



Version 2
(October 2021)

**How to add games on Nintendo Game and Watch 2020.
No Soldering Raspberry pie only Guide.
For original 1MB flash (and 16/64MB)
(based on Mickey`s guide)**



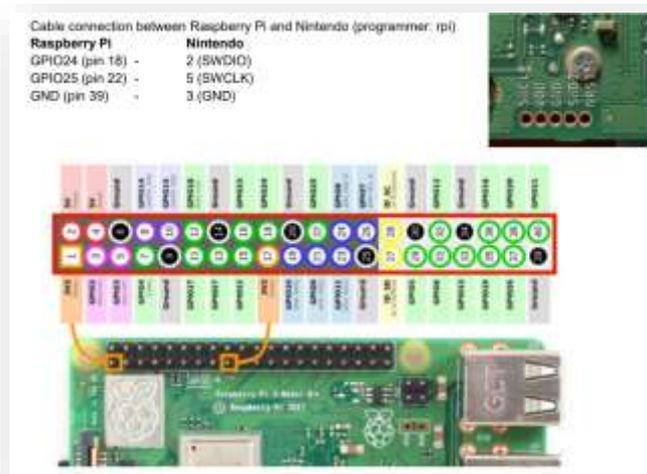
Disclaimer: this guide is for those who don't have the right equipment, experience and time on hand. There are better and more professional guides on the internet.

Prerequisites.

1. Raspberry pi
2. Dupont cables.

Step1: Open and Prepare your Game and Watch for flashing

1. Find suitable screw driver (does not have to be triangle)
2. Connect dupont cables using scheme



Step2 : Prepare your Raspberry.

1. Use Raspberry pi imaging tool to install Raspbian Lite on your SD.
2. Activate SSH on your Raspberry using Raspery-Config -> Connection.
 - a. Use SSH on your PC to access Raspberry to be able to copy paste commands from this guide.

Step 3: Hack and Unlock your Game and Watch

1. `sudo apt update`
2. `sudo apt upgrade`
3. `wget https://github.com/xpack-dev-tools/arm-none-eabi-gcc-xpack/releases/download/v10.2.1-1.1/xpack-arm-none-eabi-gcc-10.2.1-1.1-linux-arm.tar.gz`
4. `mkdir -p ~/opt`
5. `cd ~/opt`
6. `tar xvf ../xpack-arm-none-eabi-gcc-10.2.1-1.1-linux-arm.tar.gz xpack-arm-none-eabi-gcc-10.2.1-1.1`
7. `export PATH=$PATH:/home/pi/opt/xpack-arm-none-eabi-gcc-10.2.1-1.1/bin/`
8. `git clone https://github.com/ghidraninja/game-and-watch-backup.git`
9. `sudo apt install npm`
10. `npm install --global xpm@latest`
11. `xpm install --global @xpack-dev-tools/openocd@latest`
12. `export OPENOCD="/home/pi/.local/xPacks/@xpack-dev-tools/openocd/0.11.0-`

ls -la - you should see directories as on below picture:

```
pi@raspberrypi: ~/opt
pi@raspberrypi:~/opt $ pwd
/home/pi/opt
pi@raspberrypi:~/opt $ ls -la
total 20
drwxr-xr-x  5 pi pi 4096 Jan 20 13:15 .
drwxr-xr-x 28 pi pi 4096 Jan 20 13:15 ..
drwxr-xr-x 12 pi pi 4096 Jan 20 12:57 game-and-watch-backup
drwxr-xr-x  5 pi pi 4096 Dec 19 15:54 xpack-arm-none-eabi-gcc-10.2.1-1.1
```

1.1/.content/bin/openocd"

