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

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1   Introduction

This document describes how to create a Dementia Friendly Music Player (DQMusicBox) 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. At the time of this writing, there are two versions of the software. This version uses a USB DAC and a newer method for USB drive automounting.

2   No warranty

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3   Prepare the disk image

This is a record of how I created the disk image. You only need to read this information if you wish to do your own OS configuration.

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: 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-nox
```

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_usb.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_usb.sh /etc/init.d
sudo chmod 755 /etc/init.d/dqmusicbox_usb.sh
sudo update-rc.d dqmusicbox_usb.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
            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   Shutdown, unplug

```
sudo shutdown -h now
```

Then unplug the Pi

3.10   Insert USB drive
Once Pi is off, insert USB drive. Then plug the Pi back in.

3.11   Test
Make sure the music plays…

3.12   Shutdown
Provided that the reboot went well, shutdown:

```
sudo shutdown –h now
```

Then remove the micro-SD card.

3.13   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.