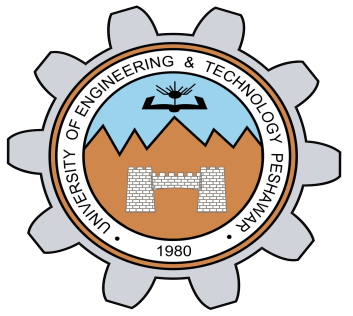
**PROJECT PROPOSAL**



**CSE-308L**

**Digital System Design**

**Group Members:**

**Omer Khan (22PWCSE2130)**

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**Section: B**

“On my honor , as student of University of Engineering and Technology, I have neither given nor received unauthorized assistance on this academic work”

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: May 18, 2025

**Submitted To: Engr. Shahzada Fahim Jan**

**Department of Computer Systems Engineering University of Engineering and Technology**

**Project Proposal: Elevator Controller**

**PROJECT TITLE:**

Design and Implementation of an Elevator Controller Using Verilog HDL

**OBJECTIVE:**

To design a digital elevator controller in Verilog that simulates the behavior of a basic multi-floor elevator system, including floor selection, door control, and movement direction logic.

**SCOPE:**

* Supports 4 floors (Floor 0 to Floor 3)
* Button inputs for each floor (inside the elevator)
* LED/Display outputs to indicate:
  + Current floor
  + Direction (Up/Down)
  + Door status (Open/Closed)
* Floor requests are served in FIFO or priority-based order
* Can be simulated in ModelSim, Vivado, or on FPGA (like Mimas V2)

**MODULES TO BE DESIGNED:**

1. **Floor Request Handler** – Stores and updates floor button requests.
2. **FSM (Finite State Machine)** – Controls elevator states:
   * Idle
   * Moving Up
   * Moving Down
   * Door Opening/Closing
3. **Direction Controller** – Determines up/down based on requests.
4. **Debouncer (Optional)** – To handle button input glitches.
5. **Display/LED Module** – Shows current floor and status.

**INPUT SIGNALS:**

* clk: System clock
* rst: Reset
* floor\_buttons[3:0]: Inputs from buttons (1 per floor)

**OUTPUT SIGNALS:**

* current\_floor[1:0]: Current floor number
* moving\_up, moving\_down: Direction indicators
* door\_open: Door status indicator

**DEVELOPMENT TOOLS:**

* **HDL**: Verilog
* **Simulation**: ModelSim / Vivado Simulator
* **Hardware**: Mimas V2 FPGA (or equivalent, optional)

**APPLICATIONS:**

* Digital design education
* Real-world automation systems
* Embedded system project practice

**Expected Output:**

* Fully functional elevator simulation
* Smooth transition between floors
* Displays and signals indicating status clearly