DATAPATH

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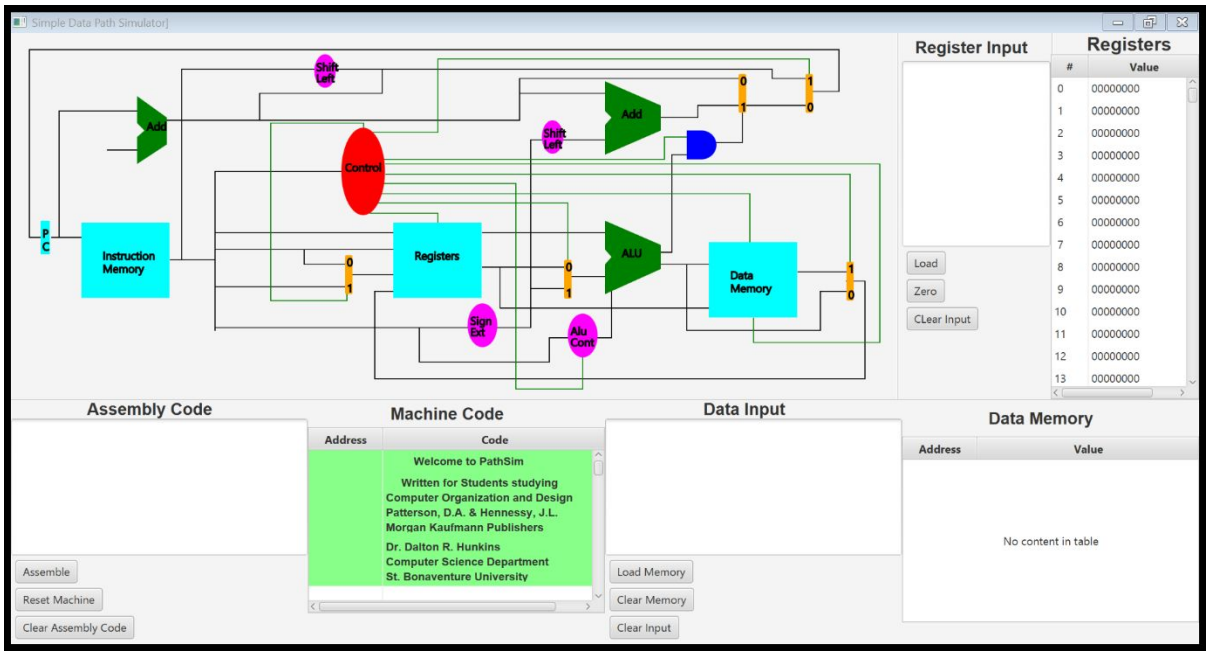
In this tutorial session, we will try the foundation of programming within Assembly language, we will use assembly in MIPS architecture. So, we will use Pathsim. PathSim is a simulator for the simple data path. You can download Pathsim in *Scele* or http://www.cs.sbu.edu/PathSim4/

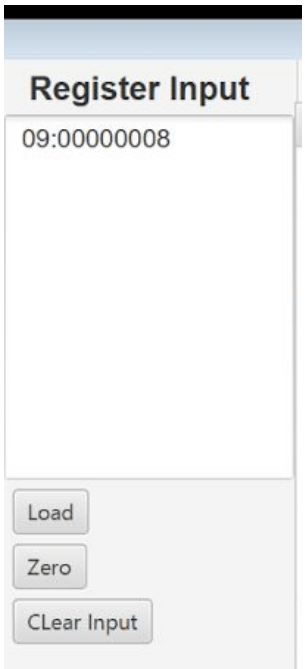
A. How to use PathSim

1. Open Pathsim , and you will see this screen



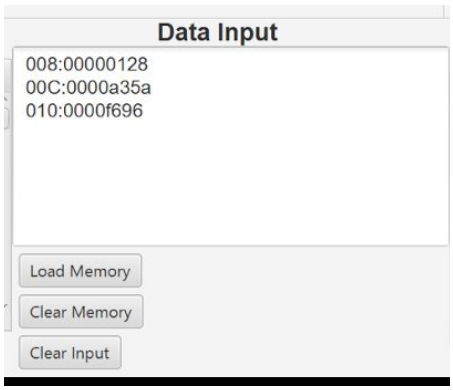
2. Input this code Into **Register Input Table** and click Load
   09:00000008

