Level: Beginner V1.0 Draft

Embedded Linux Z2HV2
Assignment 4 - Buildroot
A Reproducible Mp3-Player application

Summary:

This assignment is part of assignment series aims to develop a fully functional Mp3 player reproducible

By buildroot (without any manual modifications after the build).

The project will be splitted into 3 stages :

Stage	Goal	Requirements
1	Have an up running pi with ssh and network configuration, without any manual configuration.	From: **ELZ2H_BRA1_1** To : **ELZ2H_BRA1_6**
2	Add an audio driver, audio player, play songs from the sdcard and control them with buttons.	From: **ELZ2H_BRA1_7** To : **ELZ2H_BRA1_11**
3	Add support to bluetooth headphones, reading songs from external usb and text to speech audio notifications.	To be added later

Host machine requirements:

-The buildroot project (Tag: 2019.11.1) - Clone a clean repo from http://git.buildroot.net/buildroot/
(you can use the repo from the past labs, but make sure to clean it using the clean commands and remove the compiler cache from ~/.buildroot-cchace to avoid any build problem)
-Network Connection to your laptop in case of a clean buildroot repo.
-A Raspberry Pi and your own SDcard.
-Your Prefered Hardware connection (Serial, Ethernet), we learned the basic concept for connecting via each one.

The output image requirements :

Info : OI refer to the output image

Requirement ID	Description
ELZ2H_BRA1_1	The OI shall has the network static ip “192.168.1.6” and netmask “255.255.255.0” configuration in the interfaces file
ELZ2H_BRA1_2	The OI shall has the ssh enabled and running, do any needed changes to the ssh configuration file

ELZ2H_BRA1_3	The OI shall has root password “12345”
ELZ2H_BRA1_4	The OI shall has a pre-compiled application that print welcome to buildroot Mp3 player in the following path “/myApplications/printHello.o”
ELZ2H_BRA1_5	The OI shall has a shell prompt “rapi_shell>”
ELZ2H_BRA1_6	All of the requirements should be automated with buildroot without any further modification on the output image or entering any commands using the ttl
ELZ2H_BRA2_7	The OI shall include the hardware sound card driver needed to play sounds (ALSA : Advanced Linux Sound Arch) and all the related libraries.
ELZ2H_BRA2_8	The OI shall use glibc instead of uclibc
ELZ2H_BRA2_9	The OI shall have a suitable .mp3 file player package (mpg123, madplay, … etc).
ELZ2H_BRA2_10	Before running the mp3 player the kernel will need to load a kernel module called “snd-bcm2835” using $modprobe (More on that later)
ELZ2H_BRA2_11	The OI shall have a script which runs automatically at boot time to control the songs on the music player with push buttons (Start, Stop, Next, Prev).

How to deliver your work (For each stage):

-You should complete the build on your own machine.

-You should test the image on the team raspberry pi.

-On lecture i will check who completed the assignment and will ask about the steps and inspect the output build/image.

- Create a Repository on your GitHub account and name it Embedded_Linux_Z2H (already created)
- Create a folder within this repo called assignement_4_MP3_player has the following :

```
gemad@gemad-Host:~/Documents/test2019$ tree assignement_4_MP3_player/
assignement_4_MP3_player/
├── build.log
├── mp3_overlay
├── mp3-postbuild.sh
└── rpi3_mp3_defconfig

1 directory, 3 files
```

* Your "build.log" file created from the build process on your machine (use tee command).
* Your configuration: Save configurations to a file called "rpi3_mp3_defconfig". (use the savedefconfig command).
* Your filesystem overlay directory.
* Your post-build script.

- Commit and push your changes to the repo (make sure to write a descriptive commit message start with mp3_satage1 , and for stage mp3_stage2 and so on)
- Export your mp3-postbuild.sh and rpi3_mp3_defconfig to .pdf format

Submit A link to your "Repository" and the files "mp3-postbuild.sh", "mp3-postbuild.pdf" ,"rpi3_mp3_defconfig" and "rpi3_mp3_defconfig.pdf" to the Assignment on google Classroom