Dementia Friendly Music Player: How to prepare the micro-SD card image

21 November 2020

1 Introduction

This document describes how to create a Dementia Friendly Music Player system image – a .img file. I (Ross) am probably the only person that needs this document. Mostly people making a Dementia Friendly Music Player will use the fruit (the .img file) of the process described here -- you don't need to create your own custom .img file unless you really want to.

2 No warranty

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3 To create USB DAC version

The Dementia Friendly Music Player that looks like this uses a USB DAC.

3.1 Flash DietPi onto the micro-SD card

Install DietPi i.e. follow these instructions: http://dietpi.com/phpbb/viewtopic.php?f=8&t=9#p9. I used balenaEtcher (free) to write the disk image to the micro-SD card. This may take a while as the system updates itself.

3.2 Boot & configure DietPi

Put the Pi on Ethernet. Move the micro-SD card to the Pi, boot DietPi. After a build process, you will be prompted to make some choices.

DietPi-Config

```
Audio Options: Enable : Install ALSA to enable audio capabilities
Audio Options: Soundcard : usb-dac
```

Software Optimized

```
Hardware Projects : RPi.GPIO [Install]
```

Software Additional

```
System : ALSA
Development : Git Client
```

Install

```
Install
```

Software will be installed. Then your Pi will then reboot

3.3 Install VLC (music player)

```
sudo apt-get install vlc-bin
sudo apt-get install vlc-plugin-base
```

3.4 adduser pi

```
sudo adduser pi
```

3.5 Install/clone dqmusicbox, enable

```
cd /home/pi
git clone https://github.com/rosswesleyporter/dqmusicbox/
sudo chmod 755 dqmusicbox/bin/dqmusicbox.py
```

3.6 Install Python bindings for VLC

```
cd /home/pi
sudo git clone https://github.com/oaubert/python-vlc
cp python-vlc/generated/2.2/vlc.py dqmusicbox/bin
chmod 755 dqmusicbox/bin/vlc.py
```

3.7 Add shell script to automatically start the musicbox

```
cd /home/pi
sudo cp dqmusicbox/bin/dqmusicbox.sh /etc/init.d
sudo chmod 755 /etc/init.d/dqmusicbox.sh
sudo update-rc.d dqmusicbox.sh defaults
```

For more information, see Stephen Christopher Phillips' terrific page.

3.8 Configure such that USB drives mount automatically

The instructions below are from pauliucxz in StackExchange 66169, preserved below for clarity. I am quite thankful for that answer. The first USB drive will automatically mount as /media/usb1.

Specify a udev rule by creating file /etc/udev/rules.d/usbstick.rules

```
ACTION=="add", KERNEL=="sd[a-z][0-9]", TAG+="systemd", ENV{SYSTEMD_WANTS}="usbstick-handler@%k"
```

Configure a system service by creating file /lib/systemd/system/usbstick-handler@.service

```
[Unit]
Description=Mount USB sticks
BindsTo=dev-%i.device
After=dev-%i.device

[Service]
Type=oneshot
RemainAfterExit=yes
ExecStart=/usr/local/bin/cpmount /dev/%I
ExecStop=/usr/bin/pumount /dev/%I
```

Create the mount script file /usr/local/bin/cpmount

```
#!/bin/bash
if mountpoint -q /media/usb1
then
   if mountpoint -q /media/usb2
   then
      if mountpoint -q /media/usb3
      then
         if mountpoint -1 /media/usb4
         then
             echo "No mountpoints available!"
             #You can add more if you need
         else
             /usr/bin/pmount --umask 000 --noatime -w --sync $1 usb4
         fi
      else
         /usr/bin/pmount --umask 000 --noatime -w --sync $1 usb3
      fi
```

```
    else
       /usr/bin/pmount --umask 000 --noatime -w --sync $1 usb2
    fi
else
    /usr/bin/pmount --umask 000 --noatime -w --sync $1 usb1
fi
```

Make the script executable

```
sudo chmod 755 /usr/local/bin/cpmount
```

3.9 Reboot

```
sudo reboot
```

3.10 Test

Make sure the music plays…

3.11 Shutdown

Provided that the reboot went well, shutdown:

```
sudo shutdown -h now
```

Then remove the micro-SD card.

3.12 Use Win32DiskImager to create the master image

Remove the micro-SD card from your Pi and place in the card reader of your computer. Use Win32DiskImager to create an image of Dementia Friendly Music Player that you just nicely configured.

4 To create built-in headphone jack version

The Dementia Friendly Music Players below use the Pi's built-in headphone jack.

4.1 Flash DietPi onto the micro-SD card

Install DietPi i.e. follow these instructions: http://dietpi.com/phpbb/viewtopic.php?f=8&t=9#p9. I used DietPi 6.26 which was current as of this writing in November 2019. I used balenaEtcher (free) to write the disk image to the micro-SD card. This may take a while as the system updates itself.

4.2 Boot & configure DietPi

Put the Pi on Ethernet. Move the micro-SD card to the Pi, boot DietPi. After a build process (which will take a while), you will be prompted to make some choices.

DietPi-Config

```
Audio Options: Enable : Install ALSA to enable audio capabilities
Audio Options: Soundcard : rpi-bcm2835-3.5mm : Onboard HQ: 3.5mm forced output
```

Software Optimised

```
Hardware Projects : RPi.GPIO [Install]
```

Software Additional

```
System: ALSA: linux sound system
Development : Git Client
```

Install

```
Install
```

Software will be installed. Then your Pi will then reboot

4.3 Install VLC (music player)

```
sudo apt-get install vlc-bin
sudo apt-get install vlc-plugin-base
```

4.4 adduser pi

```
sudo adduser pi
```

4.5 Install/clone dqmusicbox, enable

```
cd /home/pi
git clone --depth 1 https://github.com/rosswesleyporter/dqmusicbox/
sudo chmod 755 dqmusicbox/bin/dqmusicbox.py
```

4.6 Install Python bindings for VLC

```
cd /home/pi
sudo git clone https://github.com/oaubert/python-vlc
cp python-vlc/generated/2.2/vlc.py dqmusicbox/bin
chmod 755 dqmusicbox/bin/vlc.py
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BindsTo=dev-%i.device
After=dev-%i.device

[Service]
```

```
Type=oneshot
RemainAfterExit=yes
ExecStart=/usr/local/bin/cpmount /dev/%I
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         else
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         fi
      else
         /usr/bin/pmount --umask 000 --noatime -w --sync $1 usb3
      fi
   else
      /usr/bin/pmount --umask 000 --noatime -w --sync $1 usb2
   fi
else
   /usr/bin/pmount --umask 000 --noatime -w --sync $1 usb1
fi
```

Make the script executable

```
sudo chmod 755 /usr/local/bin/cpmount
```

4.9 Reboot

```
sudo reboot
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