

Smart Classroom: System Architecture Overview

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1 System Block Definition Diagram

The system's Block Definition Diagram of the smart classroom project is illustrated in Figure 1.

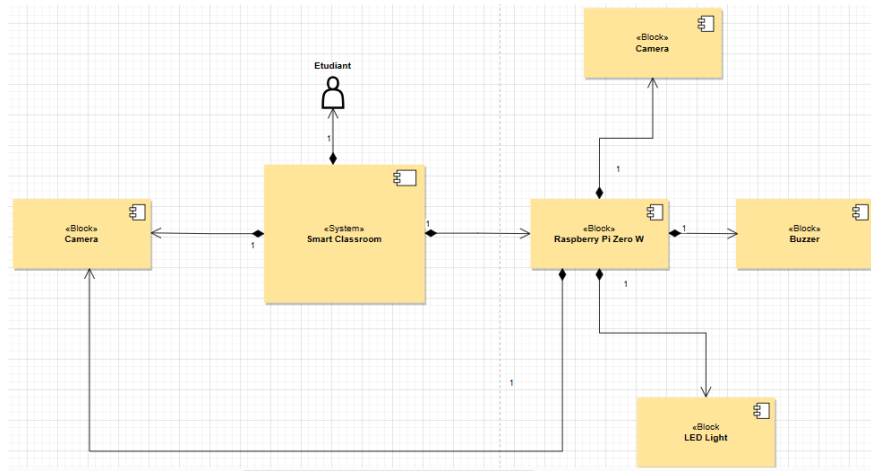


Figure 1: System Block Definition Diagram

- **Camera:** Installed on the ceiling of the classroom, it records and saves the session.
- **Raspberry Pi:** Installed on the door frame and connected to a camera for capturing faces and performing facial recognition.
- **Buzzer:** Connected to the Raspberry Pi; emits sound in case of errors, such as failed facial recognition, with different sounds for successful recognition.
- **LED:** Connected to the Raspberry Pi; indicates successful or unsuccessful facial recognition through red or green lights.

2 Raspberry Pi Block Definition Diagram

To provide more details, a Block Definition Diagram for the Raspberry Pi is presented in Figure 2.

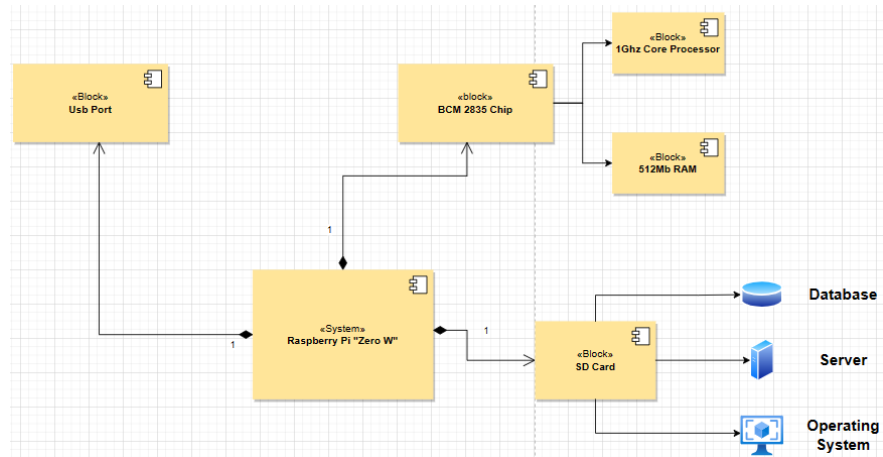


Figure 2: Raspberry Pi Block Definition Diagram

- **USB port:** Allows connection to a computer for programming the Raspberry Pi.
- **Core processor:** Serves as the central processing unit (CPU), executing instructions and performing calculations.
- **RAM:** Random Access Memory provides temporary storage for actively used or imminently needed data.
- **BCP chip:** Broadcom BCM283x series SoC processor; integrates essential components for the Raspberry Pi.
- **SD card:** Primary storage medium for the Raspberry Pi, storing the OS, software, user data, and necessary files.