



Retro Pie Gaming Console Using Raspberry Pi

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Abstract :

Retro Pi games use to play classic old games. In this paper we will show how we can replace the expensive retro gaming consoles with the Raspberry Pi board installed with the RetroPie emulator system. We will also discuss the choice of hardware and the development tools used for developing our system. We are making a portable retro gaming console so that we can play the games anywhere we want just by charging the console.

Keywords: Raspberry Pi, RetroPie, Gaming Console, Retro Gaming, cheap, etc.

INTRODUCTION

The Retro Gaming which was out of the image for so many days is back in the market. Retro gaming has existed since the first years of the video game industry, but was popularized with the recognition of the Internet and emulation technology. It's said that the main reasons players are drawn to retro games are nostalgia for different eras, the thought that older games are more innovative and original, and therefore the simplicity of the games that requires less hours of gameplay.

Most companies selling the retro gaming console on today's date are selling them for very expensive prices, thanks to the huge customer demand in the market. People born within the 80's and 90's usually play these games. This industry might be worth \$300 billion by 2025. Nintendo sold 10 million units Nintendo Entertainment System (NES) classic consoles units this year.

An emulator is software that creates a computer behave like another computer, or within the case of RetroPie gaming console that behaves like a video game such as the Super Nintendo. RetroPie allows you to show your Raspberry Pi into a retro-gaming machine. It builds upon Raspbian, EmulationStation, RetroArch and lots of other projects to enable you to play your favourite Arcade, home-console, and classic PC games with the minimum set-up for power users it also provides an outsized variety of configuration tools to customize the system as you want.

The RetroPie runs on the Raspberry Pi board. The Raspberry Pi board may be a single board computer developed in the United Kingdom by Raspberry Pi foundation. The Raspberry Pi is legendary due to its very low price. The Raspberry Pi has various models with different specifications. the newest Raspberry Pi 4 has, Quadcore.

The Raspberry Pi with the RetroPie are often used as a really good emulating device for retro games.

It supports most gaming controllers and also the keyboard and mouse. The RetroPie supports all models of Raspberry Pi so it depends on the users which one to settle on. All you would like to do is just plug and play once the device is ready

Technical requirements

The following are requirements to build a retro gaming rig from Raspberry Pi

- Raspberry Pi (any model)
- MicroSD card 32GB
- Touch Display
- Joystick
- Battery 5000mah
- Raspberry Pi power supply 2A
- HDMI cable
- MicroUSB card reader
- Computer (with internet access)
- Screwdriver

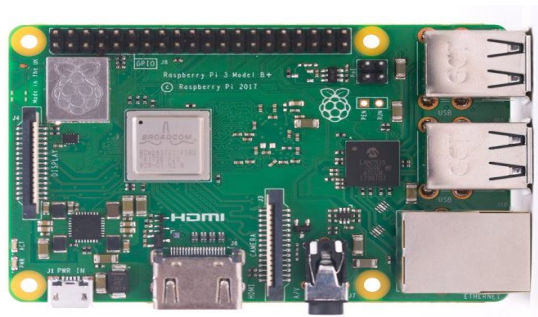
PenDrive

Related Work

The booting method involves the subsequent steps:

1. Place your Raspberry Pi into the Raspberry pi case.
2. Download the RetroPie SD card image into the Raspberry pi.
3. Format the microSD card.
4. Installing the RetroPie image onto a microSDcard.
5. Put the SD card into the Raspberry Pi and connect the Peripherals.
6. connect the power cable.
7. Connect it to a display and choose the control settings you would like .
8. Connect the Raspberry Pi to the web through wifi or ethernet
9. Install Retro Pi OS in Raspberry Pi for installing the games.
10. The user will select the game which the user wants to play.

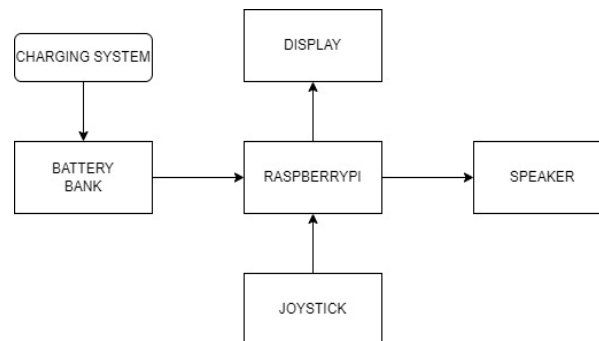
Raspberrypi B3+ :-



The Raspberry Pi 3 Model B+ is the latest product in the Raspberry Pi 3 range, boasting a 64-bit quad core processor running at 1.4GHz, dual-band 2.4GHz and 5GHz wireless LAN, Bluetooth 4.2 .

The Raspberry Pi 3 Model B+ maintains the identical mechanical footprint as both the Raspberry Pi 2 Model B and the Raspberry Pi 3 Model B. The dual-band wireless Local area network(LAN) comes with modular compliance certification, allowing the board to be designed into end products with significantly reduced wireless LAN compliance testing, improving both cost and time to plug.

