WIA1003 Report

Question 1

Source Code

```
INCLUDE Irvine32.inc

.data
    arr WORD 0, 2, 5, 9, 10
    result WORD 0

.code
main PROC
    mov ecx, LENGTHOF arr - 1 ; Set iteration number
    mov esi, OFFSET arr       ; Set array pointer

L1:
    mov ax, [esi + 2]       ; Set AX to next value
    sub ax, [esi]           ; Subtract AX by previous value
    add result, ax          ; Add the gap to result
    add esi, 2              ; Increment the ESI by 2

Loop L1
    mov eax, result ; Display result
    call WriteInt
    call Crlf

    exit
main ENDP
END main
```
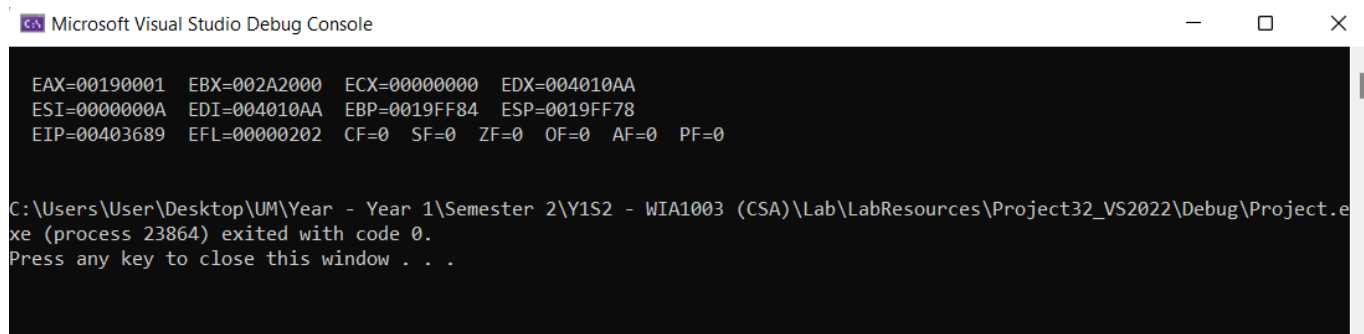
```
1    │  INCLUDE Irvine32.inc
2    │
3    │  ; // FileName  >> Assignment_Q1.asm
4    │  ; // Name      >> Ng Zhi Yang
5    │  ; // Matric No >> 22004833
6    │  ; // Email     >> 22004833@siswa365.um.edu.my
7    │
8       .data
9           arr WORD 0,2,5,9,10
10          result WORD 0
11
12      .code
13          main PROC
14              mov ECX, LENGTHOF arr - 1 ; Iteration number the length of arr - 1|
15              mov ESI, OFFSET arr ; Set the pointer named ESI
16
17              L1:
18                  mov AX, [ESI+2] ; Set the value of AX to the next value
19                  sub AX, [ESI] ; Subtract the AX by the previous value
20                  add result, AX ; Add the gap between the number to the result
21                  add ESI, 2 ; Increment the ESI by 2
22              Loop L1
23
24              movzx ESI, result ; Set the value of ESI to result
25              call DumpRegs
26
27              exit
28          main ENDP
29      END main
```

Output

Microsoft Visual Studio Debug Console   —   □   ✕

```
EAX=00190001  EBX=002A2000  ECX=00000000  EDX=004010AA
ESI=0000000A  EDI=004010AA  EBP=0019FF84  ESP=0019FF78
EIP=00403689  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0


C:\Users\User\Desktop\UM\Year - Year 1\Semester 2\Y1S2 - WIA1003 (CSA)\Lab\LabResources\Project32_VS2022\Debug\Project.e
xe (process 23864) exited with code 0.
Press any key to close this window . . .
```

