CS 211

End Sem Exam

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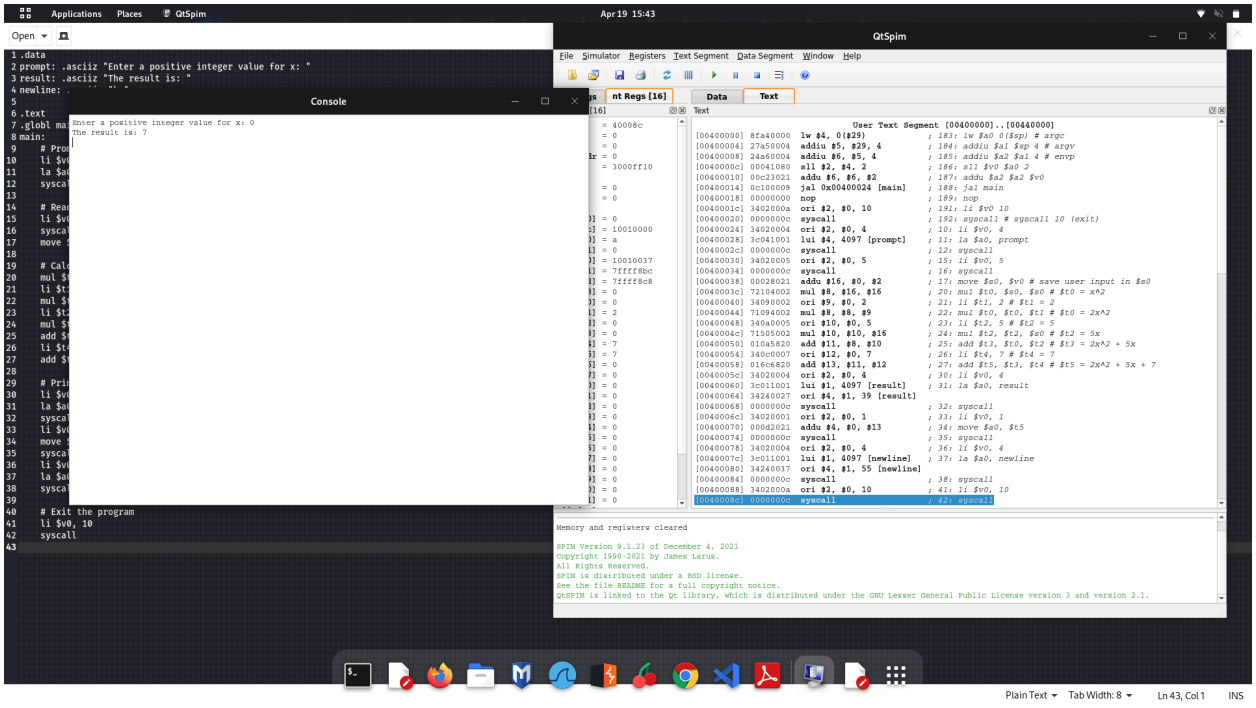
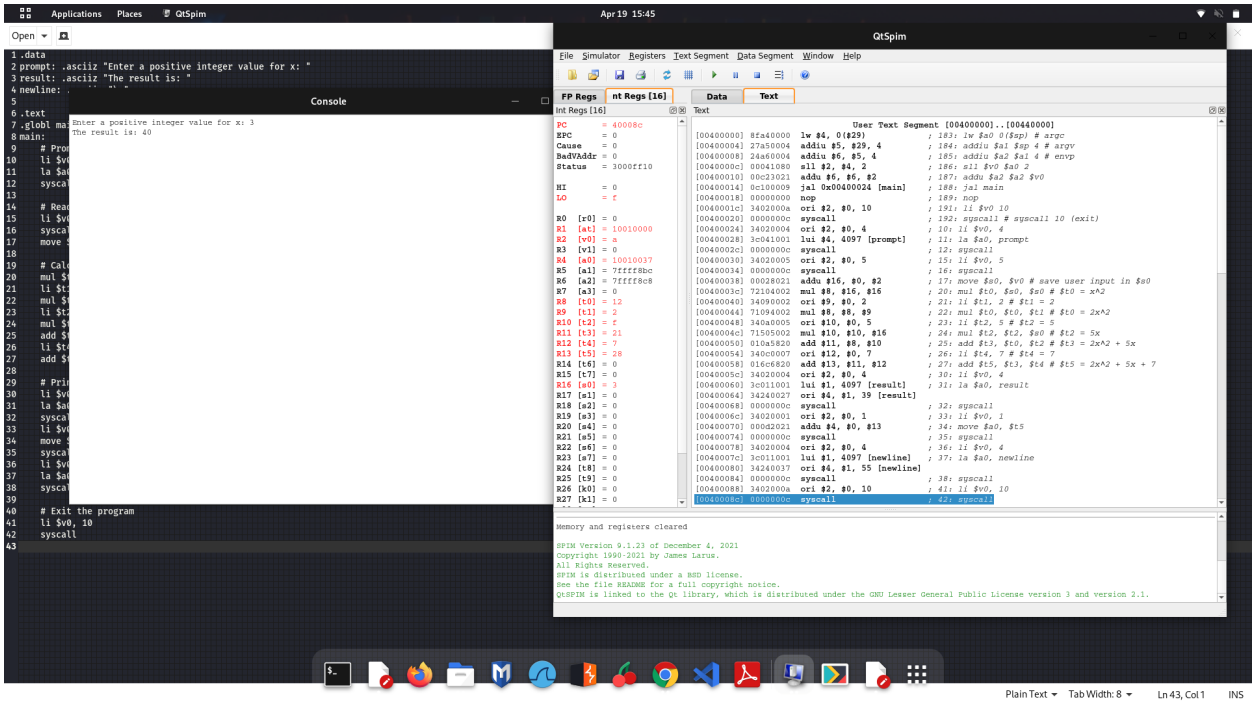
Roll No. – 2103114

