



16

What are the THREE values of register  
?x1 that get PUSHED to the stack  
Notice: The answers below are in

decimal format  
(2 نقطة)

and 100 ,88 ,20

and 96 ,84 ,16

and 52 ,64 ,20

and 52 ,64 ,16

and 56 ,68 ,20

17

2)What is the final value in register x1?



IC <sub>i</sub> for ProgramX	10	5	6
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Relative Frequency for ProgramX	30%	50%	20%
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6

Assume that clock rate of Computer-A is 8GHz; what is the CPU time of

\*?ProgramX on Computer-A (3 نقطة)

ns 21

ns 147

ns 7

ns 8

ns 56



Given the RISC-V code and memory contents below, answer the following problems 8 to 14

PC	Instruction	Memory Byte Address	Memory Contents
0	lui x6, 0xB9F25	6	0x77
4	ori x7, x6, 0x6C3	5	0xDF
8	lwu x8, 2(x0)	4	0x91
12	beq x8, x7, 6	3	0x9B
16	addi x9, x0, 0x008	2	0xEC
20	sh x9, 0(x0)	1	0xA8
24	srlr x9, x9, 2	0	0x45

8

What is the value of register x6 after \* ?executing the RISC-V code (1 نقطة)

0x FFFF FFFF B9F2 5000

0x FFFF FFFF FFFB 9F25

0x 0000 0000 B9F2 5000

0x 0000 0000 000B 9F25

None of the above



None of the above

12

What is the value of register x9 after  
\* ?executing the RISC-V code  
(1 نقطة)

0x 0000 0000 0000 0010

0x 0000 0000 0000 0004

0x FFFF FFFF FFFF A845

0x 3FFF FFFF FFFF EA11

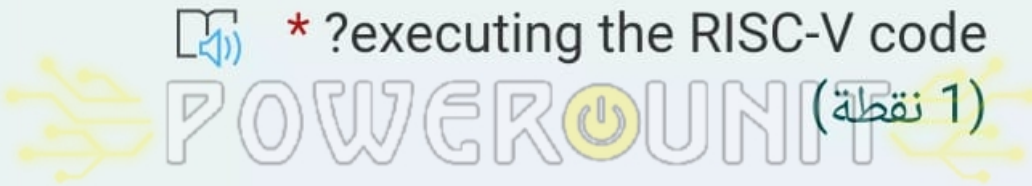
0x 0000 0000 0000 0002

13



9

What is the value of register x7 after  
🔊 \* ?executing the RISC-V code



0x 0000 0000 0000 06C3

0x FFFF FFFF B9F2 56C3

0x 0000 0000 B9F2 56C3

0x FFFF FFFF B9F2 46C3

None of the above

10

What is the value of register x8 after



4

Computer-1 and Computer-2 have the .EXACT hardware  
Computer-1 needs 100 clock cycles to .execute programZ  
Computer-2 needs 300 clock cycles to .execute programZ

When executing programZ, which  
?computer is faster and by how much

POWERUNIT



\*

(1 نقطة)

Computer-1 is faster by 3 times

Computer-2 is faster by 3 times

Computer-1 is faster by 1/3 times

Both computers have the





13

Which instruction is the target of the  
\* ?beq instruction at PC = 12



addi x9, x0, 0x008

sh x9, 0(x0)

srli x9, x9, 2

lui x6, 0xB9F25

ori x7, x6, 0x6C3

14

What is the machine instruction of the



None of the above

10

What is the value of register x8 after

 \* ?executing the RISC-V code  
(1 نقطة)

0x 0000 0077 DF91 9BEC

0x 0000 0000 EC9B 91DF

0x 0000 0000 DF91 9BEC

0x FFFF FFFF EC9B 91DF

None of the above

11





14

What is the machine instruction of the  
?beq instruction at PC = 12

Notice that the opcode of the beq is

\* "1100011" and the funct3 is "000

POWERUNIT



(1 نقطة)

0x 0074 0663

0x 0074 0363

0x 0083 8663

0x 0083 8363

None of the above



(PC = 96) jalr x0, 0(x1)

15

What is the value of the immediate "PLAY" in the jal instruction at PC = ?52

Notice: The answers below are in

decimal format (1 نقطة)

32

20-

10-

8

16-

16



11

What is the value stored in memory location at address 1 after executing

the RISC-V code (1 نقطة)

0x F0

0x 08

0x A8

0x 00

None of the above

12



17

?What is the final value in register x12

Notice: The answers below are in

\* decimal format

(2 نقطة)

14



7



21



0



10



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7

:Assume that  
Clock period of Computer-B is (0.5 .1 ns)

CPU time of ProgramX on .2  
Computer-B is (21 ns)

What is the total instruction count of



\* ?ProgramX on Computer-B

(3 نقطة)

7

100

42

2.1

20



Computer-1 and Computer-2 use the same ISA and same compiler. In addition, the two computers have the same CPI for all instruction types. As a result, when the same program is executed on both computers, which of the following statements is NOT

necessarily correct (1 نقطة)

Total Instruction Count of Computer-1 = Total Instruction Count of Computer-2

CPIavg of Computer-1 = CPIavg of Computer-2

Clock Cycles of Computer-1 = Clock Cycles of Computer-2

CPU Performance of Computer-1 = CPU Performance of Computer-2