DEPARTMENT OF APEX INSTITUTE OF TECHNOLOGY

PROJECT PROPOSAL

1. Project Title: -

Build a Cloud-based Temperature Monitoring system IOT using Spartan3an Starter Kit

2. Project Scope: -

The proposed research project aims to design and implement a Cloud-based Temperature Monitoring System utilizing the Spartan-3an Starter Kit for Internet of Things (IoT) applications. The primary objective is to develop a reliable and scalable system that can monitor and report temperature data in real-time, leveraging the capabilities of FPGA-based Spartan-3an hardware. The main objective of this research is to focus on how the FPGA-based hardware resources can be accessed from anywhere. The maintenance cost of servers can be reduced by building a cloud-based monitoring system. The data losses are avoided with the help of this technique.

The project scope encompasses several key components:

1. Hardware Selection and Integration: The research will involve selecting appropriate hardware components, including sensors for temperature measurement, microcontrollers, and communication modules compatible with the Spartan3an Starter Kit. These components will be integrated to form the physical infrastructure of the temperature monitoring system.

2. Software Development: The project will involve developing software solutions for data acquisition, processing, and transmission. This includes designing firmware for the microcontroller to interface with the temperature sensors, as well as implementing communication protocols for transmitting data to the cloud platform.

3. Cloud Platform Development: A cloud-based platform will be developed to receive, store, and analyze temperature data from IoT devices. This platform will provide features such as real-time monitoring, data visualization, and alerting mechanisms for detecting temperature anomalies.

4. User Interface Design: The research will include designing user interfaces for accessing and interacting with the temperature monitoring system. This may involve developing web-based dashboards, mobile applications, or desktop applications to enable users to view temperature data, configure settings, and receive notifications.

5. Evaluation and Testing: The performance and effectiveness of the temperature monitoring system will be evaluated through rigorous testing in simulated and real-world environments. This includes assessing the accuracy of temperature measurements, the reliability of data transmission, and the scalability of the cloud infrastructure.

6. Documentation and Dissemination: The project outcomes, including hardware schematics, software code, and technical documentation, will be documented comprehensively. The research findings will be disseminated through research papers, conference presentations, and open-access publications to contribute to the body of knowledge in IoT and cloud-based monitoring systems.

Overall, this research project aims to develop an innovative and practical solution for temperature monitoring using IoT technology and cloud computing, leveraging the capabilities of the Spartan3an Starter Kit for hardware prototyping and experimentation.

3. Requirements: -

- **Hardware Requirements**

1. Spartan3AN FPGA starter kit
2. LM35 Temperature Sensor
3. LCD module (2*16)

- **Software Requirements**

1. VHDL Development Environment
2. Cloud Platforms
3. IDE for Controller Module Programming

STUDENTS DETAILS

Name	UID	Signature
Hitashi	22BDO10039	
Km Ayushi	22BDO10055	

APPROVAL AND AUTHORITY TO PROCEED

We approve the project as described above, and authorize the team to proceed.

Name	Title	Signature (With Date)
Geetanjali Pandey(E16323)	**Supervisior**	
Jaswinder Singh (E15978)	**Evaluation Panelist**	
Komal Mehta (E15888)	**Evaluation Panelist**	