

CSCI 341: Computer Organization  
WS 11: Single Cycle Data Path

1	What two types of functional units are present in a data path? What defines when a state can change or not in a data path?
2	What assembly instruction is represented by the following lines of register transfer language? 1. $R[rd] \leftarrow R[rs1] + R[rs2]$ 2. $R[rd] \leftarrow \text{MEM}[R[rs1]] + \text{SignExtImm}$
3	Why does the register file need both a Write Register and Write Data input?
4	Draw the datapath for the instruction fetch stage.

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| 5 | What are the five stages in the pipeline, in order?  |
| 6 | Draw a picture showing the datapath (with all functional units that are used) for<br><code>add t2, t1, t0</code><br>Explain what is happening in each functional unit. |