CIS240/CNET220 EXERCIZE 3A

PIPPIN Instructions

1. Enter the following PIPPIN program into PIPPIN, beginning at memory location
   0. You may remember that this is the PIPPIN equivalent of our example equation:
2.   `W = X * (2 + Y).`
3.
4.   `LOD     #2`
5.   `ADD     Y`
6.   `MUL     X`
7.   `STO     W`
8.
9. Set the values of memory locations X and Y to 4 and 5, respectively.

10. Run the program, by clicking the Play button.

11. Reset the program, and reset the value of memory location W back to zero.

12. Now, use the Step button to execute one PIPPIN instruction at a time. Watch
    carefully to see how the program counter is used to retrieve an instruction from
    memory, how the instruction is decoded to detect which operation is to be
    performed. This is the fetch-execute cycle in action.

13. Reset the simulator now, and perform steps 1-5 again, this time using the PIPPIN
    codes for equation:
14.   `X = (3 * Y) + (2/W)`
15.
16.   `LOD     #3`
17.   `MUL     Y`
18.   `STO     T1`
19.   `LOD     #2`
20.   `DIV     W`
21.   `ADD     T1`
22.   `STO     X`
23.

    In this case, set the values of the memory locations for variables Y and W to 5 and
1, respectively.

On a separate sheet of paper, describe how a single instruction gets executed by our
machine in terms of the components of the simulator. That is, describe the order in which
components are used, and the flow of information that occurs in the processing of one
instruction.