Branch – Computer Science Engineering

Question

Question 1-




Applications Places QtSpim
Apr 19 15:45
Open
1 .data
2 prompt: .asciiz "Enter a positive integer value for x: "
3 result: .asciiz "The result is: "
4 newline: .
5
6 .text
7 .globl ma
8 main:
9 # Pro
10 li $v
11 la $a
12 sysca
13
14 # Rea
15 li $v
16 sysca
17 move
18
19 # Cal
20 mul $
21 li $t
22 mul $
23 li $t
24 mul $
25 add $
26 li $t
27 add $
28
29 # Pri
30 li $v
31 la $a
32 sysca
33 li $v
34 move
35 sysca
36 li $v
37 la $a
38 sysca
39
40 # Exit the program
41 li $v0, 10
42 syscall
43
Console
Enter a positive integer value for x: 3
The result is: 40
QtSpim
File Simulator Registers Text Segment Data Segment Window Help
FP Regs nt Regs [16]
Data Text
Int Regs [16]
PC = 40008c
EPC = 0
Cause = 0
BadVAddr = 0
Status = 3000ff10
HI = 0
LO = f
R0 [r0] = 0
R1 [at] = 10010000
R2 [v0] = a
R3 [v1] = 0
R4 [a0] = 10010037
R5 [a1] = 7ffff8bc
R6 [a2] = 7ffff8c8
R7 [a3] = 0
R8 [t0] = 12
R9 [t1] = 2
R10 [t2] = f
R11 [t3] = 21
R12 [t4] = 7
R13 [t5] = 28
R14 [t6] = 0
R15 [t7] = 0
R16 [s0] = 3
R17 [s1] = 0
R18 [s2] = 0
R19 [s3] = 0
R20 [s4] = 0
R21 [s5] = 0
R22 [s6] = 0
R23 [s7] = 0
R24 [t8] = 0
R25 [t9] = 0
R26 [k0] = 0
R27 [k1] = 0
Text
User Text Segment [00400000]..[00440000]
[00400000] 8fa40000 lw $4, 0($29) ; 183: lw $a0 0($sp) # argc
[00400004] 27a50004 addiu $5, $29, 4 ; 184: addiu $a1 $sp 4 # argv
[00400008] 24a60004 addiu $6, $5, 4 ; 185: addiu $a2 $a1 4 # envp
[0040000c] 00041080 sll $2, $4, 2 ; 186: sll $v0 $a0 2
[00400010] 00c23021 addu $6, $6, $2 ; 187: addu $a2 $a2 $v0
