COP4600

P0: My First Kernel Mod

Overview

You will add a kernel boot log message to Reptilian. You will then take a screenshot of the terminal displaying the added boot message with your name/UFID and a personal message visible and create a short video to demonstrate your code. You'll submit the project via Canvas.

Structure

The project is broken into four main parts:

1) Modify the kernel to print your name, UFID, and a personal message to the default boot (and rebuild).
2) Take a screenshot displaying your name and UFID in the debug boot message.
3) Create a unified patch file.

The system must print "**###** ~~Assignment Project Exam Help~~ **y Personal Message #####**" using the log system with on ~~https://eduassistpro.github.io/~~ default configuration) just before the message "**Detecting Re** age can be <u>appropriate</u> message you like (see example screenshots). It can be added in sour **cu_end_inkernel_boot()** function, which wraps up the kernel's boot tasks and hands o ~~Add WeChat edu_assist_pro~~ em initialization routines.

For extra credit (+4%), students may modify the GRUB m **(FirstName LastName)**" next to the default "**Reptilian 20.08-A9.0-r2**" option; see the *Example Screenshots* section below for an example of what the modified menu should look like. This will not be included in the patch; just take a screenshot and talk about what you did in the report and screencast. Note that <u>the GRUB utilities cannot be used</u> for this – just a text editor.

Log Levels

Many systems use level-based log systems. The Linux kernel has eight (8) levels that are used for log messages. Anything less severe than the KERN_ERR log level will only show up on the screen in verbose or debug mode.

Testing

You should test your code by starting your VM after rebuilding. Make sure it displays your message while booting in default mode (*not* verbose or debug). You should also apply your patch to a "clean" VM to make sure it works.

Submissions

You will submit the following at the end of this project on Canvas (Do NOT zip files):

- Screenshot of added log message with name & UFID visible (plus screenshot of GRUB if doing EC)
- Report containing link to **<u>unlisted</u>** screencast
- Unified Patch File

Report

Your report will explain how you modified the boot message, including what changes were made to which files and why each change was made. It will include description of how testing was performed. It will also contain a link to an unlisted web resource for the screencast (such as a YouTube video link). It should be named "**p0.txt**" and should be no more than 500 words. <u>You must include your name on the report</u>. It should cover all relevant aspects of the project and be organized and formatted professionally – **this is not a memo!**

Screencast

You should submit a screencast (with audio) walking through the changes you make to the operating system (~2 minutes) as part of the report (see "Report"). Audio speed-up is prohibited. <u>The video must be unlisted!</u>

Patch File

The patch file will include all changes to all files in a single patch. Applying the patches and remaking the necessary parts of Reptilian, then rebooting should modify the boot message as described above.

To create the patch file follow these commands:

```
$ cd /usr/rep/src/reptilian-kernel
$ git add -u
$ git add '*.c' '*.h' '*Makefile*' '*.tbl'
$ git diff remotes/origin/os-latest > p0.diff
```

Assignment Project Exam Help

This is merely an example that includes specific file types; you will need to ensure that all of your changes appear in patch files you your patches!

We will test your project a https://eduassistpro.github.io/ he kernel source directory:

```
$ git apply p0.diff
$ make && sudo make install && sudo make modul
```
Add WeChat edu_assist_pro

Example Screenshots

Below you can see an example of what acceptable screenshots look like for the project and the extra credit (You don't need to circle what you added):
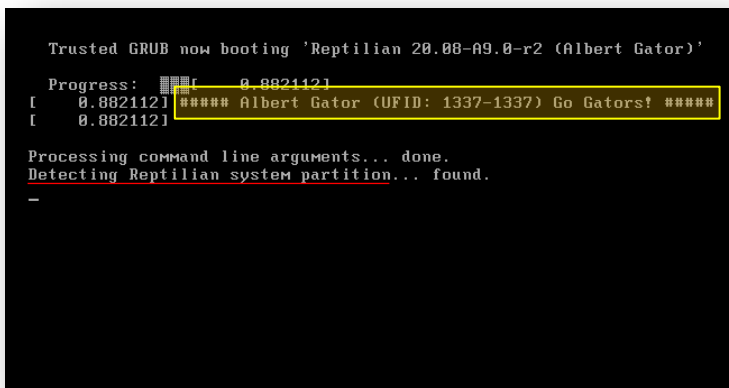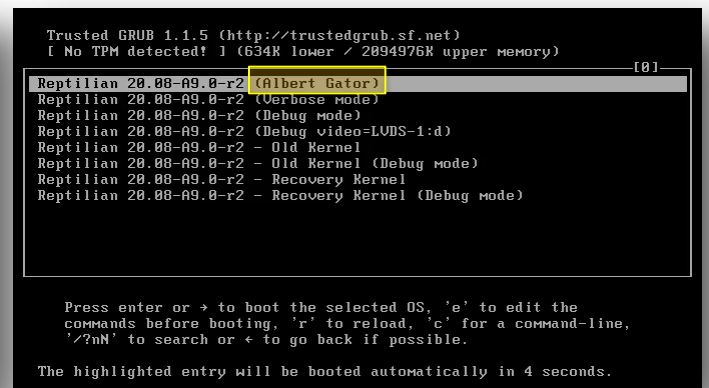

Figure 1. Added Boot Message

Figure 2. Modified GRUB Menu (Extra Credit)