

COAL Assignment 03

Rayyan Aamir | 24K-0687 | BCS-3F

Question 01:

Code:

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; Assignment 03 | Question 01

INCLUDE Irvine32.inc

.data

dividend WORD 0D4A4h

divisor WORD 0Ah

msg BYTE "The quotient is ",0

.code

main PROC

movzx eax, dividend

movzx ebx, divisor

call RecursiveFunction

mov edx, OFFSET msg

call WriteString

call WriteInt

call CRLF

exit

main ENDP

RecursiveFunction PROC

 cmp eax, 5h

 jbe return

 push ebx

 xor edx, edx

 div ebx

 call RecursiveFunction

 pop ebx

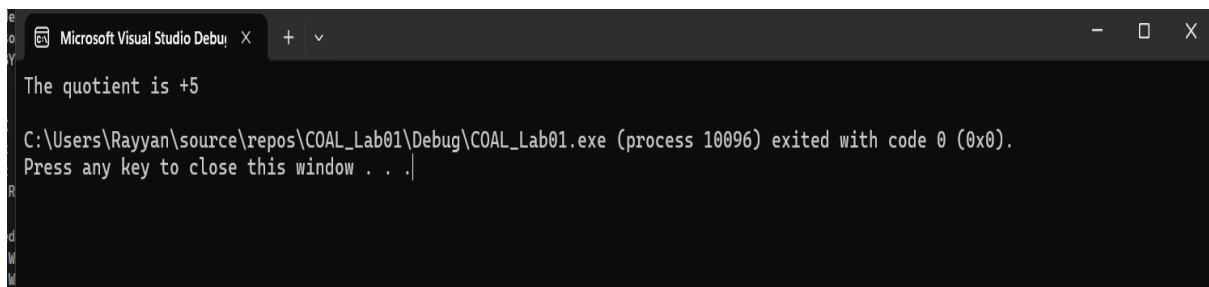
return:

 ret

RecursiveFunction ENDP

END main

Output:

A screenshot of the Microsoft Visual Studio Debug Console window. The window has a dark background and a title bar that reads "Microsoft Visual Studio Debug Console". The console output shows the text "The quotient is +5" on the first line. The second line shows the command prompt path "C:\Users\Rayyan\source\repos\COAL_Lab01\Debug\COAL_Lab01.exe (process 10096) exited with code 0 (0x0)." followed by the prompt "Press any key to close this window . . .". The window also features standard Windows window controls (minimize, maximize, close) in the top right corner.

```
Microsoft Visual Studio Debug Console
The quotient is +5
C:\Users\Rayyan\source\repos\COAL_Lab01\Debug\COAL_Lab01.exe (process 10096) exited with code 0 (0x0).
Press any key to close this window . . .
```

Question 02:

Code:

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; Assignment 03 | Question 02

INCLUDE Irvine32.inc

.data

str1 BYTE 50 DUP(?)

msg1 BYTE "Enter a string: ",0

msg2 BYTE "Vowel Count",0

countVowel BYTE 5 DUP(0)

msg3 BYTE "a or A = ",0

msg4 BYTE "e or E = ",0

msg5 BYTE "i or I = ",0

msg6 BYTE "o or O = ",0

msg7 BYTE "u or U = ",0

.code

main PROC

mov edx, OFFSET msg1

call WriteString

mov edx, OFFSET str1

mov ecx, SIZEOF str1

call ReadString

mov esi, OFFSET str1

check_loop:

mov al, [esi]

cmp al, 0

je display

cmp al, 'a'

je inc_A

cmp al, 'A'

je inc_A

cmp al, 'e'

je inc_E

cmp al, 'E'

je inc_E

cmp al, 'i'

je inc_I

cmp al, 'I'

je inc_I

cmp al, 'o'

je inc_O

cmp al, 'O'

je inc_O

cmp al, 'u'

je inc_U

cmp al, 'U'

je inc_U

```
    jmp next
```

```
inc_A:
```

```
    inc BYTE PTR [countVowel + 0]
```

```
    jmp next
```

```
inc_E:
```

```
    inc BYTE PTR [countVowel + 1]
```

```
    jmp next
```

```
inc_I:
```

```
    inc BYTE PTR [countVowel + 2]
```

```
    jmp next
```

```
inc_O:
```

```
    inc BYTE PTR [countVowel + 3]
```

```
    jmp next
```

```
inc_U:
```

```
    inc BYTE PTR [countVowel + 4]
```

```
next:
```

```
    inc esi
```

```
    jmp check_loop
```

```
display:
```

```
    call CRLF
```

```
    mov edx, OFFSET msg2
```

```
    call WriteString
```