[00400014] 0c100009 jal 0x00400024 [main] ; 188: jal main
[00400018] 00000000 nop ; 189: nop
[0040001c] 3402000a ori $2, $0, 10 ; 191: li $v0 10
[00400020] 0000000c syscall ; 192: syscall # syscall 10 (exit)
[00400024] 34020004 ori $2, $0, 4 ; 10: li $v0, 4
[00400028] 3c041001 lui $4, 4097 [prompt] ; 11: la $a0, prompt
[0040002c] 0000000c syscall ; 12: syscall
[00400030] 34020005 ori $2, $0, 5 ; 15: li $v0, 5
[00400034] 0000000c syscall ; 16: syscall
[00400038] 00028021 addu $16, $0, $2 ; 17: move $s0, $v0 # save user input in $s0
[0040003c] 72104002 mul $8, $16, $16 ; 20: mul $t0, $a0, $s0 # $t0 = x^2
[00400040] 34090002 ori $9, $0, 2 ; 21: li $t1, 2 # $t1 = 2
[00400044] 71094002 mul $8, $8, $9 ; 22: mul $t0, $t0, $t1 # $t0 = 2x^2
[00400048] 340a0005 ori $10, $0, 5 ; 23: li $t2, 5 # $t2 = 5
[0040004c] 71505002 mul $10, $10, $16 ; 24: mul $t2, $t2, $s0 # $t2 = 5x
[00400050] 010a5820 add $11, $8, $10 ; 25: add $t3, $t0, $t2 # $t3 = 2x^2 + 5x
[00400054] 340c0007 ori $12, $0, 7 ; 26: li $t4, 7 # $t4 = 7
[00400058] 016c6820 add $13, $11, $12 ; 27: add $t5, $t3, $t4 # $t5 = 2x^2 + 5x + 7
[0040005c] 34020004 ori $2, $0, 4 ; 30: li $v0, 4
[00400060] 3c011001 lui $1, 4097 [result] ; 31: la $a0, result
[00400064] 34240027 ori $4, $1, 39 [result]
[00400068] 0000000c syscall ; 32: syscall
[0040006c] 34020001 ori $2, $0, 1 ; 33: li $v0, 1
[00400070] 000d2021 addu $4, $0, $13 ; 34: move $a0, $t5
[00400074] 0000000c syscall ; 35: syscall
[00400078] 34020004 ori $2, $0, 4 ; 36: li $v0, 4
[0040007c] 3c011001 lui $1, 4097 [newline] ; 37: la $a0, newline
[00400080] 34240037 ori $4, $1, 55 [newline]
