Green University of Bangladesh

Department of Computer Science and Engineering (CSE)
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Password Security System

Course Title: Digital Logic Design Lab
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Chapter 1

Introduction

1.1 Overview

The password security management system using logic gates and ICs involves creating a combination lock circuit. It uses logic gates, such as AND, OR, and XOR gates, to compare the entered password with the correct combination. An output indicator, like an LED or buzzer, signals whether the password is correct. This simple circuit demonstrates the concept but isn't as secure as modern encryption and hashing algorithms used in real-world systems.

1.2 Motivation

The motivation behind developing a password security management system using logic gates and ICs is to provide a basic understanding of how digital circuits can be utilized for access control. By implementing a combination lock circuit, individuals can gain insight into the principles of logic gates and their application in securing sensitive information. While this simplified system may not be as secure as modern encryption methods, it serves as a starting point for learning about the fundamentals of password protection and circuit design. [**?**].

1.3 Problem Definition

1.3.1 Problem Statement

The problem statement is to design and implement a password security management system using logic gates and ICs. The objective is to create a circuit that allows access only when the correct password is entered. The system should consist of input switches or buttons to enter the password, logic gates to compare the entered password with the correct combination, and an output indicator to signal whether access is granted or denied. The challenge lies in designing the logic circuit to accurately verify the password and ensuring that the system is secure, efficient, and resistant to unauthorized

access or tampering.

1.3.2 Complex Engineering Problem

The following Table 1.1 is Showing the achievement of various attributes. In table the achieved attribute is described below.

Table 1.1: Summary of the attributes touched by the mentioned projects

Name of the P Attributess	**Explain how to address**
P1: Depth of knowledge required	To design and implement a password security management system using logic gates and ICs, a solid understanding of digital circuit design, Boolean logic, and familiarity with various types of logic gates, their truth tables, and their applications is necessary.
P2: Range of conflicting requirements	—-
P3: Depth of analysis required	A basic level of analytical thinking and problem-solving skills is required to analyze the functionality and performance of the password security management system using logic gates and ICs, identify potential issues, and make necessary adjustments for optimization and improvement.
P4: Familiarity of issues	Familiarity with potential issues in password security, such as unauthorized access, password cracking techniques, and vulnerabilities in logic gate circuits, is important to anticipate and address potential security risks in the system.
P5: Extent of applicable codes	—-
P6: Extent of stakeholder involvement and conflicting requirements	—-
P7: Interdependence	—-

1.4 Design Goals/Objectives

Here are the design goals for creating a password security management system using logic gates and ICs, outlined step by step:

1. Access control: The system should allow access only when the correct password is entered, providing a secure means of authentication.

2. Accuracy: The logic circuit should accurately compare the entered password with the correct combination, minimizing false positives or false negatives.

3. Simplicity: The design should be straightforward and easy to understand, allowing individuals to grasp the basic concepts of logic gates and ICs.

4. Reliability: The system should consistently perform as intended, without unexpected failures or malfunctions.

5. Security: While a basic system, it should prioritize basic security measures, such as preventing unauthorized access and protecting sensitive information.

6. Efficiency: The circuit should be efficient in terms of power consumption and response time.

7. Documentation: The system should be well-documented, providing clear instructions on the design, circuit connections, and any other relevant information.

1.5 Application

The application of a password security management system using logic gates and ICs can be in simple access control scenarios, such as securing physical doors or digital devices. It provides a basic level of authentication to restrict unauthorized access. While not as secure as advanced encryption methods, it serves as a learning tool for understanding the principles of logic gates and digital circuitry in password protection. [**?**].