Question 2

Q2 - Source Code

```
INCLUDE Irvine32.inc

.code
main PROC
    mov eax, 1
    mov edx, 1

L1:
```

```
    call WriteDec
    inc eax
    cmp eax, 9      ; Compare eax and 9
    jne L1          ; If not equal, go to L1

L2:
    call Crlf       ; Create new line
    inc edx
    mov eax, edx
    cmp edx, 9      ; Compare edx and 9
    jne L1          ; If not equal, go to L1

    exit

main ENDP
END MAIN
```
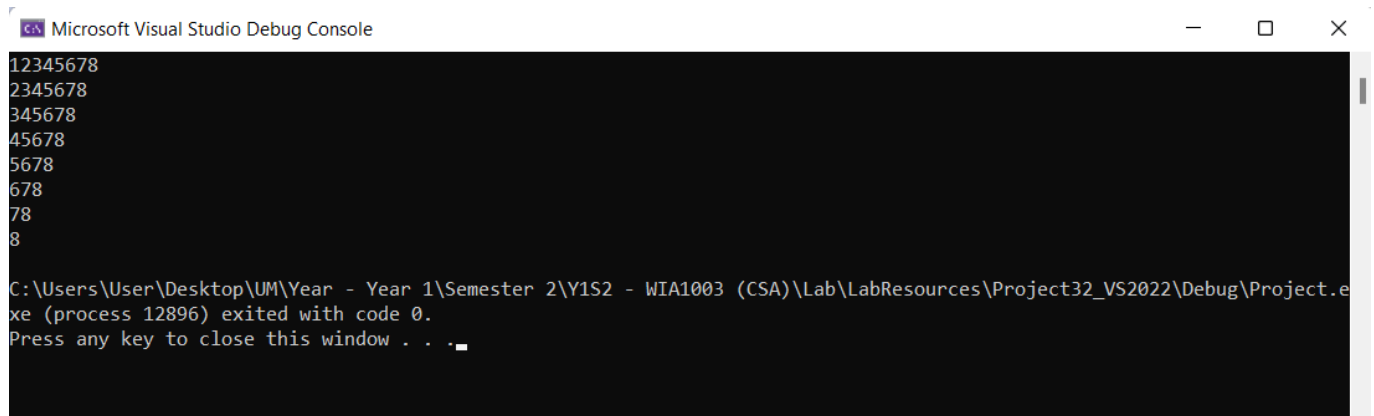
```
1     INCLUDE Irvine32.inc
2
3     .code
4     main PROC
5         mov eax, 1
6         mov edx, 1
7
8     L1:
9         call WriteDec
10        inc eax
11        cmp eax, 9
12        jne L1 ; if numbers not equal, go to L1
13
14    L2:
15        call Crlf ; Create new line
16        inc edx
17        mov eax, edx
18        cmp edx, 9
19        jne L1 ; if numbers not equal, go to L1
20
21        exit
22
23    main ENDP
24    END MAIN
```

Q2 - Output

Microsoft Visual Studio Debug Console   —   □   ✕

```
12345678
2345678
345678
45678
5678
678
78
8

C:\Users\User\Desktop\UM\Year - Year 1\Semester 2\Y1S2 - WIA1003 (CSA)\Lab\LabResources\Project32_VS2022\Debug\Project.e
xe (process 12896) exited with code 0.
Press any key to close this window . . .
```

Question 3

Q3 - Source Code

```
INCLUDE Irvine32.inc

.data
prompt BYTE "Enter 32-bit integer: ",0
result BYTE "The sum of 32-bit integers is : ",0
sum DWORD 0

.code
main PROC
    mov ecx, 3                ; ecx stores number of iteration
    mov edx, OFFSET prompt    ; edx stores string

    L1:
        call WriteString      ; Display prompt message
        call ReadInt          ; Read input int into EAX
        add sum, eax
    loop L1

    mov eax, sum
    mov edx, OFFSET result

    call WriteString
    call WriteInt

exit
main ENDP
END main
```

```
1      INCLUDE Irvine32.inc
2
3      .data
4      prompt BYTE "Enter 32-bit integer: ",0
5      result BYTE "The sum of 32-bit integers is : ",0
6      sum DWORD 0
7
8      .code
9      main PROC
10         mov ecx, 3                    ; ecx stores number of iteration
11
12         mov edx, OFFSET prompt    ; edx stores string
13
14         L1:
15             call WriteString     ; Display prompt message
16             call ReadInt         ; Read input int into EAX
17             add sum, eax
18         loop L1
19
20         mov eax, sum
21         mov edx, OFFSET result
22
23         call WriteString
24         call WriteInt
25
26         exit
27     main ENDP
28     END main
```