[00400084] 0000000c syscall ; 38: syscall
[00400088] 3402000a ori $2, $0, 10 ; 41: li $v0, 10
[0040008c] 0000000c syscall ; 42: syscall
Memory and registers cleared
SPIM Version 9.1.23 of December 4, 2021
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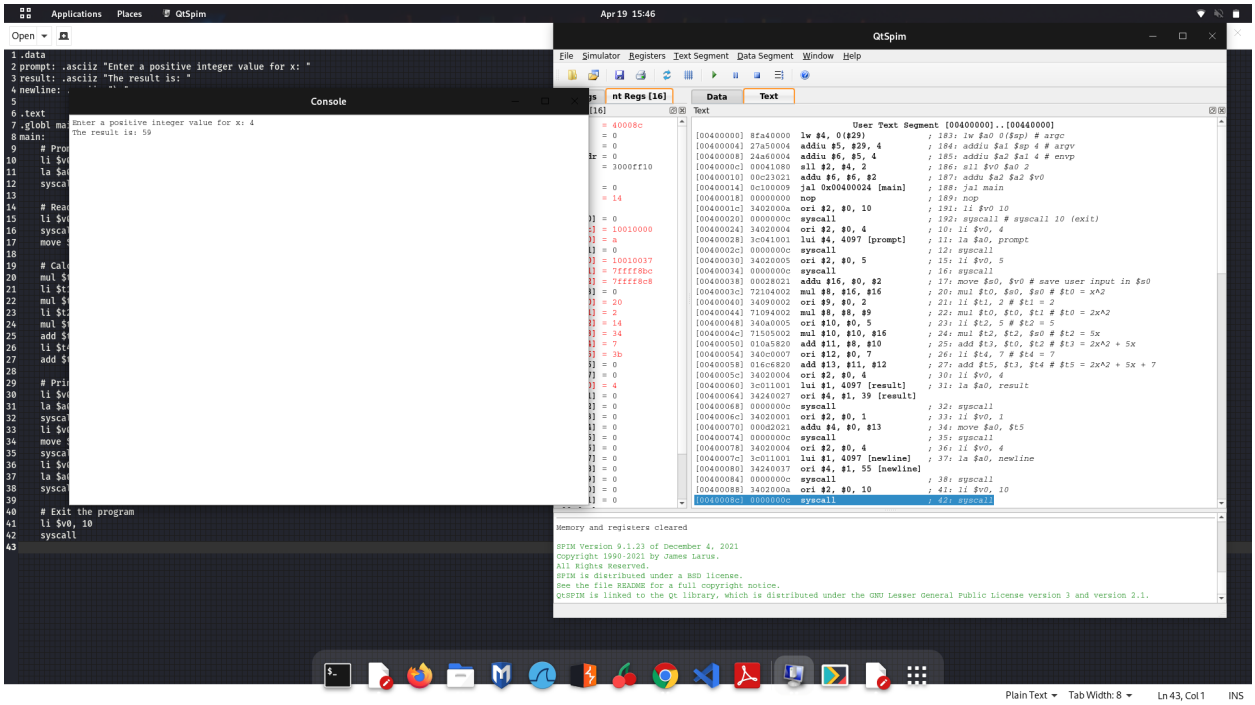
Applications Places QtSpim
Apr 19 15:46
Open
1 .data
2 prompt: .asciiz "Enter a positive integer value for x: "
3 result: .asciiz "The result is: "
4 newline: .
5
6 .text
7 .globl ma
8 main:
9 # Pro
10 li $v
11 la $a
12 sysca
13
14 # Rea
15 li $v
16 sysca
17 move
18
19 # Cal
20 mul $
21 li $t
22 mul $
23 li $t
24 mul $
25 add $
26 li $t
27 add $
28
29 # Pri
30 li $v
31 la $a
32 sysca
33 li $v
34 move
35 sysca
36 li $v
37 la $a
38 sysca
39
40 # Exit the program
41 li $v0, 10
42 syscall
43
Console
Enter a positive integer value for x: 4
The result is: 59
QtSpim
File Simulator Registers Text Segment Data Segment Window Help
nt Regs [16]
Data Text
Text
User Text Segment [00400000]..[00440000]
[00400000] 8fa40000 lw $4, 0($29) ; 183: lw $a0 0($sp) # argc
[00400004] 27a50004 addiu $5, $29, 4 ; 184: addiu $a1 $sp 4 # argv
[00400008] 24a60004 addiu $6, $5, 4 ; 185: addiu $a2 $a1 4 # envp
[0040000c] 00041080 sll $2, $4, 2 ; 186: sll $v0 $a0 2
[00400010] 00c23021 addu $6, $6, $2 ; 187: addu $a2 $a2 $v0
[00400014] 0c100009 jal 0x00400024 [main] ; 188: jal main
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[0040002c] 0000000c syscall ; 12: syscall
[00400030] 34020005 ori $2, $0, 5 ; 15: li $v0, 5
[00400034] 0000000c syscall ; 16: syscall
