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**Section: E**

**Coal Lab 9**

**Task 1**

INCLUDE Irvine32.inc

.data

var1 DWORD 5

var2 DWORD 5

var3 DWORD 5

strr BYTE " 5\*5\*5 Product= ",0

.code

main PROC

push var1

push var2

push var3

call ThreeProd

mov edx,offset strr

call WriteString

call WriteInt

call crlf

exit

main ENDP

ThreeProd PROC

push ebp

mov ebp,esp

mov edx,[ebp+8]

mov eax,[ebp+12]

mul edx

mov edx,[ebp+16]

mul edx

pop ebp

ret

ThreeProd ENDP

END main

**Task 2**

INCLUDE Irvine32.inc

.data

siz DWORD 20

arr BYTE 5,30,40,3,60,70,2,90,30,20,30,50,60,70,80,90,33,55,1,120

max BYTE ?

min BYTE ?

ma BYTE "Maximum value = ",0

mi BYTE "Minimum value = ",0

.code

main PROC

PUSH offset siz

call MinMaxArray

mov eax,0

;printing Minimum value

mov edx,offset mi

call WriteString

mov al,min

call WriteDec

call crlf

;printing Maximum value

mov edx,offset ma

call WriteString

mov al,max

call WriteDec

call crlf

exit

main ENDP

MinMaxArray PROC

push ebp

mov ebp,esp

mov eax,[ebp+8]

mov eax,[eax] ;eax=10

dec eax

;Finding Largest Number

mov edx,0

mov esi,1

mov dl,arr[0]

mov max,dl

mov ecx,eax ;ecx=9

mov eax,ecx

L1:

mov al,arr[esi\*type arr]

cmp max,al

jb L2

inc esi

loop L1

jmp L3

L2:

mov max,al

inc esi

jmp L1

;Finding Minimum Value

L3:

mov eax,[ebp+8]

mov eax,[eax] ;eax=10

dec eax

mov esi,1

mov dl,arr[0]

mov min,dl

mov ecx,eax ;ecx=9

mov eax,ecx

L4:

mov al,arr[esi\*type arr]

cmp min,al

ja L5

inc esi

loop L4

jmp L6

L5:

mov min,al

inc esi

jmp L4

L6:

pop ebp

ret

MinMaxArray ENDP

END main

**Task 3**

INCLUDE Irvine32.inc

.data

sq BYTE "Square of Number = ",0

entr BYTE "Enter a Number: ",0

.code

main PROC

call LocalSquare

mov edx,offset sq

call WriteString

call WriteDec

call crlf

exit

main ENDP

LocalSquare PROC

ENTER 4,0

mov eax,0

mov edx,offset entr

call WriteString

call Readdec

mov [ebp-4],eax

mov edx,[ebp-4]

mul edx

leave

ret

LocalSquare ENDP

END main

**Task 4**

INCLUDE Irvine32.inc

.data

num DWORD ?

v DWORD 1

en BYTE "Enter a number: ",0

rsult BYTE "Factorial = ",0

.code

main PROC

;getting input from user

mov edx,offset en

call WriteString

call ReadDec

mov ecx,eax

call fact

;printing result

mov eax,v

mov edx,offset rsult

call WriteString

call WriteDec

call crlf

exit

main ENDP

fact PROC

cmp ecx,0

ja L1

je L2

L1:

mov eax,ecx

mul v

mov v,eax

dec ecx

call fact

L2:

ret

fact ENDP

END main

**Task 5**

INCLUDE Irvine32.inc

.data

sz BYTE "Enter Number: ",0

fac BYTE "Factorial of number = ",0

gm BYTE "Total time in mili-seconds = ",0

v1 DWORD ?

v2 DWORD ?

.code

main PROC

mov edx,0

mov eax,0

mov edx,offset sz

call WriteString

call GetMSeconds

mov v1,eax

call ReadDec

mov ecx,eax

dec ecx

mov esi,0

mov esi,eax

L1:

dec esi

mul esi

loop L1

mov edx,offset fac

call WriteString

call WriteDec

call crlf

call GetMSeconds

sub eax,v1

mov edx, offset gm

call WriteString

call WriteDec

call crlf

exit

main ENDP

END main

**Task 6**

.data

arr BYTE 4 DUP(?)

x BYTE 2

np BYTE " is not a prime number ",0

.code

main PROC

mov esi,0

mov ecx,4

L1:

call ReadDec

mov arr[esi\*type arr],al

inc esi

loop L1

call check\_prime

exit

main ENDP

check\_prime PROC

mov esi,0

mov ecx,4

outer:

mov x,2

mov ebx,ecx

mov al,arr[esi\*type arr]

mov ecx,2

inner:

div x

cmp eax,0

je L2

inc x

loop inner

inc esi

mov ecx,ebx

loop outer

L2:

call WriteDec

mov edx,offset np

call WriteString

ret

check\_prime ENDP

maximumPrime PROC

;Finding Largest Number

mov edx,0

mov esi,1

mov dl,arr[0]

mov max,dl

mov ecx,eax ;ecx=9

mov eax,ecx

L1:

mov al,arr[esi\*type arr]

cmp max,al

jb L2

inc esi

loop L1

jmp L3

L2:

mov max,al

inc esi

ret

maximumPrime ENDP

END main