Distinguish, differentiate, compare and explain what is the Difference between Latches and Flip Flops. Comparison and Differences.
Latches and flip flops are the basic elements and these are used to store information. One flip flop and latch can store one bit of data. The main difference between the latches and flip flops is that, a latch checks input continuously and changes the output whenever there is a change in input. But, flip flop is a combination of latch and clock that continuously checks input and changes the output time adjusted by the clock.

Latches and Flip Flops

Both Latches and flip flops are circuit elements wherein the output not only depends on the current inputs, but also depends on the previous input and outputs. The main difference between the latch and flip flop is that a flip flop has a clock signal, whereas a latch does not. Basically, there are four types of latches and flip flops: SR, D, JK and T. The major differences between these types of flip flops and latches are the number of i/ps they have and how they change the states. There are different variations for each type of latches and flip-flops which can enhance their operations.

Difference between Latches and Flip Flops

1. Latches are building blocks of sequential circuits and these can be built from logic gates. Flip flops are also building blocks of sequential circuits. But, these can be built from the latches.
2. Latch continuously checks its inputs and changes its output correspondingly. Flip flop continuously checks its inputs and changes its output correspondingly only at times determined by clocking signal.
3. The latch is sensitive to the duration of the pulse and can send or receive the data when the switch is on. Flipflop is sensitive to a signal change. They can transfer data only at the single instant and data cannot be changed until next signal change. Flip flops are used as a register.
4. Latch is based on the enable function input. Flip-flops works on the basis of clock pulses.
5. Latch is a level triggered, it means that the output of the present state and input of the next state depends on the level that is binary input 1 or 0. Flip Flop is an edge triggered, it means that the output and the next state input changes when there is a change in clock pulse whether it may a +ve or -ve clock pulse.

What is Latch ?

Latches form one class of flip-flops. This class is characterized by the fact that the timing of the output changes is not controlled. Although latches are useful for storing binary information and for the design of asynchronous sequential circuits, they are not practical for use in synchronous sequential circuits.

What is Flip-Flop ?

When latches are used for the memory elements in sequential circuits, a serious difficulty arises. Recall that latches have the property of immediate output responses (i.e., transparency). Because of this the output of a latch cannot be applied directly (or through logic) to the input of the same or another latch when all the latches are triggered by a common clock source. Flip-flops are used to overcome this difficulty.