call CRLF

mov edx, OFFSET msg3

call WriteString

movzx eax, BYTE PTR [countVowel + 0]

call WriteDec

call CRLF

mov edx, OFFSET msg4

call WriteString

movzx eax, BYTE PTR [countVowel + 1]

call WriteDec

call CRLF

mov edx, OFFSET msg5

call WriteString

movzx eax, BYTE PTR [countVowel + 2]

call WriteDec

call CRLF

mov edx, OFFSET msg6

call WriteString

movzx eax, BYTE PTR [countVowel + 3]

call WriteDec

call CRLF

mov edx, OFFSET msg7

call WriteString

movzx eax, BYTE PTR [countVowel + 4]

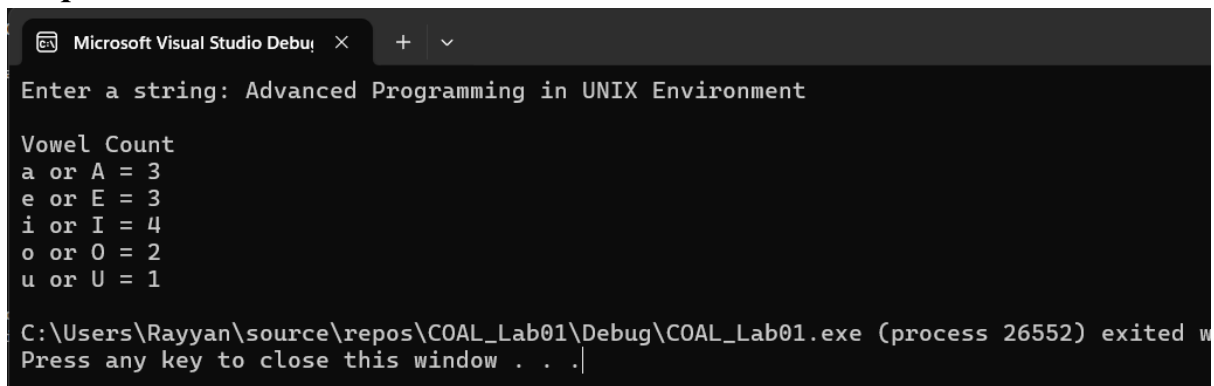
```
    call WriteDec
    call CRLF

    exit

main ENDP

END main
```

Output:



```
Microsoft Visual Studio Debug Console
Enter a string: Advanced Programming in UNIX Environment

Vowel Count
a or A = 3
e or E = 3
i or I = 4
o or O = 2
u or U = 1

C:\Users\Rayyan\source\repos\COAL_Lab01\Debug\COAL_Lab01.exe (process 26552) exited w
Press any key to close this window . . .|
```

Question 03:

Code:

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; Assignment 03 | Question 03

```
INCLUDE Irvine32.inc
```

```
.data
```

```
    str1 BYTE "#####FAST", 0
```

```
.code
```

```
STR_TRIMM PROC, AddrStr : PTR BYTE, char2trim : BYTE
```

```
    mov esi, AddrStr
```

```
    mov edi, esi
```

```
    mov bl, char2trim
```

```
skip_loop:
```

```
    mov al, [esi]
```

```
    cmp al, 0
```

```
    je string_end
```

```
    cmp al, bl
```

```
    jne copy_rest_char
```

```
    inc esi
```

```
    jmp skip_loop
```

```
copy_rest_char:
```

```
    mov al, [esi]
```

```
    mov [edi], al
```

```
    cmp al, 0
```

```
    je return
```

```
    inc esi
```

```
    inc edi
```

```
    jmp copy_rest_char
```

```
string_end:
```

```
    mov BYTE PTR [edi], 0
```

```
return:
```

```
    ret
```

```
STR_TRIMM ENDP
```

```
main PROC
```



