Implementation of Sequence Generator by the Sequential Elements (D-Flip Flop) of Reversible Gates

Abstract

Power dissipation is a significant factor in the field of today’s electrical or electronic designing. The most promising substitute to these issues is the reversible computing. The reversible circuits do not dissipate energy as much as irreversible circuits. The reversible circuits do not lose information and can also produce unique outputs from the specific inputs and vice versa. So in the view point of designing issues reversible logic is the most important field of research having applications in low power computing, quantum computing, optical computing, and other emerging computing technologies, bioinformatics and nanotechnology based systems. This paper proposes a new reversible gate and its various classical operations. Furthermore negative and positive edge triggered D flip-flop has been represented by using this reversible gate. Afterwards different sequence generators by the sequential elements of reversible gates (SGSERG) have been implemented for the generation of specific sequence. Sequence Generator is a circuit that generates a desired sequence of bits in synchronization with a clock and it is useful in the various fields of real life applications. A comparison has also been made for the D flip flop represented here to the existing D flip flop reported in the literature in terms of
the number of reversible gates, constant input, garbage output and total logical calculation in this paper.

References


Index Terms

Computer Science
Circuits and Systems

Keywords
Reversible Logic reversible gate, garbage, flip-flop, sequence generator, quantum cost,