Q3 - Output

```
Microsoft Visual Studio Debug Console                                    —    □    ✕

Enter 32-bit integer: 25
Enter 32-bit integer: 76
Enter 32-bit integer: 13
The sum of 32-bit integers is : +114
C:\Users\User\Desktop\UM\Year - Year 1\Semester 2\Y1S2 - WIA1003 (CSA)\Lab\LabResources\Project32_VS2022\Debug\Project.e
xe (process 1776) exited with code 0.
Press any key to close this window . . .
```

Question 4

Q4 - Source Code

```
INCLUDE Irvine32.inc

.data
prompt BYTE "Enter mark (0-100): ",0
result BYTE "Grade: ",0

.code
main PROC
    mov edx, OFFSET prompt  ; Store prompt in edx
    call WriteString        ; Print prompt message
```

```
        call ReadInt            ; Read integer to eax
        call crlf

        .if eax >= 90
            mov al, 'A'
        .elseif eax >= 80
            mov al, 'B'
        .elseif eax >= 70
            mov al,'C'
        .elseif eax >= 60
            mov al,'D'
        .else
            mov al,'F'
        .endif

        mov edx, OFFSET result  ; Store result in edx
        call WriteString        ; Print result message
        call WriteChar          ; Print char
        call crlf

    exit
    main ENDP
    END main
```
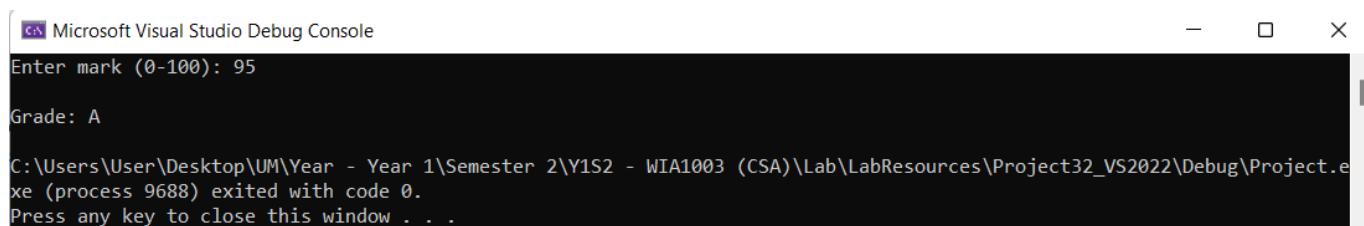
```
1    INCLUDE Irvine32.inc
2
3    .data
4    prompt BYTE "Enter mark (0-100): ",0
5    result BYTE "Grade: ",0
6
7    .code
8    main PROC
9         mov edx, OFFSET prompt
10        call WriteString
11        call ReadInt
12        call crlf
13
14        .if eax >= 90
15             mov al, 'A'
16        .elseif eax >= 80
17             mov al, 'B'
18        .elseif eax >= 70
19             mov al,'C'
20        .elseif eax >= 60
21             mov al,'D'
22        .else
23             mov al,'F'
24        .endif
25
26        mov edx, OFFSET result
27        call WriteString
28        call WriteChar
29        call crlf
30
31        exit
32   main ENDP
33   END main
```
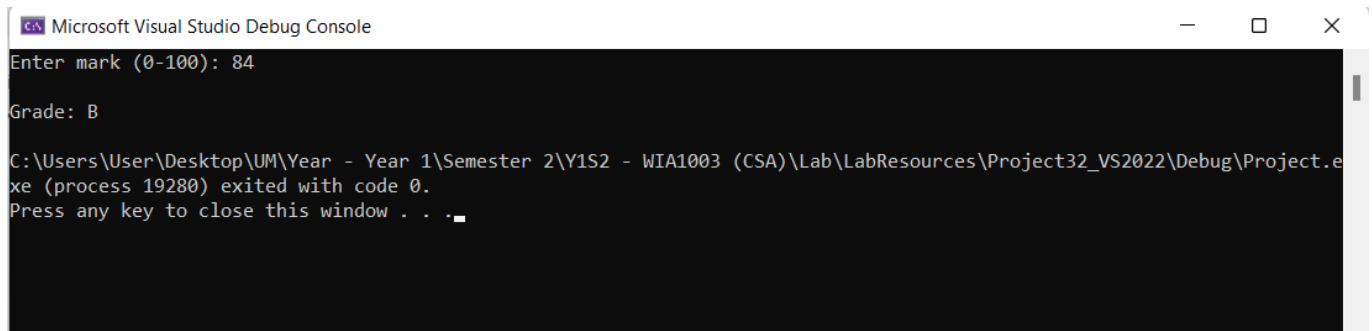
Q4 - Output

