COAL LAB 10

23K-0057 BAI-4A

Q1.
```
TITLE My First Program (Test.asm)
INCLUDE Irvine32.inc
.data
str1 BYTE "127&j~3#^&*#*#45^",0
str2 BYTE "First # found at index: "
.code
Scan_String PROC
mov edi,OFFSET str1
mov al,'#'
mov ecx,LENGTHOF str1
cld
repne scasb
jnz quit
dec edi
mov ebx, lengthof str1
sub ebx, ecx
mov eax, ebx
mov edx, offset str2
call crlf
call writeString
call writeDec
call crlf
quit:
ret
Scan_String ENDP
main PROC
call Scan_String
Exit
main ENDP
END main
```

```
First # found at index: 8

C:\Users\DELL\source\repos\Project1\Debug\Project1.exe
```

Q2.
```
TITLE My First Program (Test.asm)
INCLUDE Irvine32.inc
.data
str1 BYTE "127&j~3#^&*#*#45^",0
str2 BYTE "First # found at index: "
.code
main PROC
push Lengthof Str1
push OFFSET Str1
call Scan_String
exit
main ENDP
Scan_String PROC
push ebp
mov ebp, esp
pushad
mov edi, [ebp + 8]
mov ecx, [ebp + 12]
mov al, '#'
cld
repne scasb
dec edi
sub edi, [ebp + 8]
```

```
mov eax, edi
mov edx, OFFSET str2
call crlf
call writestring
call writedec
call crlf
popad
pop ebx
ret
Scan_String ENDP
END main
```

```
First # found at index: 7

C:\Users\DELL\source\repos\Project1\Debug\Project1.exe
```

Q3.

```
TITLE My First Program (Test.asm)
INCLUDE Irvine32.inc
.data
Str1 BYTE 'ghijk',0
Str2 BYTE 'abcd', 0
greater BYTE 'Str1 > Str2',0
less BYTE 'Str1 < Str2',0
equal BYTE 'Str1 == Str2',0
.code
main PROC
push OFFSET Str1
push OFFSET Str2
call IsCompare
exit
main ENDP
IsCompare PROC
push ebp
mov ebp, esp
pushad
mov esi, [ebp + 12]
mov edi, [ebp + 8]
cmpsb
ja L1
je L2
mov edx, OFFSET less
call crlf
call Writestring
call crlf
jmp quit
L2:
mov edx, OFFSET equal
call crlf
call writestring
call crlf
jmp quit
L1:
mov edx, OFFSET greater
call crlf
call writestring
call crlf
quit:
popad
pop ebx
ret
IsCompare ENDP
END main
```

```
Str1 > Str2

C:\Users\DELL\source\repos\Project1\Debug\Project1.exe
```

Q4.
```
TITLE My First Program (Test.asm)
INCLUDE Irvine32.inc
.data
str1 BYTE 'hello world'
reversed BYTE LENGTHOF str1 DUP(?)
.code
main PROC
push OFFSET str1
push LENGTHOF str1
call Str_Reverse
exit
main ENDP
Str_Reverse PROC
push ebp
mov ebp, esp
mov esi, [ebp+12]
mov ecx, [ebp+8]
mov edi, OFFSET reversed
add esi, ecx
dec esi
call crlf
L1:
std
lodsb
cld
stosb
loop L1
mov edx, OFFSET reversed
call crlf
call writestring
call crlf
pop ebp
ret
Str_Reverse ENDP
END main
```

```
dlrow olleh

C:\Users\DELL\source\repos\Project1\Debug\Project1.exe
```

Q5.
```
TITLE My First Program (Test.asm)
INCLUDE Irvine32.inc
.data
arr DWORD 1,2,3,4,5
mult DWORD 20
.code
main PROC
push OFFSET arr
push LENGTHOF arr
push TYPE arr
push mult
call Load_Multiply
exit
main ENDP
Load_Multiply PROC
push ebp
mov ebp, esp
```

```
mov esi, [ebp + 20]
mov ecx, [ebp + 16]
mov ebx, [ebp + 8]
mov edi, esi
cld
L1:
lodsd
mul ebx
stosd
loop L1
mov esi, [ebp + 20]
mov ecx, [ebp + 16]
mov ebx, [ebp + 12]
call dumpmem
pop ebp
ret
Load_Multiply ENDP
END main
```

```
Dump of offset 006E6000
-------------------------------
00000014  00000028  0000003C  00000050  00000064

C:\Users\DELL\source\repos\Project1\Debug\Project1.exe
```

Q6.
```
TITLE My First Program (Test.asm)
INCLUDE Irvine32.inc
.data
target BYTE "AAEBDCFBBC"
freqTable DWORD 256 DUP(0)
.code
Get_frequencies PROC, ptarget:ptr byte, pfreqTable:ptr dword
;push ebp
;mov ebp, esp
mov esi, pfreqTable ;freqTable
mov edi, ptarget ;target
mov ecx, LENGTHOF target
L1:
mov esi, [ebp + 12]
movzx eax, BYTE PTR [edi]
mov ebx, 4
mul ebx
add esi, eax
add DWORD PTR [esi], 1
inc edi
loop L1
mov esi, [ebp + 12]
mov ecx, 256
call crlf
L2:
mov eax, [esi]
cmp eax, 0
je _continue
call writedec
call crlf
_continue:
add esi, 4
loop L2
ret
Get_frequencies ENDP
main PROC
;push OFFSET freqTable
```

```
;push OFFSET target
;call Get_frequencies
invoke Get_frequencies, OFFSET target, OFFSET freqTable
exit
main ENDP
END main
```