COAL LAB 8

Questions:

Task#1

Write a program that takes four input integers from the user. Then compare and display a message whether these integers are equal or not.

Task#2

Use cmp and jumps to find the first non-zero value in the given array:

intArr SWORD 0, 0, 0, 150, 120, 35, -12, 66, 4, 0

Task#3 Implement the following given code in Assembly and Consider var = 5 , edx = var+1 and counter value from array initialized in task#2.

if (var < ecx) AND (ecx >= edx) then

x = 0

else

x = 1

Task#4 Implement the following given code in Assembly and consider var = 0.

while (var <= 10)

if (var < 5)

Print "Hello"

else

Print "World"

var = var + 1

end while

Task#5

Write a program for sequential search. Take an input from the user and find if it occurs in the following array:

arr WORD 10, 4, 7, 14, 299, 156, 3, 19, 29, 300, 20

Task#6

Write a program for bubble sort on this array.

arr WORD 10, 4, 7, 14, 299, 156, 3, 19, 29, 300, 20

Task#7

Write a program to print weekday based on given number.

Task#8

Write a program to check whether a character is alphabet or not.

Q1

Code:

```
INCLUDE Irvine32.inc

.data
arr DWORD 4 DUP(?)

str1 BYTE "Enter integer: " ,0
str2 BYTE "Intergers are equal" , 0
str3 BYTE "Intergers are not equal" , 0

.code
main PROC
mov eax , 0
mov ecx , 4
mov esi , offset arr

;taking input from the user
L1:
mov edx , offset str1
call Writestring
call Readint
mov [esi] , eax
add esi , 4
loop L1

;comparing values
mov eax , 0
mov esi , offset arr
mov eax , [esi]
mov ecx , 3

L2:
add esi , 4
cmp eax , [esi] ; if euqal then ZF = 1
jnz L3 ; if ZF = 0 jump t0 L3
loop L2

mov edx , offset str2
```
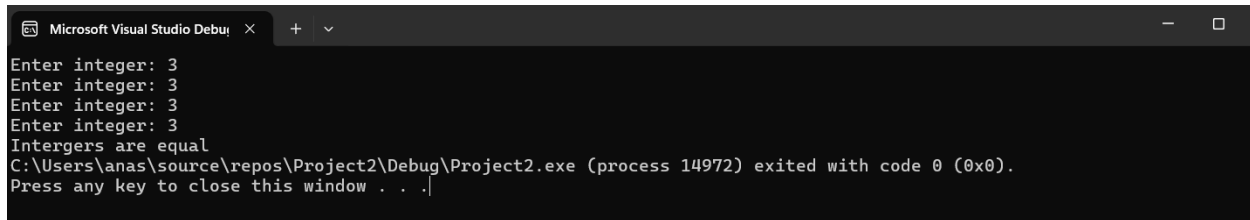
```
call Writestring
exit

L3:
mov edx , offset str3
call Writestring
exit



call Dumpregs
exit
main ENDP
END main
```



```
Enter integer: 3
Enter integer: 3
Enter integer: 3
Enter integer: 3
Intergers are equal
C:\Users\anas\source\repos\Project2\Debug\Project2.exe (process 14972) exited with code 0 (0x0).
Press any key to close this window . . .
```

Q2

Code:

```
INCLUDE Irvine32.inc

.data
intArr SWORD 0, 0, 0, 150, 120, 35, -12, 66, 4, 0

.code
main PROC
mov eax , 0
mov ecx , LENGTHOF intArr
mov esi , 0
mov ax , intArr[esi]

L1:
add esi , 2
cmp ax , intArr[esi] ;
jnz L2 ; jump to L3 if ZF = 0
loop L1
exit

L2:
mov ax , intArr[esi]
call Writeint


call Dumpregs
exit
main ENDP
END main
```

Q3

Code:

```
INCLUDE Irvine32.inc

.data
var DWORD 5
x DWORD ?

.code
main PROC
mov ecx , 10 ; from task 2

cmp var , ecx
jb L1
mov x , 1
mov eax , x
call Writeint
exit

L1:
inc var
mov edx , var
cmp ecx , edx
jae L2
mov x , 1
mov eax , x
call Writeint
exit

L2:
mov x , 0
mov eax , x
call Writeint

call Dumpregs
exit
main ENDP
END main
```

Q4

Code:

```
INCLUDE Irvine32.inc

.data
var DWORD 0
str1 BYTE "Hello" , 0
str2 BYTE "World" , 0

.code
main PROC
mov eax , 0
;mov ecx , 10 ; set the counter for while loop

L1:
cmp var , 10
jbe L2
exit

L2:
cmp var , 5
jb L3
mov edx , offset str2
call Writestring
call crlf
inc var
jmp L1


L3:
mov edx , offset str1
call Writestring
call crlf
inc var
jmp L1



call Dumpregs
exit
main ENDP
END main
```

```
Hello
Hello
Hello
Hello
Hello
World
World
World
World
World
World

C:\Users\anas\source\repos\Project2\Debug\Project2.exe (process 27252) exited with code 0 (0x0).
Press any key to close this window . . .
```

Q5

Code:

```
INCLUDE Irvine32.inc

.data
arr WORD 10, 4, 7, 14, 299, 156, 3, 19, 29, 300, 20
str1 BYTE "Enter the number you want to find in the array: " , 0
str2 BYTE "Value found" , 0
str3 BYTE "Value not found" , 0

.code
main PROC
mov eax , 0
mov edx , offset str1
call Writestring
call Readint

mov ecx , LENGTHOF arr
mov esi  , 0

L1:
movzx ebx , arr[esi * TYPE WORD]
cmp eax , ebx
je found
inc esi
loop L1
mov edx , offset str3
call Writestring
exit


found:
mov edx , offset str2
call Writestring
exit


call Dumpregs
exit
main ENDP
END main
```