Grade A

```
Microsoft Visual Studio Debug Console                                    —     □     ×

Enter mark (0-100): 95

Grade: A

C:\Users\User\Desktop\UM\Year - Year 1\Semester 2\Y1S2 - WIA1003 (CSA)\Lab\LabResources\Project32_VS2022\Debug\Project.e
xe (process 9688) exited with code 0.
Press any key to close this window . . .
```
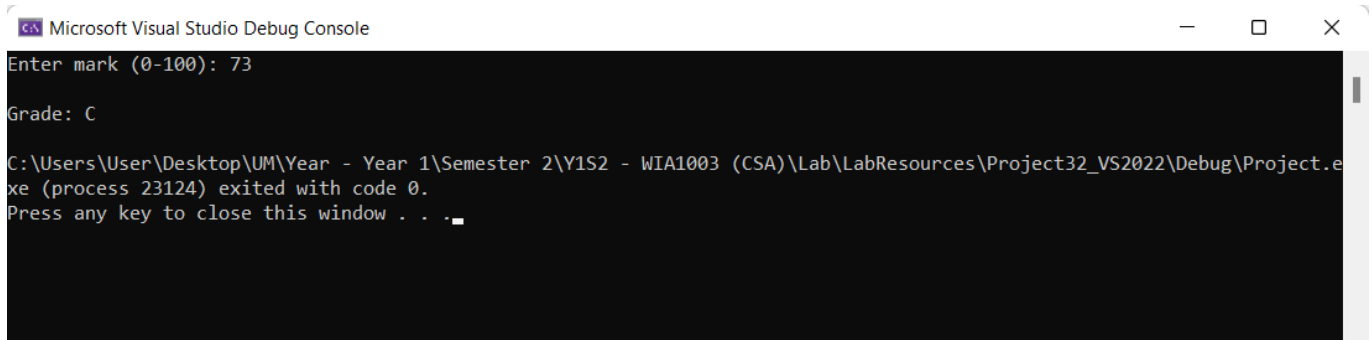
Grade B

```
Enter mark (0-100): 84

Grade: B

C:\Users\User\Desktop\UM\Year - Year 1\Semester 2\Y1S2 - WIA1003 (CSA)\Lab\LabResources\Project32_VS2022\Debug\Project.e
xe (process 19280) exited with code 0.
Press any key to close this window . . .
```
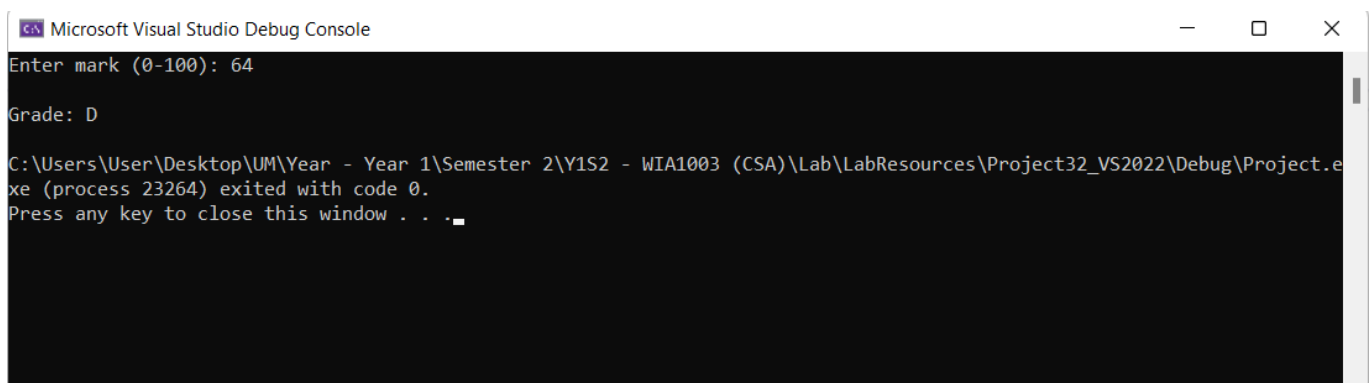
8 / 8

