Activity 2-1 : Central Processing Unit

Group No : G-25

Group Member :

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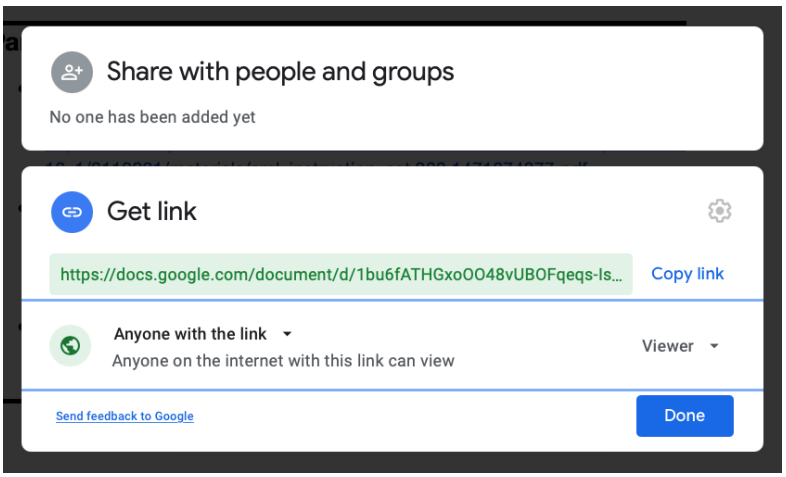
Part 0 : Preparation

- In part 1, use Activity 2 Reference: SML Instruction Set, which can be downloaded from CourseVille or below: https://www.mycourseville.com/sites/all/modules/courseville/files/uploads/2016_1/2110221/materials/sml_instruction_set.333.1471674877.pdf
- In part 2 and 3, Use Brookshear Simple Machine Emulator to perform the indicated tasks https://www.mycourseville.com/sites/all/modules/courseville/files/uploads/2016_1/2110221/materials/bme.333.1471675276.htm
- Make a copy of this sheet. Answer the questions in the box given. Share this file with the permission for **anyone with link can view the document**. Submit the URL of this file to CourseVille.



Part 1 : SML Instruction (20 minutes)

Program-A

Suppose a CPU is started with PC=10 and the following values in cells 10-19 in memory.

Address	Content
10	22
11	36
12	25
13	0F
14	83
15	25
16	33
17	20
18	C0
19	00

Question A.1 Decode the following instruction into English

2236	LOAD register 2 with the bit pattern 36.
250F	LOAD register 5 with the bit pattern 0F.
8325	AND the bit patterns in registers 2 and 5 and place the result in register 3.
3320	STORE the bit pattern found in register 3 in the memory cell whose address is 20.
C000	HALT execution.

Question A.2 What does this program perform?

Store the result of “AND Operation” of bit pattern 36 and 0F in memory cell whose address is 20

Program-B

Suppose a CPU is started with PC=20 and the following values in cells 10-19 in memory.

Address	Content
20	11
21	30
22	20
23	05
24	B1
25	2A
26	22
27	00
28	B0
29	2C

Address	Content
2A	22
2B	01
2C	32
2D	31
2E	C0
2F	00
30	04
31	FF

Question B.1 Decode the following instruction into English

1130	LOAD the register 1 with bit pattern in address 30
2005	LOAD the register 0 with the bit pattern 05.
B12A	JUMP to address 2A if register 1 is equal to register 0. Otherwise, continue with normal sequence of execution.
2200	LOAD the register 2 with the bit pattern 00.
B02C	JUMP to the instruction located in the memory cell at address 2C with no condition.
2201	LOAD the register 2 with the bit pattern 01.
3231	STORE the bit pattern found in register 2 in memory cell address 31
C000	HALT execution.

Question B.2 What does this program perform?

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Store bit pattern 01 in address 31 if the bit pattern in address
30 is bit pattern 05. Otherwise, store bit pattern 00 instead.
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