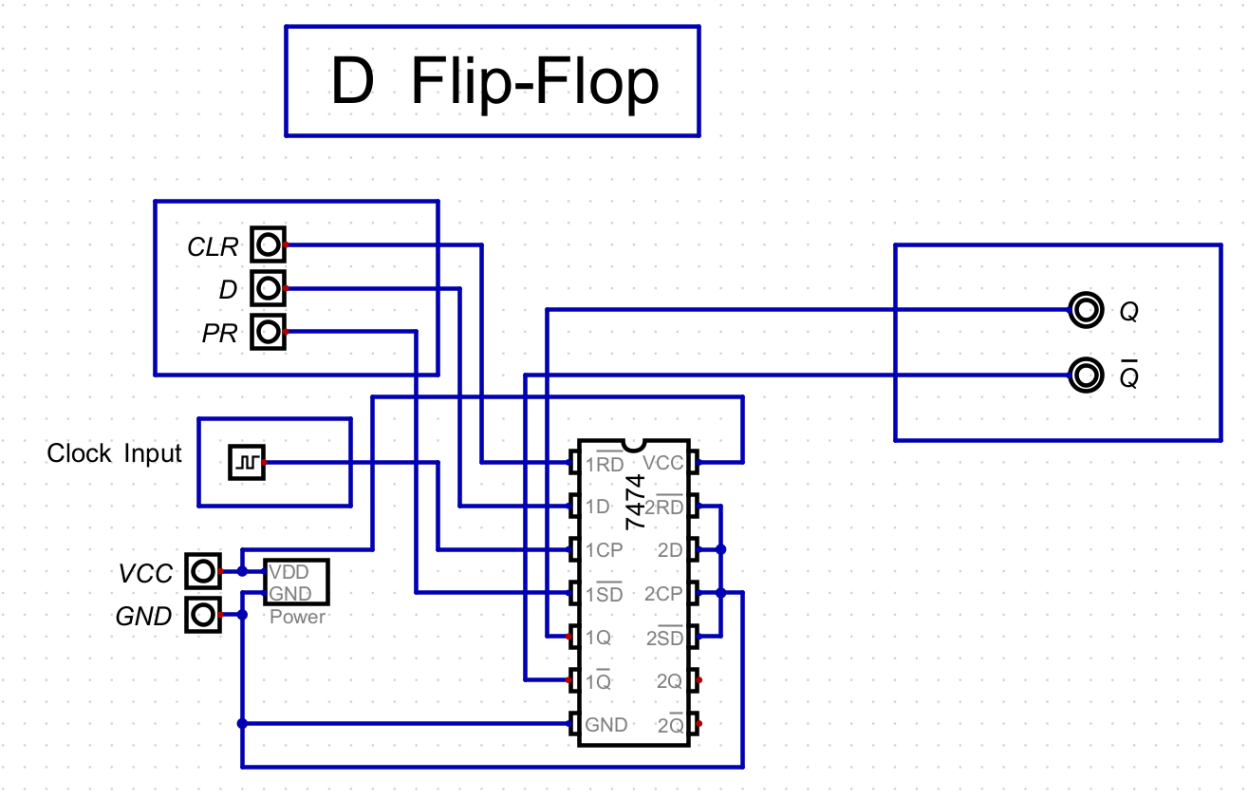
Zen Park
WXP190001
CS4141.6U1
7/17/2021

Postlab 4

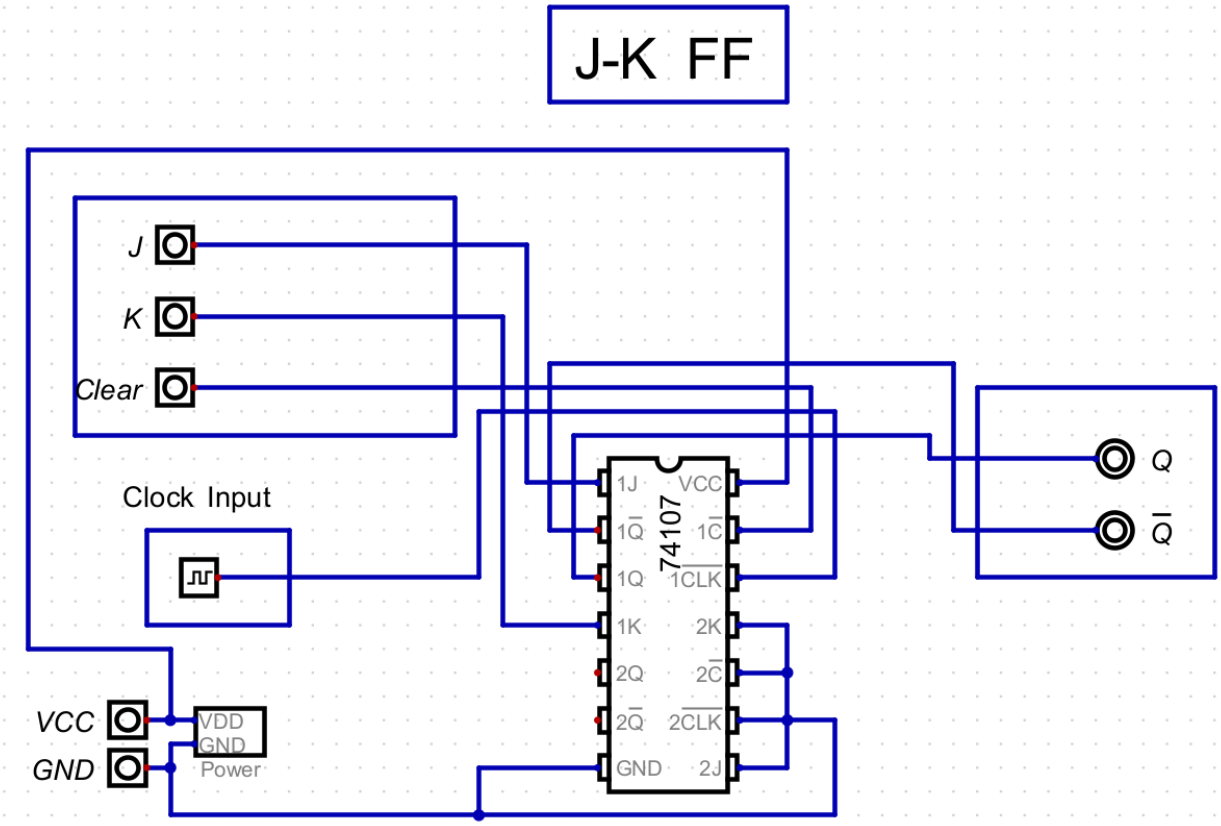
1) D flip flop




We have four inputs (CLR, D, PR, and the clock input) as well as the 7474 chip. Our outputs consist of Q and not Q (~Q). We set the Clock Input to manually tick at 1 per second, which would automatically activate any output.

Having only the preset on turns on ~Q. Turning on CLR does nothing and remains the same. However, CLR on and PR off switches to Q output. CLR and D has no change from the previous. Turning on all three will have no change.

2) JK FF




Here we have a very similar style as the previous circuit. We have 4 inputs again (J, K, CLR, and clock input). We have the Q and ~Q outputs. We use the 74107 chip.