Grade C

```
Enter mark (0-100): 73

Grade: C

C:\Users\User\Desktop\UM\Year - Year 1\Semester 2\Y1S2 - WIA1003 (CSA)\Lab\LabResources\Project32_VS2022\Debug\Project.e
xe (process 23124) exited with code 0.
Press any key to close this window . . .
```
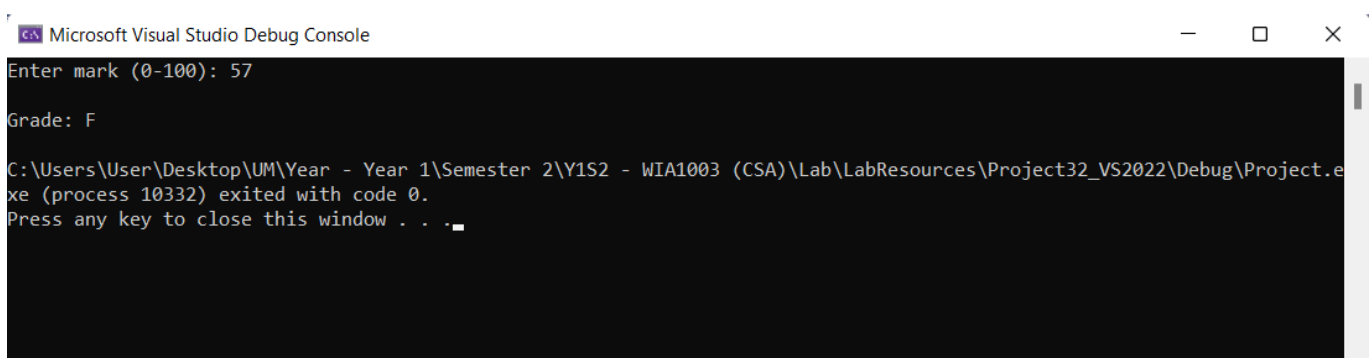
Grade D

```
Enter mark (0-100): 64

Grade: D

C:\Users\User\Desktop\UM\Year - Year 1\Semester 2\Y1S2 - WIA1003 (CSA)\Lab\LabResources\Project32_VS2022\Debug\Project.e
xe (process 23264) exited with code 0.
Press any key to close this window . . .
```

Grade F

```
Enter mark (0-100): 57

Grade: F

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xe (process 10332) exited with code 0.
Press any key to close this window . . .
```