   **Don't forget the new line*



3. Look at **Registers** table and see the differences
4. Input this code into **Data Input** table and click Load Memory
   008:00000128
   00C:0000a35a
   010:0000f696

   **Don't forget the new line*

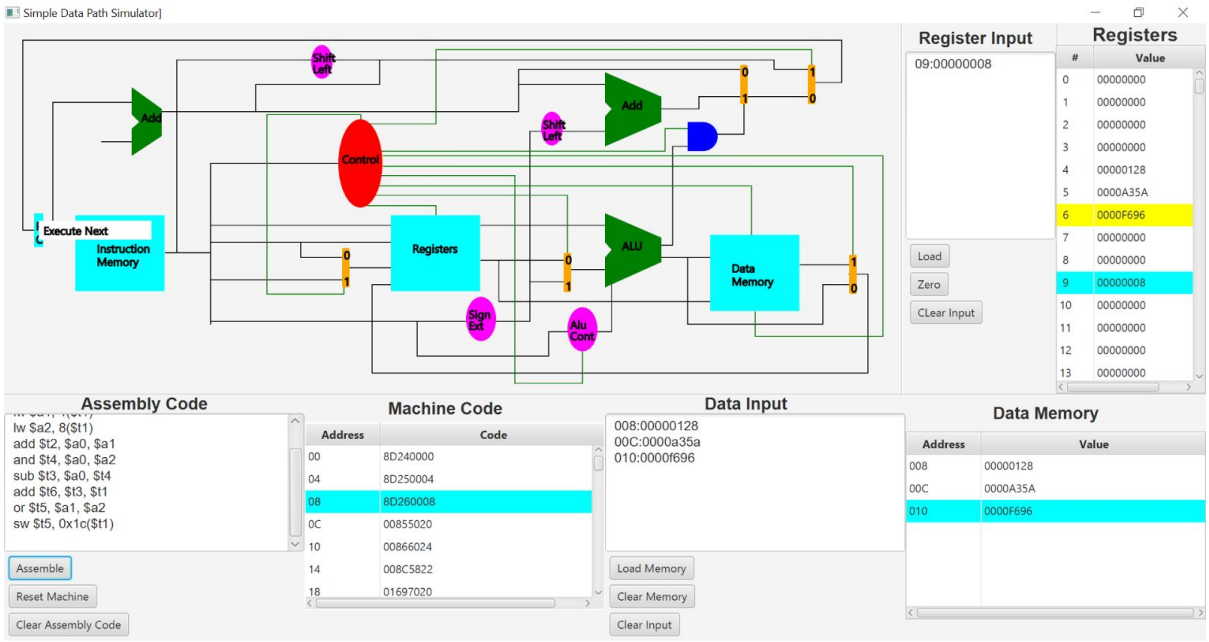


5. Look at the **Data Memory** table and see the differences
6. Correct this code and then write it into **Assembly Code** table so the code will run without syntax error

```
lw $a0, 0($t1)

lw $a1, 4($t1)

lw $a2 8($t1)

add $t2, $a0, $a1

andi $t4, $a0, $a2

sub $t3, $a0, $t4

add $t6, $t3, $t1

or $t5, $a1, $a2

sw 0x1c(t1), $t5
```

7. Look at the **Machine Code** table and see the differences

8. Click the **PC component** to execute each instruction



9. Observe the control signal through each input/output component for each instruction that executed by processor (Hint : click each line)
10. Write your observation result to Excel table (The excel table can be downloaded at Scele)