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|  | **Department of Computer Science**  **Faculty of Computing**  **UNIVERSITI TEKNOLOGI MALAYSIA** |

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| **SUBJECT NAME:** | **COMPUTER ORGANIZATION AND ARCHITECTURE** |
| **SUBJECT CODE:** | **SCSR 2033** |
| **SEMESTER:** | **1 - 2014/15** |
| **LAB TITLE:** | **Programming 1: Assembly Language Fundamentals** |
| **INSTRUCTION:** | **Student is required to have instructor’s signature before proceed from each lab work.** |
| **STUDENT INFO :** | **Name: Mek Zhi Qing**  **Metric No: A20EC0077**  **Section: 01**  **Email:** [**mekqing@graduate.utm.my**](mailto:mekqing@graduate.utm.my)  **Name: Zereen Teo Huey Huey**  **Metric No: A20EC0173**  **Section: 01**  **Email:** [**zereen@graduate.utm.my**](mailto:zereen@graduate.utm.my) |
| **SUBMITTED DATE:** | **10 April 2021** |

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| **COMMENTS:** |  |
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**Lab # 1**

Simple program to familiarize with Program Code, Rebuild & Start Without Debugging

Execute the programs below.

1. **Part A**: Adding and Subtracting Integers

TITLE Add and Subtract (AddSub.asm)

;This program adds and subtracts 32-bit integers.

INCLUDE Irvine32.inc

.code

main PROC

mov eax,10000h ; EAX = 10000h

add eax,40000h ; EAX = 50000h

sub eax,20000h ; EAX = 30000h

call DumpRegs ; display registers

exit

main ENDP

END main

Experimental Results:

1. Rebuild & Start Without Debugging CamStudio:

C:\Program Files\Microsoft Office\MEDIA\CAGCAT10\j0293844.wmfCompleted Fully Partially : Checked by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Rebuild & Start Without Debugging

Text

Description automatically generated

1. 4 Windows

Graphical user interface, application

Description automatically generated

1. **Part B**: Adding Variables

TITLE Add and Subtract, Version 2 (AddSub2.asm)

; This program adds and subtracts 32-bit unsigned

; integers and stores the sum in a variable.

INCLUDE Irvine32.inc

.data

val1 DWORD 10000h

val2 DWORD 40000h

val3 DWORD 20000h

finalVal DWORD ?

.code

main PROC

mov eax,val1 ; start with 10000h

add eax,val2 ; add 40000h

sub eax,val3 ; subtract 20000h

mov finalVal,eax ; store the result (30000h)

call DumpRegs ; display the registers

exit

main ENDP

END main

Experimental Results:

1. Rebuild & Start Without Debugging CamStudio:

C:\Program Files\Microsoft Office\MEDIA\CAGCAT10\j0293844.wmfCompleted Fully Partially : Checked by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Rebuild & Start Without Debugging

Text

Description automatically generated

1. 4 Windows

Graphical user interface, application

Description automatically generated

1. **Part C**: Add and Subtract 8 and 16-Bit Version

TITLE Add and Subtract, Version 3

; This program adds and subtracts 8 and 16 bit ;unsigned integers and stores the sum in a variable.

INCLUDE Irvine32.inc

.data

valw1 WORD 1000h

valw2 WORD 4000h

valw3 WORD 2000h

finalValw WORD ?

valb1 BYTE 10h

valb2 BYTE 40h

valb3 BYTE 20h

finalValb BYTE ?

.code

main PROC

mov ax,valw1 ; start with 10000h

add ax,valw2 ; add 40000h

sub ax,valw3 ; subtract 20000h

mov finalValw,ax ; store the result (30000h)

call DumpRegs ; display the registers

mov ah,valb1 ; start with 10000h

add ah,valb2 ; add 40000h

sub ah,valb3 ; subtract 20000h

mov finalValb,ah ; store the result (30000h)

call DumpRegs ; display the registers

exit

main ENDP

END main

Experimental Results:

1. Rebuild & Start Without Debugging CamStudio:

C:\Program Files\Microsoft Office\MEDIA\CAGCAT10\j0293844.wmfCompleted Fully Partially : Checked by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Text

   Description automatically generatedRebuild & Start Without Debugging
2. Graphical user interface, application

   Description automatically generated4 Windows