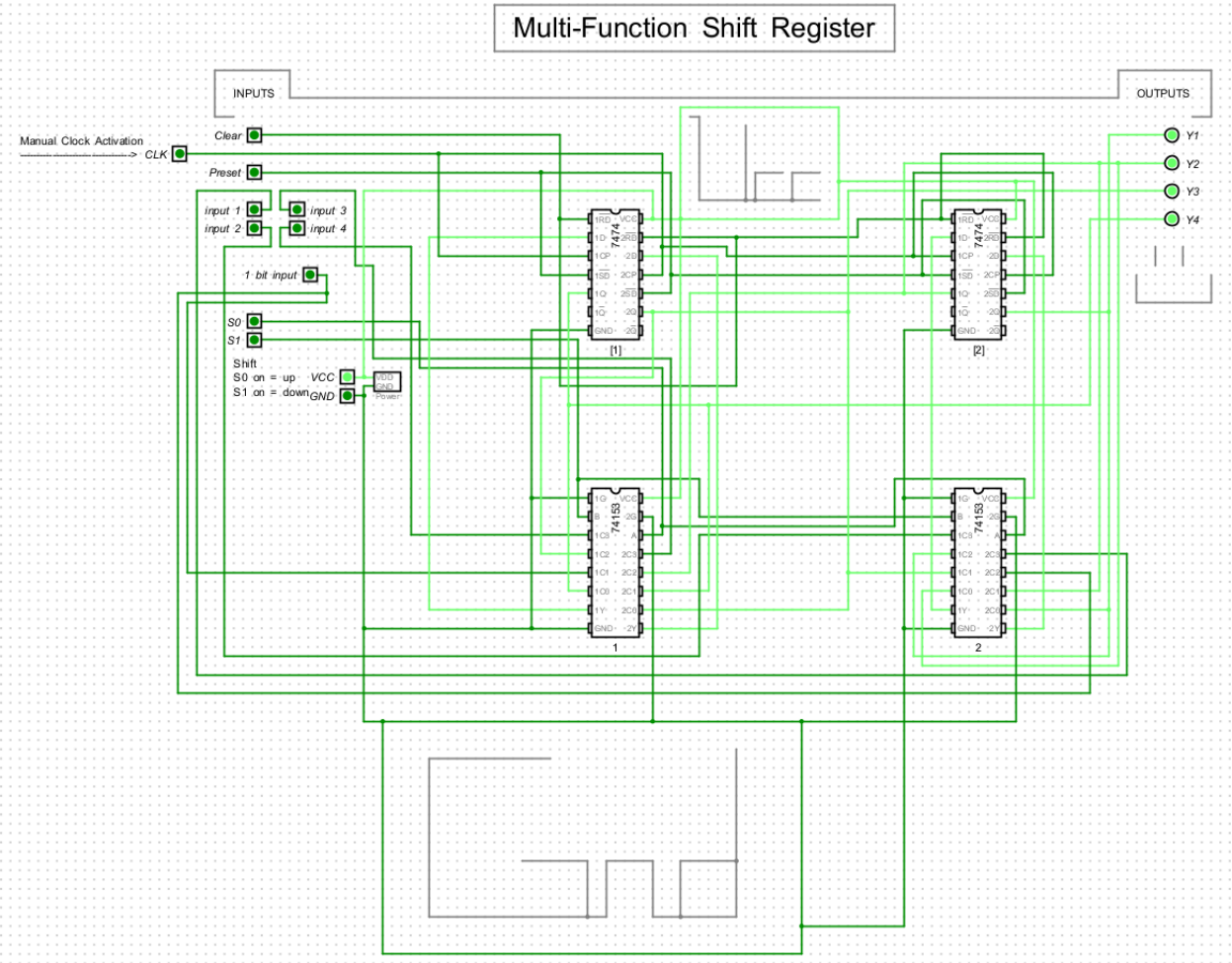
By default, CLR on and rest off would result in ~Q.

Switching to J and CLR would output Q. Turning off CLR and keeping J on would become ~Q.

J and K on does absolutely no change and remains as ~Q.

However, turning on all three would rotate between Q and ~Q every clock cycle.

3) Multifunction Shift Register




We have a bit more complex circuit here. We have 10 inputs and 4 outputs.

First, we want to turn on Preset, then turn on clear. This will make our outputs go from on to off, which allows us to manipulate it appropriately.

We can turn on any input from 1 through 4. If we were to select 2 and 3, nothing would happen after turning on the clock. This is because we must turn on S0 and S1.

If we leave S0 on and S1 off, the Y2 and Y3 will move up. If we leave S1 on and S0 off, then the opposite happens. This works with any input.

To work with the 1 bit input, we must only have either S0 or S1 on, but not both.

S0 will cause the off output to move up like Pacman. S1 will cause the off output to move down.

These circuits remind me of Pacman.

Thank you for this semester!