Switched Circuits

You may find it convenient to use a switched circuit for the digital labs. Switches provide an alternative to moving wires back and forth between power and ground in order to supply a logic 0 or 1 to the inputs of your circuit. A side benefit of using a switch is that it ensures your circuit will never have “floating” inputs (i.e. inputs are connected to either $V_{CC}$ or Ground).

**Momentary Switch**: There is a momentary switch in your lab kit. It is useful for supplying a clock pulse or momentary contact to your circuit. A momentary switch is connected as shown in the leftmost diagram below.

In its default state the switch is open; depressing the button closes the circuit. When the switch open or OFF (as in the diagram), point A is connected to the positive voltage and produces a logic HIGH. Depressing or closing the switch pulls point A to ground, inducing a logic LOW.

**Dip Switch**: There is also a 4-pole Dip switch in your lab kits. This switch controls multiple sources and is useful if a circuit requires multiple inputs. Integrate it into a circuit as in the rightmost diagram below.

With the switches open or OFF (as they are in the diagram), points A-D are each connected to the positive voltage and produce a logic HIGH. Closing any particular switch (by moving it to ON) will induce a logic LOW at the corresponding output point.