DIY Arcade Machine with Raspberry Pi & Talentec's Kit

2

The present document provides a short description on how to build a 2-player Arcade machine with Raspberry Pi, using a kit provided by Talentec (https://talentec.es/).

IN THIS DOCUMENT

2.1 Electronic components, enclosure and vinyl stickers.

2.2 Uploading operating system and games on Raspberry Pi.

Electronic components, enclosure and vinyl stickers

Below is the list of the electronics used by the Arcade machine (**Figure 2–1**). The present setup is based on the Raspberry Pi 3A *single-board computer (SBC)*. Since the latter SBC features merely one USB port, our setup requires an addition USB hub of at least two USB ports to communicate with the Arcade Joystick and Push-button encoders. Our setup holds a 3-port hub (**Figure 2–2**) which is particularly convenient when uploading games to the Raspberry system (a procedure described later in this document).
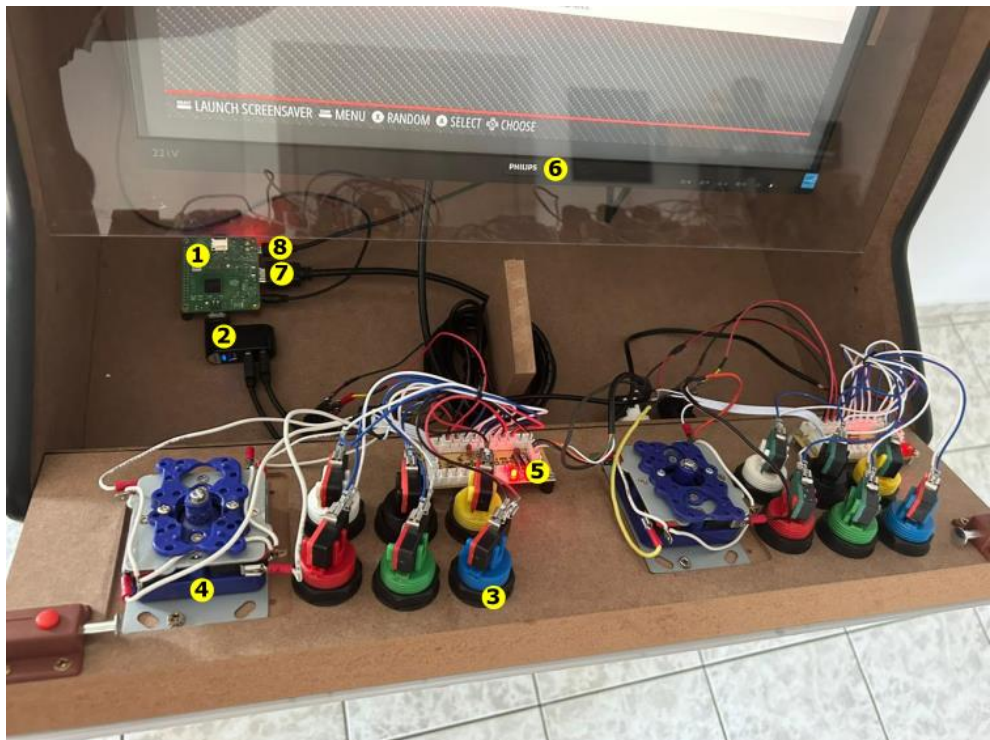

Figure 2–1 Inside electronics of the Arcade machine (1 of 2).

List of Electronics (overall cost of electronics **~260€**)
1.   Rasberry Pi 3A board (**x1**), price **~33€**
2.   3-port USB hub (**x1**), price **~7€**
3.   American arcade push button of 28mm hole sizing (**x16**), price **~30€**
4.   Arcade joystick (**x2**), price **~20€**
5.   Zero delay arcade joystick/push-button encoder (**x2**) along with cables, price **~25€**
6.   PC monitor 22´´ (**x1**), price **~90€**
7.   HDMI cable for the Raspberry-Monitor communication (**x1**), price **~5€**

