Project Title:

3-Bit Password Checker (Digital Lock)

Student Name:

Oluwapelumi Adewuyi

**Boolean Expression Used:**

**F(A, B, C) = A · B′ · C**

**Truth Table:**

|  |  |  |  |
| --- | --- | --- | --- |
| A | B | C | F(UNCLOCKED) |
| 0 | 0 | 0 | 0 |
| 0 | 1 | 0 | 0 |
| 0 | 1 | 1 | 1 |
| 0 | 0 | 0 | 1 |
| 0 | 0 | 1 | 1 |
| 1 | 1 | 1 | 1 |

**A diagram of a lock

Description automatically generated**

**Brief Description:**

This circuit simulates a basic password-activated lock system using digital logic gates. It uses a NOT gate to invert the B input and a 3-input AND gate to evaluate the condition A = 1, B = 0, and C = 1. The “Unlocked” output only goes high when the exact binary input 101 is entered.