Abstract

Reversible logic is gaining importance in recent years largely due to its property of low power consumption. It has a wide range of applications which include advance computing, low power CMOS, optical information processing, quantum computing, DNA cryptography and nanotechnology. Reversible gates are the building blocks of quantum computation. This paper presents a novel design of D, JK and T flip-flops using the existing reversible gates. All circuits have been modeled and verified using Verilog and Modelsim. A comparative study in terms of the number of gates, number of garbage outputs and quantum costs is also presented.

References


**Index Terms**

Computer Science

Circuits and Systems

**Keywords**

Reversible logic, Power consumption, CMOS, Nanotechnology, Reversible gates, Flip-flops, Garbage Output.