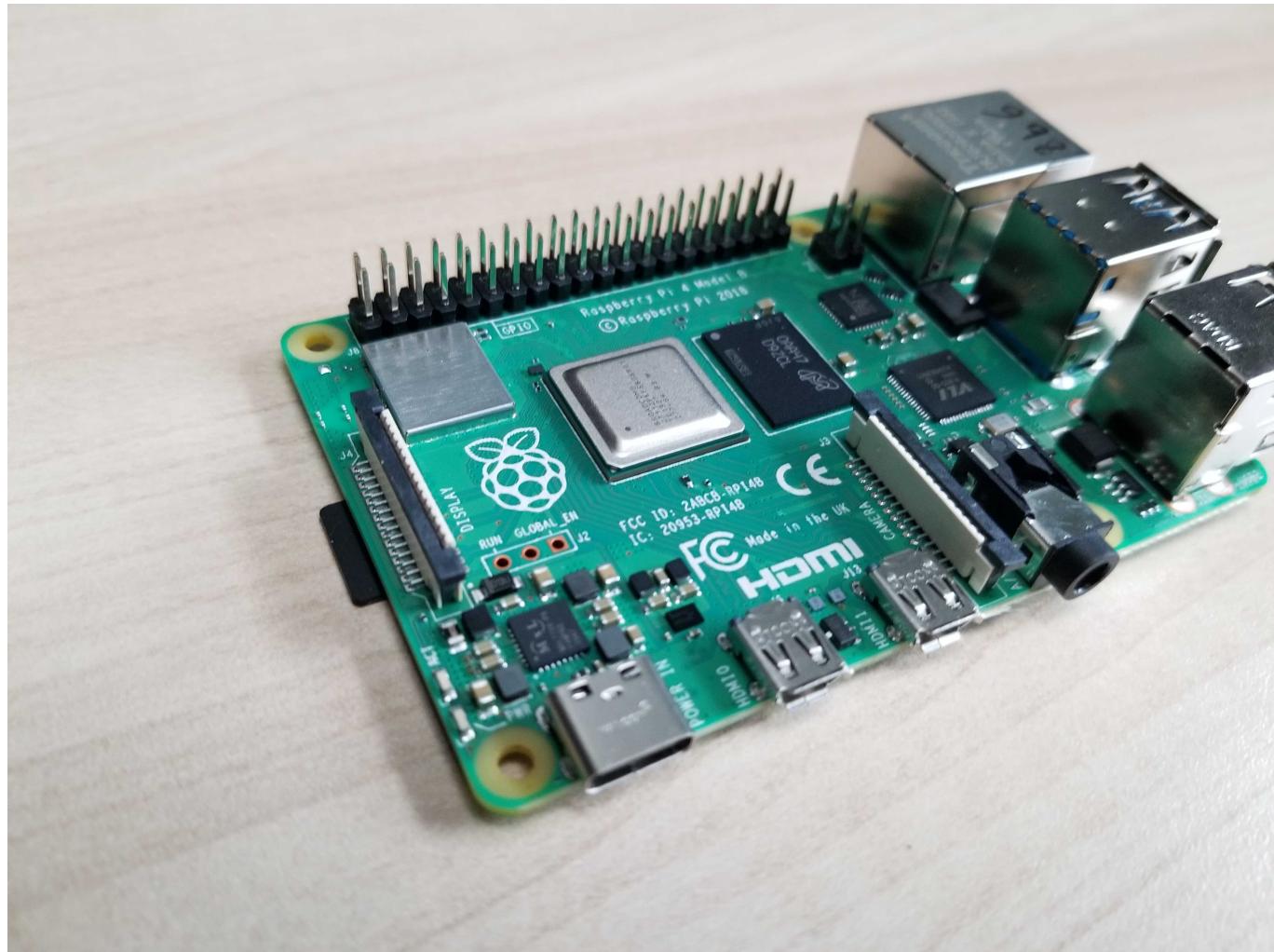


# Deliverable 1

## What is a Raspberry Pi?

The Raspberry Pi is a small, affordable single-board computer developed in the UK by the Raspberry Pi Foundation. It is widely used for educational purposes, DIY projects, and prototyping.



## Raspberry Pi Models

Model	CPU	RAM Options	USB Ports	Video Output	Release Year
Raspberry Pi 1	ARM1176JZF-S (700 MHz)	256–512 MB	2 USB 2.0	HDMI, Composite	2012
Raspberry Pi 2	Quad-core Cortex-A7 (900 MHz)	1 GB	4 USB 2.0	HDMI, Composite	2015
Raspberry Pi 3	Quad-core Cortex-A53 (1.2 GHz)	1 GB	4 USB 2.0	HDMI	2016
Raspberry Pi 4	Quad-core Cortex-A72 (1.5 GHz)	2–8 GB	2x USB 2.0, 2x USB 3.0	2x micro-HDMI	2019

Model	CPU	RAM Options	USB Ports	Video Output	Release Year
Raspberry Pi 5	Quad-core Cortex-A76 (2.4 GHz)	4–8 GB	2x USB 2.0, 2x USB 3.0	2x micro-HDMI	2023

## Origins of the Raspberry Pi

The Raspberry Pi was developed by the Raspberry Pi Foundation, a UK-based charity, to promote computer science education. The goal was to create an affordable computer for learning and experimentation.

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## What is Batocera?

Batocera.linux is a Linux-based operating system focused on emulation and retro gaming. It comes pre-configured with a wide variety of emulators and a user-friendly interface.

**Website:** <https://batocera.org>

### Alternatives to Batocera

- **RetroPie** - Based on Raspbian, widely used on Raspberry Pi.
  - **Recalbox** - Similar to Batocera with a strong user community.
  - **Lakka** - Lightweight Linux distro that turns a small computer into a full retro gaming console.
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## What is Emulation?

Emulation refers to mimicking the hardware and software behavior of one system on a different system. Emulators allow modern computers to run software originally designed for other platforms, such as game consoles.

### Is Emulation Legal in the U.S.?

Emulation itself is legal in the United States. However, downloading ROMs of games you do not own may violate copyright laws.

**Opinion:** Emulation should be legal as it preserves digital history and gives access to games no longer commercially available.

More here --> <https://www.mcneelylaw.com/understanding-the-legal-landscape-of-video-game-emulation/>

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## What is SSH?

SSH (Secure Shell) is a cryptographic network protocol for securely accessing and managing devices remotely over an unsecured network.

### SSH Command Examples

```
# Generate SSH key pair  
  
ssh-keygen  
  
# Connect to remote server  
  
ssh username@ip-address  
  
# Copy a file to remote server  
  
scp file.txt username@ip-address:/path/to/destination
```

## Connect to VM from Windows using SSH

1. Open **Command Prompt** or **PowerShell**.
2. Use the following command:

```
ssh username@VM-IP-Address
```

Replace `username` and `VM-IP-Address` with your VM credentials.

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## What is an IP Address?

An IP address is a unique identifier for a device on a network.

### IPv4

- 32-bit numeric address.
- Example: `192.168.1.1`
- Supports ~4.3 billion devices.

### IPv6

- 128-bit hexadecimal address.
- Example: `2001:0db8:85a3:0000:0000:8a2e:0370:7334`
- Supports a vastly larger number of devices.

## What is a ROM? (In the context of gaming)

A ROM (Read-Only Memory) is a digital copy of a video game cartridge or disc. ROMs are used with emulators to play games originally designed for consoles like SNES, Sega Genesis, or PlayStation.