

Faculty of Computing



Lab # 8

Computer Architecture

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Task 1:

*Subtract

File Edit Modify Execute Help

Data

Hex

Registers

| Name | Width | Data |
|------|-------|------|
| AR | 12 | 001 |
| DR | 16 | 0000 |
| E | 1 | 0 |
| I | 1 | 0 |
| IR | 16 | E001 |
| PC | 12 | 00D |
| S | 1 | 1 |
| AC | 16 | FFFE |

subtraction.a x

Subtract 3nums.a x

```

1 START:
2 INP      ; Take 1st number
3 STA NUM
4
5 INP      ; Take 2nd number
6 CMA
7 INC
8 ADD NUM
9 STA NUM
10
11 INP     ; Take 3rd number
12 CMA
13 INC
14 ADD NUM
15
16 OUT
17 HLT
18
19 NUM: .data 1 0
20

```

EXECUTING...

Enter Inputs, the first of which must be an Integer: 2

Enter Inputs, the first of which must be an Integer: 2

Enter Inputs, the first of which must be an Integer: 2

Output: -2

EXECUTION HALTED NORMALLY due to the setting of the bit(s): [HALT-BIT]

Task 2:

Registers

| Name | Width | Data |
|------|-------|-------|
| AC | 16 | 1 |
| AR | 12 | 1 |
| DR | 16 | 6 |
| E | 1 | -1 |
| I | 1 | 0 |
| IR | 16 | -8191 |
| PC | 12 | 6 |
| S | 1 | -1 |

```

1 START:
2 ADD NUM1
3 CMA
4 INC
5 ADD NUM2
6
7 OUT
8 HLT
9
10 NUM1: .data 1 5
11 NUM2: .data 1 6
12 RESULT: .data 1 0

```

EXECUTING...

Output: 1

EXECUTION HALTED NORMALLY due to the setting of the bit(s): [HALT-BIT]

Task 3:

| Registers | | |
|-----------|-------|-------|
| Name | Width | Data |
| AC | 16 | 1 |
| AR | 12 | 1 |
| DR | 16 | 6 |
| E | 1 | -1 |
| I | 1 | 0 |
| IR | 16 | -8191 |
| PC | 12 | 7 |
| S | 1 | -1 |

```
1 START:
2 ADD NUM1
3 CMA
4 INC
5 ADD NUM2
6 STA RESULT
7 OUT
8 HLT
9
10 NUM1: .data 1 5
11 NUM2: .data 1 6
12 RESULT: .data 1 0
```

EXECUTING...

Output: 1

EXECUTION HALTED NORMALLY due to the setting of the bit(s): [HALT-BIT]