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[00400044] 71094002 mul $8, $8, $9 ; 22: mul $t0, $t0, $t1 # $t0 = 2x^2
[00400048] 340a0005 ori $10, $0, 5 ; 23: li $t2, 5 # $t2 = 5
[0040004c] 71505002 mul $10, $10, $16 ; 24: mul $t2, $t2, $s0 # $t2 = 5x
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[00400054] 340c0007 ori $12, $0, 7 ; 26: li $t4, 7 # $t4 = 7
[00400058] 016c6820 add $13, $11, $12 ; 27: add $t5, $t3, $t4 # $t5 = 2x^2 + 5x + 7
[0040005c] 34020004 ori $2, $0, 4 ; 30: li $v0, 4
[00400060] 3c011001 lui $1, 4097 [result] ; 31: la $a0, result
[00400064] 34240027 ori $4, $1, 39 [result]
[00400068] 0000000c syscall ; 32: syscall
[0040006c] 34020001 ori $2, $0, 1 ; 33: li $v0, 1
[00400070] 000d2021 addu $4, $0, $13 ; 34: move $a0, $t5
[00400074] 0000000c syscall ; 35: syscall
[00400078] 34020004 ori $2, $0, 4 ; 36: li $v0, 4
[0040007c] 3c011001 lui $1, 4097 [newline] ; 37: la $a0, newline
[00400080] 34240037 ori $4, $1, 55 [newline]
[00400084] 0000000c syscall ; 38: syscall
[00400088] 3402000a ori $2, $0, 10 ; 41: li $v0, 10
[0040008c] 0000000c syscall ; 42: syscall
Memory and registers cleared
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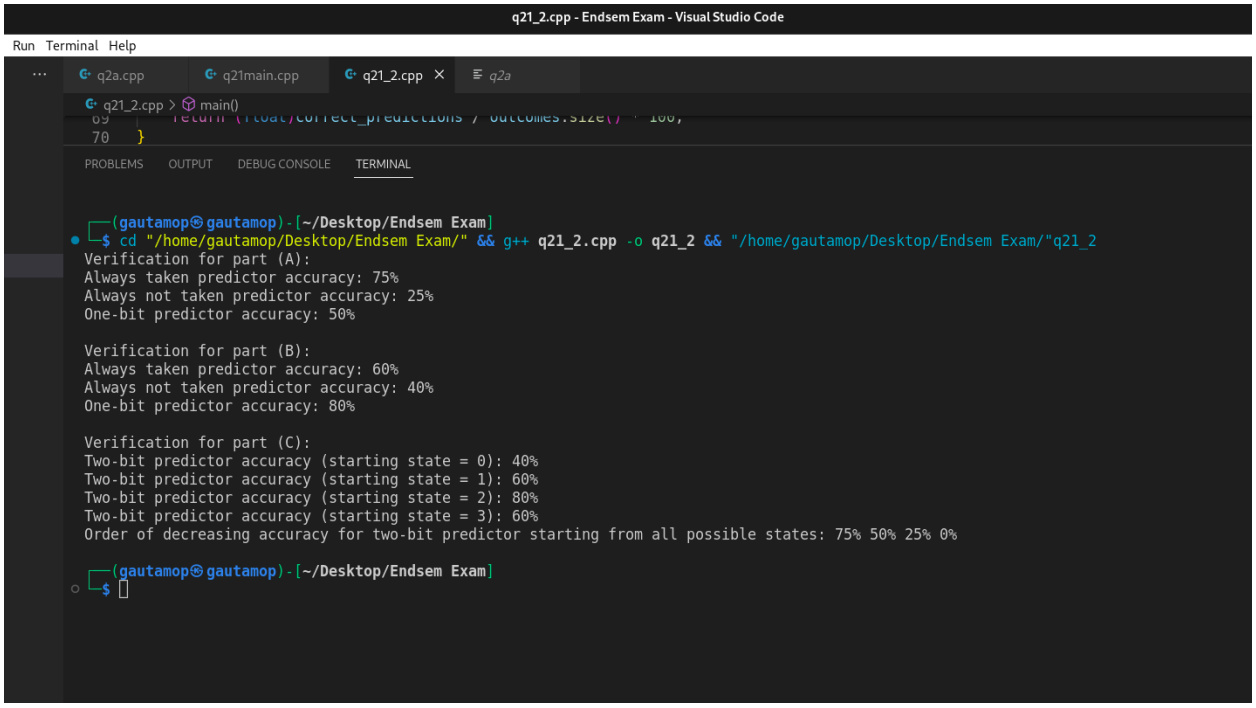
Question 2 -
All parts -



Question 3 -

Input X = 4

And then count = 2X^2 (X power 2)

Output = 32


Name
Value
a[7:0]
ZZ
b[7:0]
ZZ
op[2:0]
Z
x[7:0]
08
out[7:0]
80
/end_alu/x[7:0]
[7]
[6]
0
[5]
0
[4]
0
[3]
0
[2]
0
[1]
0
[0]
0
DSIZE[31:0]
00000008
823,212 ps
823,213 ps
823,214 ps
823,215 ps
823,216 ps
823,21
ZZ
ZZ
Z
ZZ
XX
00000008

Thank You