

ECE 477 Lab 1

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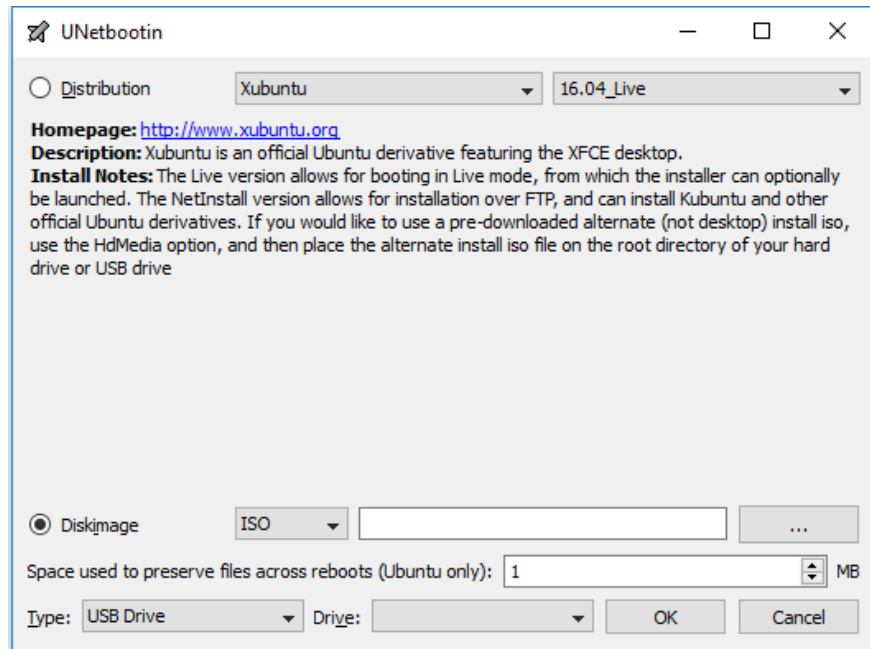
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1 Introduction

The purpose of this lab was to set up a bootable USB image for Ubuntu with the necessary packages for the class, in addition to doing something interesting with the bootable USB drive after. Setting up the bootable USB drive required a prepared Ubuntu system image provided by the instructor and a utility to make the bootable live USB drive from the image. Then, a simple "Hello World" program was created and run on the live USB to demonstrate its use. Finally, for the interesting and creative part, a C program was developed that gives the user a random date of death based on their year of birth and prints the date on a tombstone in ASCII art.

2 Part A

The first step in making the bootable thumb drive for Ubuntu was to download the image file from the link provided on the [course webstie](#). Once the image file was downloaded, UNetBootin was used to make the bootable live USB. The following screenshot shows the UNetBootin interface.



Another feature within UNetbootin that was used was the ability to create persistent storage across reboots. 4GB was reserved for persistent storage on the live USB. After creating the live USB, a modification was made to `grub.cfg` under `\boot \grub` to indicate the persistent storage to the BIOS.

After the live USB was fully set up, it was booted into and ready for a C program to be created. A file was made on the desktop called `hello.c` and the classic "Hello World" program was inserted (see Appendix A for `hello.c` code). The program's use is shown in the figure below.

```

Terminal - student@xubuntu: ~/Desktop
File Edit View Terminal Tabs Help
student@xubuntu:~/Desktop$ gcc hello.c -o hello
student@xubuntu:~/Desktop$ ./hello
Hello World
student@xubuntu:~/Desktop$

```

3 Part B

For this lab's Part B, a more interesting C code `rip.c` was developed to run on the bootable Ubuntu USB. This helped to get comfortable doing C code development in the new Ubuntu environment.

`rip.c` generates a random date of death based on a user's date of birth and prints a tombstone with the date of death in ASCII art. This is achieved by taking the user's birth year, adding a random number from 0-100 to it, and assigning a random month and date as well. The `rand()` function in `stdlib.h` was used to generate these random numbers. A sequence of

`printf()` statements were used to generate the ASCII art. The program's use is shown in the figure below.

[illegible]

This program further demonstrates the execution of C code on the live USB.

4 Conclusion

The setup and demonstration of basic C programming on a live Ubuntu USB has been presented. The user is capable of developing, compiling, and running C code using the live USB. A simple "Hello World" program was created and run as well as another that gives the user a random date of death based on their year of birth and prints the date on a tombstone in ASCII art. The live USB contains all the necessary packages for the class.

A Part A Source Code

Attached: hello.c

B Part B Source Code

Attached: rip.c