Assembler lab1: Toolchain practice.

Introduction

This lab will allow you practice using the Linux shell (bash), the assembler, the linker and the debugger. It will hopefully broaden your understanding of 80x86 assembly language as well.

Procedure:

Boot from the live CD supplied. Once booted, you can optionally plug in a USB stick where you can store your work. If you choose not to do this and your PC reboots you will lose your work as this system runs entirely from CD and RAM.

From the webcourses directory for this lab download the file 'hello.s'. This file will be saved to the Downloads directory on your desktop (it will not be displayed). Open a terminal (Go to Applications->Accessories->Terminal in the Debian main menu).
Enter the following:

cd Desktop
cd Downloads
as -g hello.s -o hello.o
ld hello.o -o hello
./hello

After doing this you should see the infamous “Hello World” appear on the screen. Before moving on, make sure you fully understand the meaning of each of the commands you just executed.

You can single step through the program using the insight debugger by entering the following command:

insight hello

This runs a graphical debugger that allows you start and stop the program, inspect memory and registers and track down any errors.

Modify the program (using the **gedit** editor) so that it prints your name instead of “World” when it says runs.

Go to your course notes and read the section entitled: “System Calls”. Now modify the program so that it does the following:

Print a message asking the user to enter some text (system call 4)
Read some text from the console (The console if file #1 and you use system call 3 to read it)
Print the text the user just entered. (system call 4 again)
Exit (system call 1)

Can you think of an equivalent C-program that closely parallels this?

Answer the questions in the multiple choice quiz.