Practical 09

Assembly Language

THIS IS A PROCTORED PRACTICAL

YOU MUST SHARE YOUR SCREEN SO YOUR PARTICIPATION IN THIS PRACTICAL CAN FULLY INVIGILATED

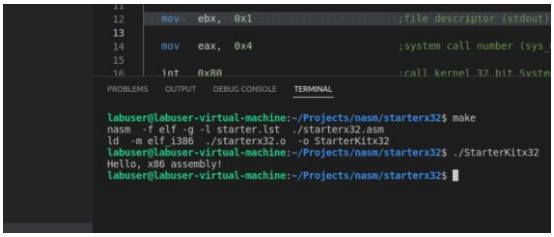
1. Create a Github repository "Assembly_and_C"
2. Create a sub directory PRACTICAL_##
3. Add Github link to CA Spreadsheet
   e.g https://STUDENTID.github.com/Assembly_and_c/PRACTICAL_##
4. Invite Lab Supervisors including **MuddyGames** as a collaborators
5. Go to designated group to complete practical
6. Upload completed Practical files to Github repository

Create a unique file ***e.g. practical_##_part#.c*** or ***practical_##_part#.asm*** for each practical section below.

Clone https://bitbucket.org/MuddyGames/assembly-and-c-x86_64/src/master/

Linux VM https://comp-vcentre.itcarlow.ie

Objective Understand and utilise x84 Assembly Instructions

1	Create a new directory and name ***practical_09_part1.*** This is a clone of **starterx32** directory Program, edit compile and execute code to perform activities =>	 1. Open terminal in Visual Studio Code 2. Perform a make 3. Run binary produced 4. Modify output string so that it outputs "Assembly and C" 5. Note registers used
2	Create a new directory and name ***practical_09_part2.*** This is a clone of **starterx64** directory Program, edit compile and execute code to perform activities =>	1. Open terminal in Visual Studio Code 2. Perform a make 3. Run binary produced 4. Modify output string so that it outputs "Assembly and C" 5. Note registers used

3	Create a new directory and	

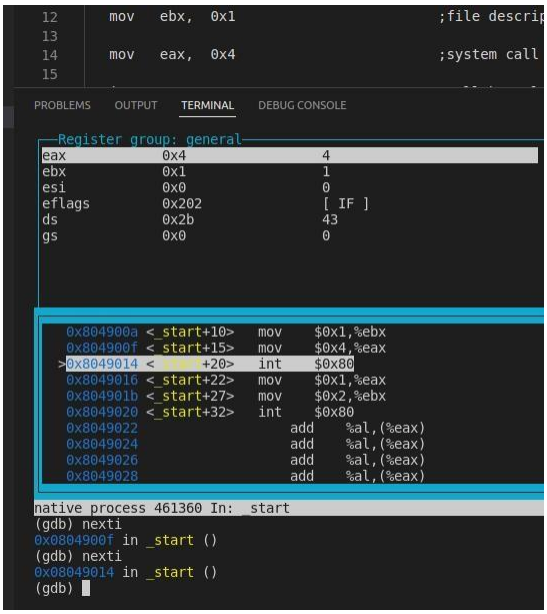
name ***practical_09_part3.***

This is a clone of **starterx32** directory

Debug binary produced in ***practical_08_part1***

Program, edit compile and execute code to perform activities =>

For full list of GDB Commands



1. Open terminal and issue following command

   gdb StarterKitx32 -tui

2. Set a breakpoint

   break _start

3. Run binary

   run

4. Step through using

   nexti

   AND

   next

   commands, observe difference

5. Rerun StarterKitx32 using

   run command

6. Examine register values using

   layout reg command

7. Examine register values using e.g.

   info registers eax
   i r eax
   info all-registers
   commands

<table>
<tr><td></td><td></td><td>8. Take screenshots of each step and add to practical_09_part3 directory</td></tr>
<tr><td>4</td><td>Create a new directory and name practical_09_part4.

This is a clone of integrationx32 directory

Program, edit compile and execute code to perform activities =></td><td>integrationx32 > add.asm
<pre>
1 global add
2
3 section .data
4 section .text
5 add:
6   mov   eax, [esp+4]   ; argument 1
7   add   eax, [esp+8]   ; argument 2
8   ret
</pre>
1. Modify main.c and add.asm so that the method takes 3 arguments

extern int add(int a,int b,int c);

2. Compile run as check validity of code

3. Create and new assembly file which subtracts one number from another

extern int sub(int a, int b);

4. Modify make file to include the new assembly file sub.asm

5. Compile run as check validity of code</td></tr>
<tr><td>5</td><td colspan="2">Complete Practical Quiz which will be provided by Lab Supervisor</td></tr>
</table>

Demonstrate completed assembly files at the end of the LAB and ensure it has been checked

Student Name		**Student Number**	
Date		**Checked**	