

Faculty of Computing



Lab # 7

Computer Architecture

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Semester: BSCS-4

Task 1: Accept **three numbers** as input and compute their sum.

The screenshot shows a software interface with a menu bar (Insert, Draw, Design, Layout, References, Mailings, Review, View, Help) and a toolbar. The main window is titled '*program1' and has a menu bar (File, Edit, Modify, Execute, Help). The 'Data' dropdown is set to 'Hex'. The 'Registers' table is visible, showing the following data:

Name	Width	Data
AC	16	0006
AR	12	001
DR	16	0005
E	1	0
I	1	0
IR	16	E001
PC	12	009
S	1	1

The code editor shows the following code:

```

1 START:INP
2 STA NUM
3 INP
4 ADD NUM
5 OUT
6 HLT
7
8 NUM:.data 1 0
  
```

The output window shows the following text:

```

EXECUTING...
Enter Inputs, the first of which must be an Integer: 2
Enter Inputs, the first of which must be an Integer: 3
Enter Inputs, the first of which must be an Integer: 1
Output: 6
EXECUTION HALTED NORMALLY due to the setting of the bit(s): [HALT-BIT]
  
```

Task 2: Add Two Numbers Stored in Memory (Predefined Values).

The screenshot shows a software interface with a menu bar (File, Edit, Modify, Execute, Help). The main window is titled '*program1' and has a menu bar (File, Edit, Modify, Execute, Help). The 'Data' dropdown is set to 'Hex'. The 'Registers' table is visible, showing the following data:

Name	Width	Data
AC	16	000C
AR	12	001
DR	16	0006
E	1	0
I	1	0
IR	16	E001
PC	12	004
S	1	1

The code editor shows the following code:

```

1 START:
2 STA NUM
3 ADD NUM
4 OUT
5 HLT
6
7 NUM:.data 1 0
  
```

The output window shows the following text:

```

EXECUTING...
Output: 12
EXECUTION HALTED NORMALLY due to the setting of the bit(s): [HALT-BIT]
  
```

An 'Edit Modules' dialog box is open, showing the 'Type of Module' as 'Register'. The dialog box contains a table with the following data:

name	width	initial value	read-only
AC	16	6	<input type="checkbox"/>
AR	12	0	<input type="checkbox"/>
DR	16	0	<input type="checkbox"/>
E	1	0	<input type="checkbox"/>
I	1	0	<input type="checkbox"/>
IR	16	0	<input type="checkbox"/>
PC	12	0	<input type="checkbox"/>
S	1	0	<input type="checkbox"/>

The dialog box also has buttons for 'New...', 'Delete...', 'Duplicat...', 'Properties...', 'OK', and 'Cancel'.

Task 3: Add a Number to Itself (Double a Value)

*program1

File Edit Modify Execute Help

Data Hex

Registers

Name	Width	Data
AC	16	0004
AR	12	001
DR	16	0002
E	1	0
I	1	0
IR	16	E001
PC	12	005
S	1	1

Addition.a × Additionof3.a × Predefined.a × doubling number ×

```
1 START:INP
2 STA NUM
3 ADD NUM
4 OUT
5 HLT
6
7 NUM:.data 1 0
```

EXECUTING...

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

Output: 4

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