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

21 March 2019

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.

Install pmount

```
sudo apt-get install pmount
```

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
```

3

```
        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
```
Development : Git Client
```

Install
```
Install
```

Software will be installed. Then your Pi will then reboot

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```
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```
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4.4   adduser pi
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```
cd /home/pi
git clone 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
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```
cd /home/pi
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sudo chmod 755 /etc/init.d/dqmusicbox.sh
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For more information, see Stephen Christopher Phillips' terrific page.

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ACTION=="add", KERNEL=="sd[a-z][0-9]", TAG+="systemd", ENV{SYSTEMD_WANTS}="usbstick-handler@%k"
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Configure a system service by creating file /lib/systemd/system/usbstick-handler@.service
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[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
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        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
```

4.9   Reboot

```
sudo reboot
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Provided that the reboot went well, shutdown:

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Then remove the micro-SD card.

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