Q6

```
INCLUDE Irvine32.inc

.data
arr WORD 10, 4, 7, 14, 299, 156, 3, 19, 29, 300, 20

arrSize = ($ - arr) / 2

.code
main PROC
mov eax , 0
mov ecx , LENGTHOF arr

mov esi , 0

outerloop:
dec ecx
jz endSort
mov esi , 0

innerloop:
mov ax , arr[esi]
mov bx , arr[esi+2]
cmp ax , bx
jle noswap
;swapping
mov arr[esi] , bx
mov arr[esi+2] , ax


noswap:
add esi , 2
cmp esi, (arrSize - 1) * 2 ; to check kahi hm end pr tou nhi phooch gai
jl innerloop

jmp outerloop


mov ecx , arrSize
mov esi , 0

endSort:
mov ax , arr[esi]
call Writeint
call crlf
add esi , 2
loop endSort


call Dumpregs
exit
```
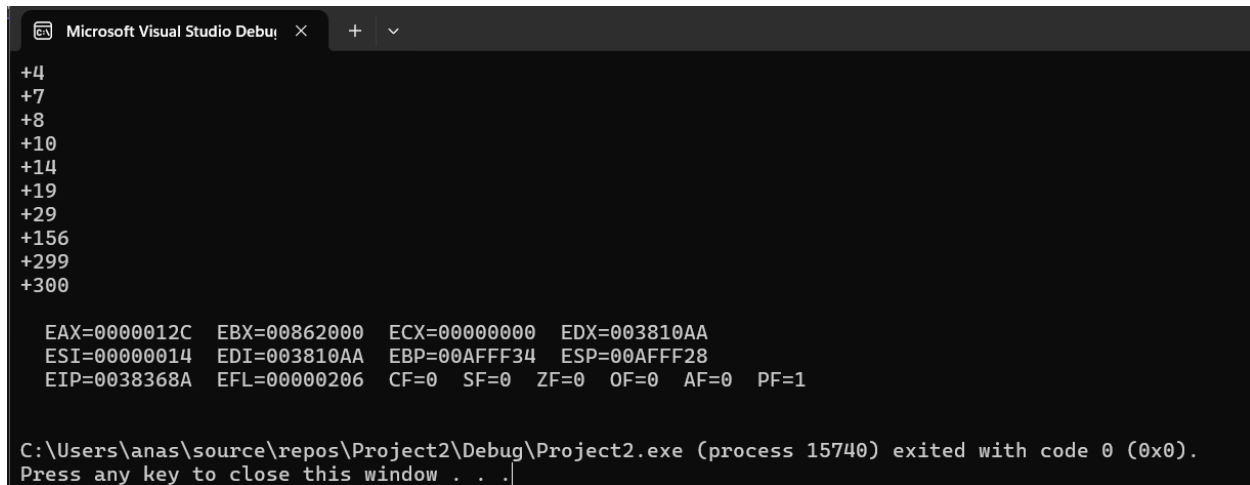
```
main ENDP
END main
```


C:\Users\anas\source\repos\Project2\Debug\Project2.exe (process 15740) exited with code 0 (0x0).
Press any key to close this window . . .

Q7

Code:

```
INCLUDE Irvine32.inc

.data
weekdays BYTE "Sunday", 0, "Monday", 0, "Tuesday", 0, "Wednesday", 0, "Thursday",
0, "Friday", 0, "Saturday", 0
str1 BYTE "Enter the number(1-7): " ,0
invalid BYTE "Invalid Input"

.code
main PROC
mov eax , 0
mov edx , offset str1 ;
call Writestring
call Readint

cmp eax , 1
jb InValid
cmp eax , 7
ja InValid

dec eax
mov ecx , 0
mov ebx , eax

findWeekday:
mov al , weekdays[ecx]
cmp al , 0
je CheckIndex
inc ecx
jmp findWeekday

checkIndex:
cmp ebx, 0
je printWeekday
dec ebx
```

```
    inc ecx
    jmp findWeekday

printWeekday:
mov edx, OFFSET weekdays[ecx]
call WriteString
call Crlf
exit


InValid:
mov edx, OFFSET invalid
call WriteString
call Crlf


call Dumpregs
exit
main ENDP
END main
```

```
Microsoft Visual Studio Debug  ×    +    ∨
Enter the number(1-7): 1
Sunday
C:\Users\anas\source\repos\Project2\Debug\Project2.exe (process 21520) exited with code 0 (0x0).
```

Q8

Code:

```
INCLUDE Irvine32.inc

.data
str1 BYTE "Enter the character: " , 0
str2 BYTE "This is not a character" , 0
str3 BYTE "This is a character" , 0

.code
main PROC
call clrscr
mov eax , 0
mov edx , offset str1
call Writestring
call Readchar ; stored in al
call Writechar
call crlf

mov al , al

cmp al , 'A'
jl isnotAlpha
cmp al , 'Z'
jle isAlpha

isAlpha:
mov edx , offset str3
call Writestring
exit
```

```
isnotAlpha:
mov edx , offset str2
call Writestring

call Dumpregs
exit
main ENDP
END main
```