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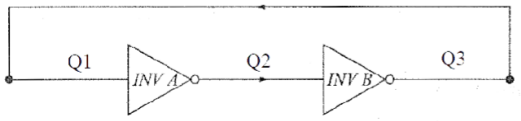
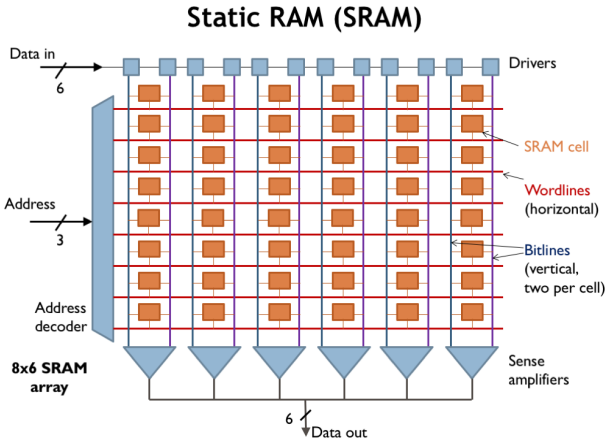
Flip Flop Assignment

To begin, a flip flop is a type logic gate designed to hold and store a piece of information. This differs from a normal logic gate because normally a logic gate would only pass information through one way to an output. A flip flop is different, as it continually outputs a bit. This has the effect of storing the bit until acted upon. This allows for programs to be stored instead of simply run through. In the world of computing, this opens up the ability to hold strings and store data forever. This allows for computer parts like random access memory (RAM) and many other inventions to grow off of this marvel.

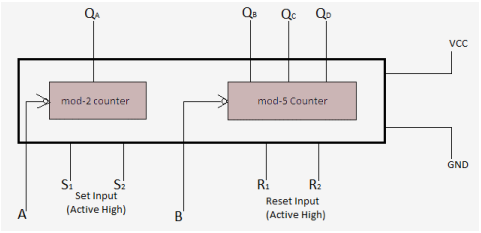


Starting on the most basic use of a flip flop, RAM is what is used in all computers today. The flip flop is used to temporarily store data. To be more specific, SRAM is what a flip-flop based RAM is called. To quote from *TechTarget*, “SRAM is commonly used for a computer's cache memory, such as a processor's L2 or L3 cache” (Sheldon, 2022). Cache memory is found near the CPU of the computer. The memory helps perform operations at lightning fast speeds. Other forms of RAM storage tend to be a little slower, the flip flop is by far the fastest as it is the most simple.



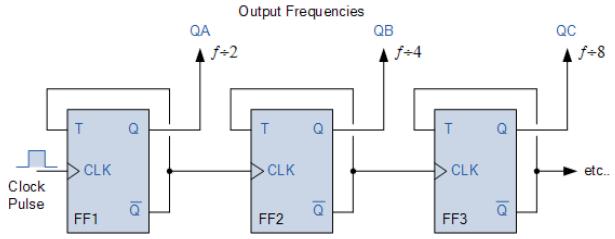
The storage works the same way a normal flip flop works, the difference being that a flip flop is stored in a grid like bits themselves.

The second type of flip flop is called a decade counter. This type of flip flop is self explanatory. It is used to tell us what year it is. This basic idea is also how we tell the time and date on the computer, as it is stored and it is incrementally updated to tell the time. Since the data



is held, the time and date can be taken from other programs to use from the main computer. This is helpful for software that has night modes that turn on or off with the time. The flip flop works by lining up a few flip flops, then storing them like bits. They are then taken and read like one would read bits to get the specific year of the decade.

A frequency divider is another application of flip-flops. This specific one is used for taking a frequency and dividing it in half. This is most used for things like radio broadcasting



and satellite television. If two sounds are played at the same radio frequency, the tend to overlap and sound bad. This is remedied by them being cut in half. This flip flop works by taking its own output and putting it into its input, creating a cycle of cutting a frequency in half. This continues on for as many frequencies there needs to be.

Flip flops are important because they help us with storing data. Without the ability to store data, we wouldn't have important parts like RAM inside a computer, and would probably have to live with input output methods forever. Flip flops are an important part of modern technology, and with it we can achieve more than we can without them.

Sources Cited

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