8. Power supply for the Raspberry Pi board (**x1**), price **~10€**
9. Sound kit (*1x stereo amplifier, 2x 5W Speakers, 1x 3.5mm Male-Male cable for the Raspberry-Amplifier communication*) (**x1**), price **~20€**
10. Power supply 12V 1A for the stereo amplifier (**x1**), price **~10€**
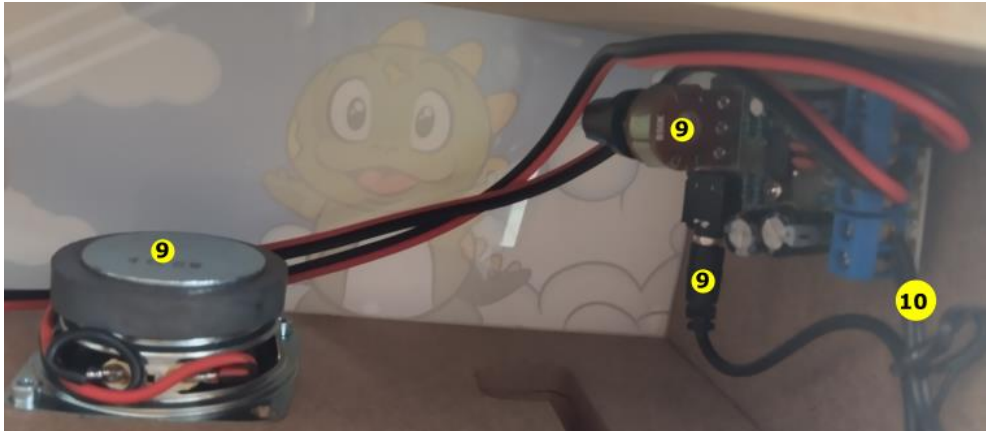11. 16GB (or 32GB) microSD card for the Raspberry Pi board (**x1**), price **~10€**

Figure 2–2 Inside electronics of the Arcade machine (2 of 2).

List of Enclosure Parts (overall cost of electronics **~340€**)
1. Next Stage 24″ Bartop Kit (*including methacrylate and black T-molding*) (**x1**), price **~145€**
2. Vinyl Sticker for the 24″ Bartop Kit (**x1**), price **~40€**
3. Stand for the 24″ Bartop Kit (*including black T-molding* (**x1**), price **~115€**
4. Vinyl Sticker for the stand (**x1**), price **~40€**

Figure 2–3 Stickers of the Arcade machine.

    Talentec provides full instructions on how to build the bartop and stand kits. Moreover, you may watch the following YouTube video for building the bartop kit (https://www.youtube.com/watch?v=72rn4YuGchc). Vinyl stickers should be placed at the very end of the building process (stick them and afterwards cut them using razor blade).

