

RetroPie - A Cheap Alternative for Retro Gaming Consoles

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Abstract -Retro gaming also known as old school gaming is again booming in today's time. In this paper I will show how we can replace the expensive retro gaming consoles with the Raspberry Pi board installed with the RetroPie emulator system. I have also **compared** some of the retro gaming consoles with the RetroPie.

Key Words: Raspberry Pi, RetroPie, Compared, Retro Gaming, cheap, etc.

1. INTRODUCTION

The Retro Gaming which was out of the picture for so many days is back in the market. Retro gaming has existed since the early years of the video game industry, but was popularized with the popularity of the Internet and emulation technology. It is said that the main reasons players are drawn to retro games are nostalgia for different eras, the idea that older games are more innovative and original, and the simplicity of the games that requires less hours of gameplay. Hence the consoles are mostly famous between Y and Z generation peoples.

Most companies selling the retro gaming console on today's date are selling them for very expensive prices. Due to the huge customer demand in the market. People born in the 80's and 90's usually play these games. This industry could be worth \$300 billion by 2025. Nintendo sold 10 million units of NES classic consoles units this year. Where each console costs near about 160\$.

As this industry boomed a emulator named RetroPie was introduced. An emulator is software that makes a computer behave like another computer, or in the case of RetroPie a computer that behaves like a video game console such as the Super Nintendo. RetroPie allows you to turn your Raspberry Pi into a retro-gaming machine. It builds upon Raspbian, EmulationStation, RetroArch and many 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 a large variety of configuration tools to customise the system as you want. The RetroPie can emulate almost all retro gaming consoles available in the market ranging from Atari 2600 to Sony's PlayStation 2.

The RetroPie runs on the Raspberry Pi board. The Raspberry Pi board is a single board computer developed in the United Kingdom by Raspberry Pi foundation. The Raspberry Pi is famous due to its very low price. The Raspberry Pi has various models with different specifications. The latest Raspberry Pi 4 has, Quad core

Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz with 4GB RAM which is as powerful as an average house PC.

The Raspberry Pi with the RetroPie can be used as a really good emulating device for retro games. It supports almost all 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 choose. All you need to do is just plug and play once the device is ready.

2. Technical requirements

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

- Raspberry Pi (any model)
- MicroSD card 32GB
- Display (eg. TV)
- Raspberry Pi power supply 2A
- HDMI cable
- MicroUSB card reader
- A personal computer (with internet access)
- Raspberry Pi Case (If needed)
- Screw driver
- Pen Drive

3. Booting process

The booting method involves the following steps:

1. Place your Raspberry Pi into the case.
2. Download the RetroPie SD card image.
3. Formatting the microSD card.
4. Burning the RetroPie image onto a microSD card.
5. Put the SD card into the Raspberry Pi and connect the Peripherals.
6. Plug in the power cable.
7. Connect it to a display and choose the control settings you want.
8. Connect the Raspberry Pi to the internet through wifi or ethernet
9. Download the games you want to play and copy it in a pen drive.
10. Insert the pendrive to the Raspberry Pi
11. The device will automatically copy the games to the systems and sort them according to their consoles
12. The device is ready and you are all set to play the game.

4. Comparison

MODEL/CONS OLE	PRICE	PRELOAD ED GAMES	PORTAB LE
RetroPi Raspberry Pi 3B	\$50(app rox)	-	yes
Nintendo Wii	\$449	-	no
Nintendo Super NES classic	\$160	21	no
Nintendo New 3DS	\$284	-	yes

In this section I have compared the most famous and appreciated retro gaming consoles of today's date with RetroPie. The consoles are Nintendo Wii, Nintendo Super NES classic, Nintendo New 3DS these consoles are compared on the basis of price, pre-loaded games and profitability.

It is evident that the Nintendo Wii is the most expensive console in the above list which is \$499 whereas the RetroPie (with Raspberry Pi 3B) is the cheapest with approximate cost of \$50. The Nintendo Super NES classic and Nintendo New 3DS are of cost \$160 and \$284 respectively.

All the consoles need to download or insert a game CD to play the games. Whereas the Nintendo Super NES classic has only 21 preloaded games

As RaspberryPi is a card sized computer you can carry it anywhere if you use a smaller display. Whereas the Nintendo New 3DS is a hand held pocket gaming console.

The Nintendo Wii and Nintendo Super NES classic are not portable.

The performance and the price of the retroPie console depends upon the model of RaspberryPie used in making the console. The RetroPie supports all types of Raspberry Pi models.

5. Warning

While downloading the game rom's only download the games with permission from the developer. Downloading the game rom's for free from an open source website may be illegal in some countries.

6. Conclusion

In the end this concludes that we can play retro games at a very cheap cost by making our own console with Raspberry Pi and the free RetroPi software.

- If you are not looking to buy the expensive retro gaming consoles in the market as a collectibles .Using the RetroPie software on the Raspberry Pi is a cheap alternative to play the retro games.
- The RetroPie supports all types of displays, controllers and games of almost all retro Gaming consoles.

7. References

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