Archietecture Diagram



In the main Archietecture diagram the main CPU(Central Processing unit) is Raspberry Pi.

All the Hardware component are interconnected to it.

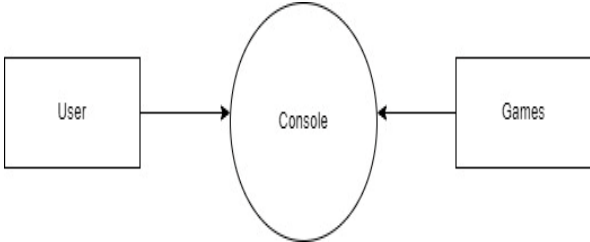
All the components in it has some to do with console.

The battery work as an internal power supply for it.

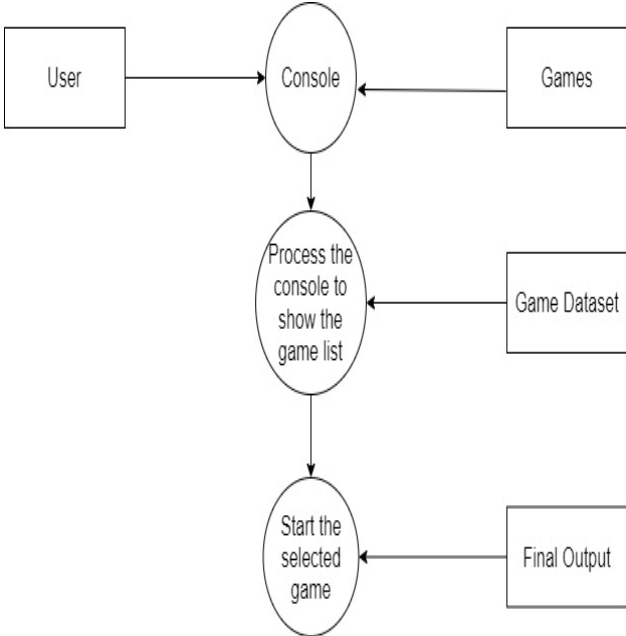
The speaker is for sound output.

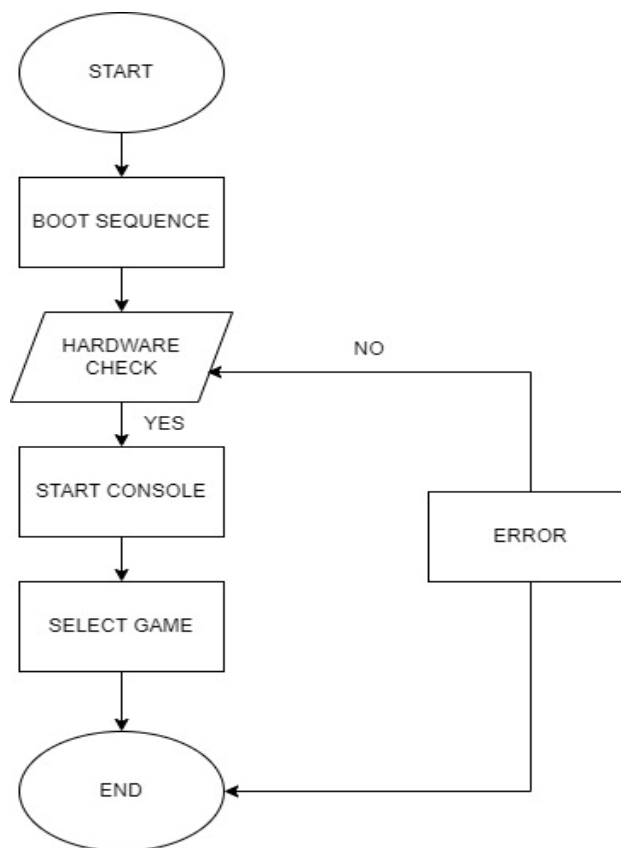
The Joystick is used for controlling the game or playing the game.

Data Flow Diagram 0



Data Flow Diagram 1



Flow Chart


Future Scope

Making the console comfortable for the high configuration games.
 By changing the OS we can also use the console as an android car auto.
 We can change the OS and it can be use for any specific application
 We can also build our own games through raspberianos using python code.

Advantages

Low price:-Most companies selling the retro gaming console on today's date are selling them for very expensive prices, but we are making a console at an affordable price.

Portable:- As we are giving the internal power supply i.e(Battery) to the console making it portable, we are also connecting the display to the console due to which there is no need of the external display.

We can also change the OS of the console and it can be used for any specific OS application.

Conclusion

IntheendthisconcludesthatwecanplayretrogamesataverycheapcostbymakingourownconsolewithRaspberryPiandthefreeRetroPi software.
 If you are not looking to buy the expensive retro gaming consoles in the market as collectibles
 .UsingtheRetroPiesoftwareontheRaspberryPisacheapalternativetoplaytheretrogames.

TheRetroPiesupportsalltypesofdisplays,controllers and games of almost all retro Gamingconsoles.

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