Development of a Smart IoT Health Monitoring System

This chapter details the necessary steps to achieve the objective of developing a smart IoT health monitoring system, which includes both an Android application and an external wireless sensor network device. The Incremental Software Development methodology has been chosen for this project due to its simplicity and its capability to deliver functional products at each phase. This methodology also encourages user participation throughout the development process, ensuring that the system meets user needs effectively.

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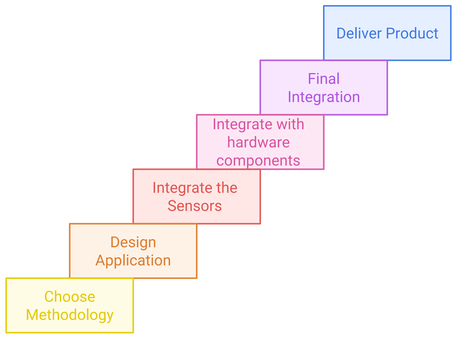

Methodology

The Incremental Software Development methodology allows for the gradual development of the system, where each increment adds functional features. This approach not only simplifies the development process but also facilitates continuous feedback from users, which is crucial for refining the system to better meet their needs.

Hardware Implementation

In addition to software development, careful consideration was given to hardware implementation. This includes:

- **Component Selection**: Choosing the right sensors and devices that are compatible with the IoT framework.
- **Power Supply Design**: Ensuring that the system is energy-efficient and can operate reliably over extended periods.

Information Gathering and Analysis

To inform the development of the proposed emergency application, a comprehensive information gathering and analysis process was conducted. This included:

- **Face-to-Face Interviews**: Engaging with potential users to understand their needs and expectations.
- **Brainstorming Sessions**: Collaborating with stakeholders to generate ideas and solutions.
- **Review of Existing Research**: Analyzing current literature on emergency alerts to identify best practices and gaps in existing systems.

Critical Sections Addressed

This chapter thoroughly addresses several critical sections essential for the successful development of the smart IoT health monitoring system, including:

- **Requirement Specification**: Clearly defining what the system needs to achieve.
- **System Analysis**: Evaluating the system's architecture and functionality.
- **Hardware Implementation**: Detailing the physical components and their integration.
- **Power Supply Design**: Outlining how the system will be powered and managed.

Acronyms Used

To streamline the discussion throughout this chapter, the following acronyms have been frequently used:

- **IoT**: Internet of Things
- **Android**: A mobile operating system based on a modified version of the Linux kernel.
- **API**: Application Programming Interface
- **UI**: User Interface

By following these structured steps and methodologies, the development of the smart IoT health monitoring system aims to create a robust, user-friendly application that effectively meets the needs of its users.

This chapter shows the implementation details of the Project. It will also show the steps required to achieve the complete project. In this section all the implementation details are presented including the software and hardware used. Dart programming language, Embedded C, Python, Flutter framework and JavaScript are the main software tools used in implementing this project. The two major components of the system deliverables are the android mobile application and the controller box stand.

Project Implementation Overview