Uploading operating system and games on Raspberry Pi

To turn Raspberry Pi to a retro-gaming machine you first need to install **Retropie** operating system to the microSD card incorporated by the Raspberry Pi board. Connect the Raspberry's microSD card to your home PC and then, install on your PC the **Raspberry Pi Imager** software. The latter software allows us to upload an operating system to the Raspberry's microSD card. Follow the procedure depicted by **Figure 2–4**.
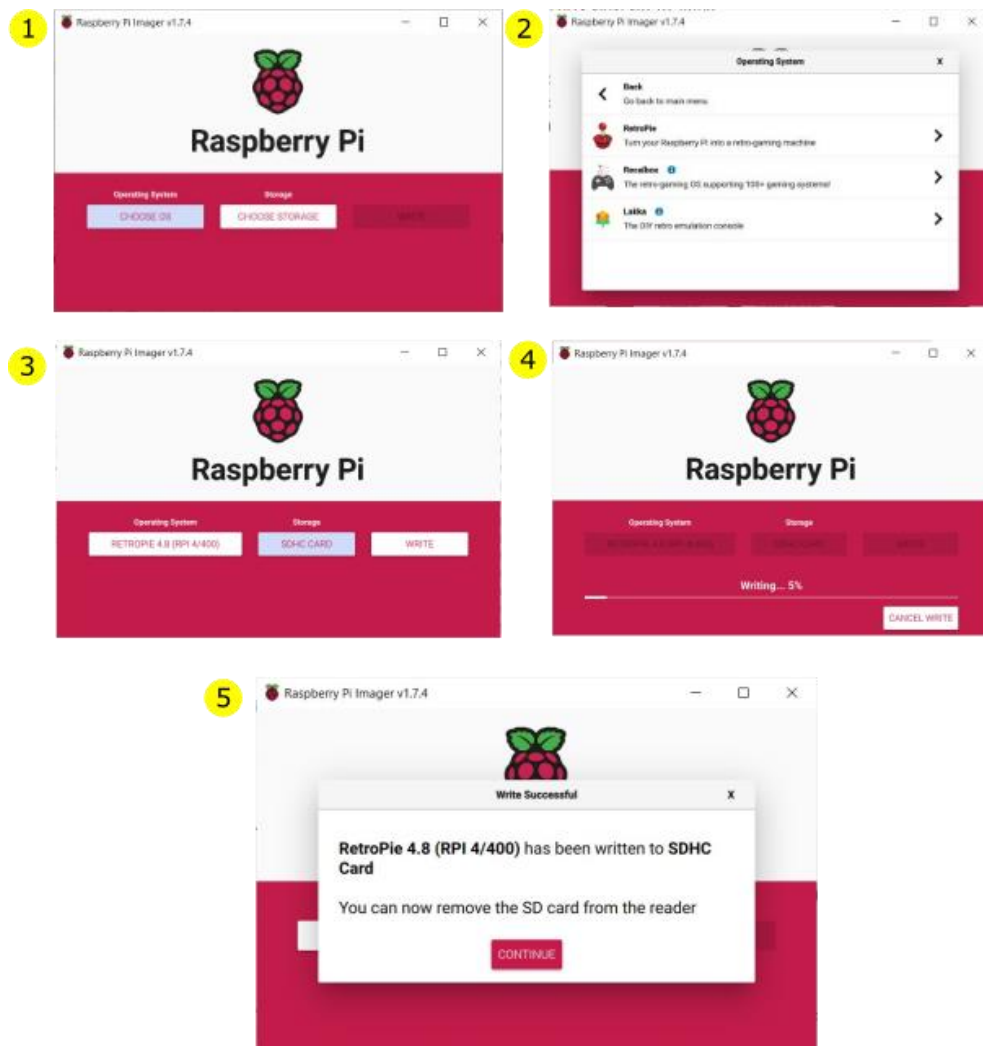

Figure 2–4 Install Retropie on the Raspberry's microSD card through the Windows (5-step procedure).

After the installation re-attach the microSD card to Raspberry Pi board and power-up Arcade machine to configure the joystick and push-buttons of Player 1. This procedure is only needed once, while the joystick and buttons of Player 2 are automatically configured (and are same as for Player 1).

Figure 2–5 Configure joystick and buttons for Player 1.

If you need a more detailed description of the aforementioned described procedure you may watch the following YouTube video:

https://www.youtube.com/watch?v=wz9ev0rG4UM&t=11s

Uploading games to the Arcade machine

At this point you are ready to upload ROM files of the games you would like to play on your Arcade machine. To upload games to the Raspberry Pi microSD card you will need a flash disk. First connect the flash disc to your home PC. Through the Windows explorer first format the flash disk (to fat32 system) and then create a new folder with the exact name retropie. Then attach the flash disk to the Raspberry Pi board and boot the Arcade machine. The retropie operating system running on the Raspberry Pi board will automatically generate the appropriate folders where the ROM files (of the downloaded retro games) should be stored. For instance, games corresponding to the Super Nintendo console should be placed to the (automatically generated) path: retropie\snes. The following descriptive YouTube video provides details on how to download games (i.e., ROM files) for the Raspberry Pi Arcade machine:

https://www.youtube.com/watch?v=888BKOFtFu0&t=748s