13. sudo apt-get install binutils-arm-none-eabi python3 libftdi1
14. cd game-and-watch-backup
15. ./ 1_sanitary_check.sh (if you get error try pushing and holding dupont cables to make sure you have connection (or solder them)

```

game-and-watch-backup pi@raspberrypi:~/game-and-watch-backup$ ./1_sanitary_check.sh
Running sanitary checks...
Looks good!
game-and-watch-backup pi@raspberrypi:~/game-and-watch-backup$ ./2_backup_flash.sh jlink
Make sure your Game & Watch is turned on and in the time screen. Press return when ready!

Attempting to dump flash using adapter jlink.
Running OpenOCD... (This will take roughly 30 seconds, you Game and Watch screen will blink in between.)
Validating ITCM dump...
Extracting checksummed part...
Validating checksum...
Looks good! Successfully backed up the (encrypted) SPI flash to flash_backup.bin!
game-and-watch-backup pi@raspberrypi:~/game-and-watch-backup$

```

16. ./ 2_backup_flash.sh rpi
17. ./3_ ... rpi
18. Follow this video from minute 2:48 -> https://www.youtube.com/watch?v=-MzmoEFs0bQ&ab_channel=stacksmashing
19. Once you reach ./5_ step you should have 3 files in backup folder within folder game-and-watch-backup

```

flash_backup.bin
internal_flash_backup.bin
itcm_backup.bin

```

20. Backup those files if not the whole folder game-and-watch-backup, you can use FileZilla on your Windows PC to access Raspberry pi and copy files from RPI to your PC. You can later use FileZilla to copy ROMS on RPI.
21. If something goes wrong later on you can come back to this folder and run 5_restore.sh script and restore original FW.

Step 4: Install Retro-Go

1. if you use 1MB original Flash chip this will replace original FW but you can always use ./5_restore.sh script to bring it back.
2. cd ..
3. cd opt
4. git clone <https://github.com/ghidraninja/game-and-watch-flashloader.git>
5. cd game-and-watch-flashloader
6. make GCC_PATH=/home/pi/opt/xpack-arm-none-eabi-gcc-10.2.1-1.1/bin/
7. cd ..
8. cd opt
9. git clone --recurse-submodules <https://github.com/kbeckmann/game-and-watch-retro-go>

```

you should have below directories:
pi@raspberrypi:~/opt
pi@raspberrypi:~/opt$ pwd
/home/pi/opt
pi@raspberrypi:~/opt$ ls -la
total 28
drwxr-xr-x  7 pi pi 4096 Jan 20 14:32 .
drwxr-xr-x 28 pi pi 4096 Jan 25 00:47 ..
drwxr-xr-x 12 pi pi 4096 Jan 20 14:00 game-and-watch-backup
drwxr-xr-x  6 pi pi 4096 Jan 20 14:59 game-and-watch-flashloader
drwxr-xr-x 11 pi pi 4096 Jan 23 21:52 game-and-watch-retro-go
drwxr-xr-x  9 pi pi 4096 Dec 19 15:54 xpack-arm-none-eabi-gcc-10.2.1-1.1

```

- 10.

How to get NEWUI or user interface with Cover Artwork?



Put Cover art pictures into the same folder as roms. Pictures will be compressed during compilation step #9. Supported pictures are BMP, PNG, JPEG.

 Alex Kidd - The Lost Stars (UE) [!].png	2,918 PNG File
 Alex Kidd - The Lost Stars (UE) [!].sms	262,144 SMS File

1. `cd game-and-watch-retro-go`
2. `git remote add olderzeus https://github.com/olderzeus/game-and-watch-retro-go.git`
3. `git fetch olderzeus`
4. `git checkout NewUI`
5. `git submodule update`
6. `make clean`
7. `git pull`
8. `chmod a+x scripts/*.sh`
9. `make GCC_PATH=/home/pi/opt/xpack-arm-none-eabi-gcc-10.2.1-1.1/bin/ COVERFLOW=1 COMPRESS=lzma flash_all`

If you have installed 16 or 64MB chip use this

10. `make GCC_PATH=/home/pi/opt/xpack-arm-none-eabi-gcc-10.2.1-1.1/bin/ COVERFLOW=1 COMPRESS=lzma EXTFLASH_SIZE_MB=64 or 16 flash_all`