# RISC-V TALENT DEVELOPMENT PROGRAM - 2025

Powered by Samsung Semiconductor India Research(**SSIR)** along with VLSI System Design(**VSD)**

## TITLE OF PROJECT : Digital Lock System


## Submitted by,

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## Contents

# 1.Overview

The **Digital Lock System** is an embedded security project that uses a 4-bit password to control access. The system:

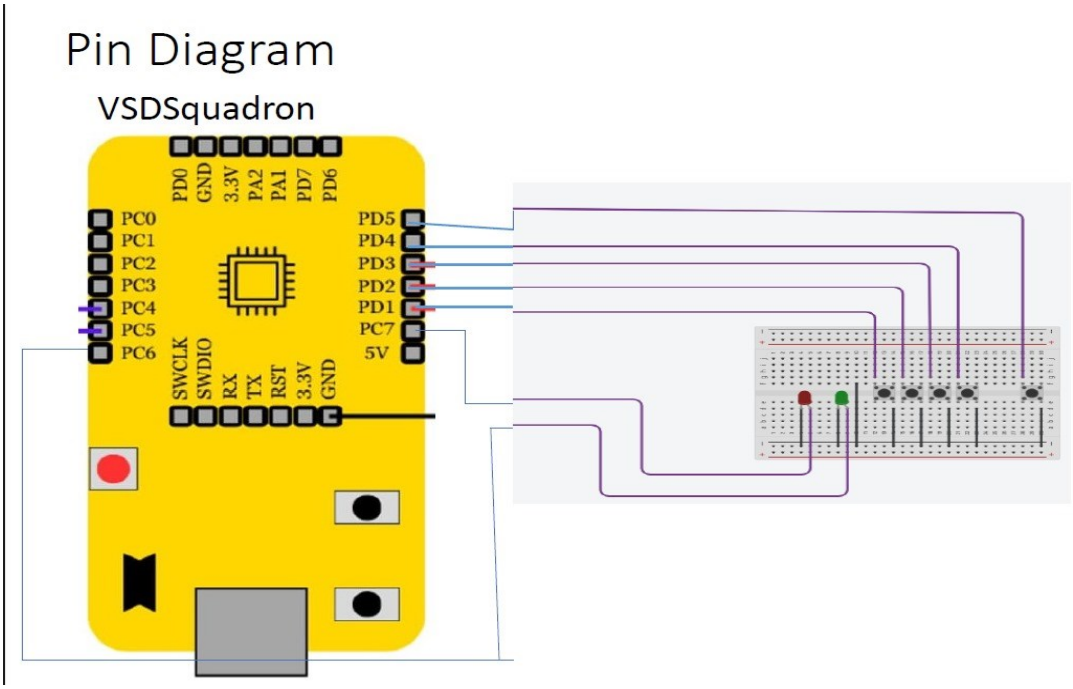
- Takes password input from 4 push buttons.
- Verifies the entered password against a predefined password (1010).
- Unlocks (Green LED ON**)** if the password is correct.
- Locks (Red LED ON) if the password is incorrect.
- Locks permanently after **three failed attempts** (requires reset to unlock).
  User enters a 4-bit password using push buttons.
  Press the "Enter" button to submit the password.
  The system compares the input with the stored password.

  If correct → Green LED turns ON, Red LED remains OFF, If incorrect → Red LED turns ON, After 3 incorrect attempts, the system locks permanently, To reset the system, use the built-in reset button on the VSDSquadron Mini board.

# 2.Components Required to build Smart Door:

- VSDSquadron Mini Board
- 4 Push Buttons (PD1-PD4) – Used for entering the 4-bit password.
- 1 Enter Button (PD5)
- 2 LEDs (PC6, PC7)
- Green LED (PC6) → Unlock indicator
- Red LED (PC7) → Lock indicator

# 3. Pinout Diagram



# 4.Table of Pin Connection

| VSDSquadron mini board \| Hardware Connections | |
|---|---|
| GND | Led cathode, Switch(1,2,3,4,5) cathode |
| PD1 | Switch 1 anode |
| PD2 | Switch 2 anode |
| PD3 | Switch 3 anode |
| PD4 | Switch 4 anode |
| PD5 | Submit password |
| Pull-up-Resistor | 10kohm |
| PC7 | Red led (LOCKED) |
| PC6 | Green Led(Unlocked) |