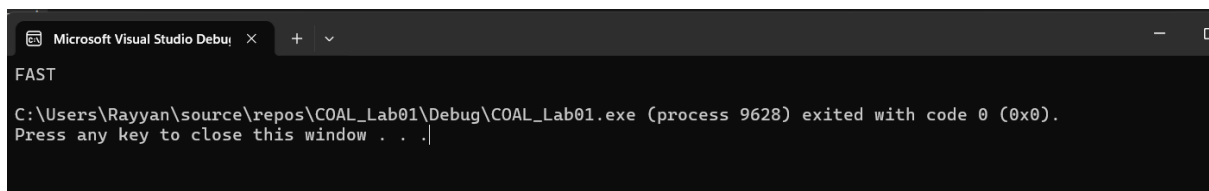
```
    INVOKE STR_TRIMM, ADDR str1, '#'
    mov edx, OFFSET str1
    call WriteString
    call CRLF

    exit

main ENDP

END main
```

Output:

A screenshot of the Microsoft Visual Studio Debug Console. The window title is "Microsoft Visual Studio Debug Console". The text inside shows "FAST" followed by a line break, then "C:\Users\Rayyan\source\repos\COAL_Lab01\Debug\COAL_Lab01.exe (process 9628) exited with code 0 (0x0).", and finally "Press any key to close this window . . .".

```
FAST
C:\Users\Rayyan\source\repos\COAL_Lab01\Debug\COAL_Lab01.exe (process 9628) exited with code 0 (0x0).
Press any key to close this window . . .
```

Question 04:

Code:

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; Assignment 03 | Question 04

```
INCLUDE Irvine32.inc
```

```
.data
```

```
arr1 DWORD 7,3,5,5,5,5,5,6,9
```

```
s1 DWORD 9
```

```
arr2 DWORD 5,5,5,5,5,9,8,7
```

```
s2 DWORD 8
```

```
arr3 DWORD 9,8,7,5,5,5,5,5
```

```
s3 DWORD 8
```

arr4 DWORD 9,8,7,5,5,5,5

s4 DWORD 7

.code

FindFive PROC, ptrArray : PTR DWORD, arrSize : DWORD

push ebx

push ecx

push esi

push edi

mov esi, ptrArray

mov ecx, arrSize

sub ecx, 4

jle not_found

L1:

mov edi, 0

mov ebx, 0

check_consecutive:

cmp edi, 5

je found

mov eax, [esi + ebx * 4]

cmp eax, 5

jne next

inc edi

inc ebx

jmp check_consecutive

next:

add esi, 4

loop L1

not_found:

mov eax, 0

jmp return

found:

mov eax, 1

return:

pop edi

pop esi

pop ecx

pop ebx

ret

FindFive ENDP

main PROC

INVOKE FindFive, ADDR arr1, s1

call WriteDec

call CRLF

INVOKE FindFive, ADDR arr2, s2

call WriteDec

call CRLF

INVOKE FindFive, ADDR arr3, s3

call WriteDec

call CRLF

INVOKE FindFive, ADDR arr4, s3

call WriteDec

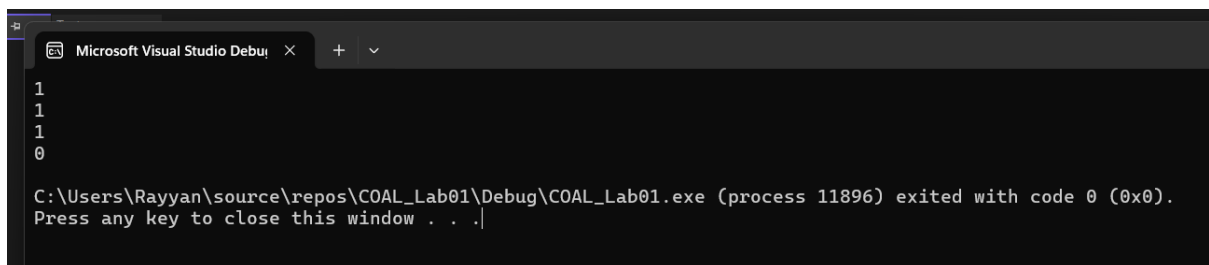
call CRLF

exit

main ENDP

END main

Output:



```
Microsoft Visual Studio Debug Console
1
1
1
0
C:\Users\Rayyan\source\repos\COAL_Lab01\Debug\COAL_Lab01.exe (process 11896) exited with code 0 (0x0).
Press any key to close this window . . .
```