FINAL YEAR PROJECT (FYP)

# PROPOSAL DOCUMENT

# “ GCT CONNECT ”

**Department of Computer Science & Information Technology, Govt. Graduate College Township, Lahore**

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**Department of Computer Science & Information Technology, Govt. Graduate College Township, Lahore**

1. **Introduction** 
   1. **Project Title**

“ GCT CONNECT ”

**1.2 Project Overview Statement**

For our final year project, we are developing a web application designed to enhance communication within our college community. This platform will serve as a centralized hub where students, faculty, and staff can connect seamlessly, fostering collaboration and interaction. The application will feature real-time updates and notifications for important announcements, ensuring that every member stays informed about events, schedules, and news. By integrating elements of social networking, our aim is to create a vibrant and engaging digital space that strengthens relationships and streamlines communication within the college environment.  
  
  
  
 The web application enhances communication by enabling students, teachers, and staff to connect, share updates, and address queries seamlessly within a centralized platform.

 Incorporating social networking features, it fosters collaboration, academic support, and stronger relationships across the college community.

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| **Project Title:** GCT CONNECT |
| **Group Leader:** Talha Mahboob |
| **PROJECT MEMBERS**   |  |  |  |  | | --- | --- | --- | --- | | **NAME** | **ROLL NO** | **EMAIL** | **SIGNATURE** | | Talha Mahboob  (Team Leader) | 21-3846 | wasadasad323@gmail.com |  | | Muhammd Awais | 21-3843 |  |  | | Abdul Majid | 21-3832 | abdulmajidrazaq02@gmail.com |  | |  |  |  |  |   **Project Goal:**  To develop a user-friendly web application that fosters seamless communication and collaboration among college members by providing real-time updates, a social networking platform, and a centralized digital hub to enhance engagement, support academic interaction, and ensure timely dissemination of information. |
| **Project Success criteria:**  The success of this project will be determined by the seamless implementation of the following frameworks, tools, and languages. The frameworks include ASP.NET 8 MVC and ASP.NET Web API. The tools used are SQL Server Management Studio, Visual Studio 2022 Community Edition, and Swagger. The development will incorporate C#, HTML, CSS, and JavaScript/jQuery. Meeting these criteria will ensure the creation of a functional and user-friendly web application that fulfills the communication and networking needs of the college community. |
| **Assumptions, Risks, and Obstacles:**  1\_ Assumes all users have internet access and basic computer literacy; risks include security concerns and potential delays.  2\_ Obstacles may include limited access to data and time constraints, affecting project progress |

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| **Type of project:** Social Network And Management |
| **Target End users:** Every member in Government College Township |
| **Platform:** Visual Studio 2022 Community Version |
| **Suggested Project Supervisor:** Sir Imran |
| **Date:** 3rd March 2025 |

**1.3 Project Goals & Objectives**

**Goals :**

To develop a user-friendly web application that enhances communication and collaboration among college members, providing real-time updates, announcements, and a social networking platform.

**Objectives :**

* To create a centralized platform for students, faculty, and staff to access important announcements and updates.
* To facilitate seamless communication and collaboration through a user-friendly interface
* Accessible to all users at no cost

# ****1.4 Tools and Technologies Used with Reasoning****

GCTConnect is designed using **modern tools and technologies** that ensure **scalability, efficiency, and security**. Each technology is carefully chosen based on **performance, compatibility, and ease of integration**. Below is a breakdown of the **tools and technologies used**, along with the **reasoning behind their selection**.

## ****1.4.1 Backend Development****

### ****ASP.NET 8 MVC & Web API****

✔ **Reasoning:**

* Uses the **Model-View-Controller (MVC) pattern** to ensure **modular and scalable application design**.
* Provides **built-in security features**, including **authentication & authorization**.
* Allows **seamless API integration** for communication between frontend and backend.
* Highly **optimized for high-performance applications** with .NET Core improvements.

### ****C# (C-Sharp)****

✔ **Reasoning:**

* A **robust, object-oriented language** ideal for **backend development**.
* **High-performance execution** compared to scripting languages.
* Works seamlessly with **ASP.NET, SQL Server, and cloud deployments**.
* Offers **strong community support** and **continuous updates from Microsoft**.

## ****1.4.2 Frontend Development****

### ****HTML, CSS, JavaScript, jQuery****

✔ **Reasoning:**

* **HTML & CSS** provide the **structure and design** for the user interface.
* **JavaScript & jQuery** improve **interactivity, responsiveness, and dynamic content loading**.
* **Cross-browser compatibility**, ensuring smooth usage across devices.
* **Lightweight, fast-loading pages**, improving the user experience.

## ****1.4.3 Database Management****

### ****Microsoft SQL Server****

✔ **Reasoning:**

* A **relational database management system (RDBMS)** that ensures **structured data storage**.
* Supports **ACID (Atomicity, Consistency, Isolation, Durability) properties** for **data integrity**.
* **Optimized for large-scale applications**, ensuring **fast query execution**.
* Provides **built-in security features** such as **encryption and role-based access control (RBAC)**.

## ****1.4.4 Real-Time Communication****

### ****SignalR (Real-Time Messaging Framework)****

✔ **Reasoning:**

* Enables **real-time communication for messaging and notifications**.
* Supports **bi-directional communication between the client and server**.
* Reduces **latency issues** in the chat system, ensuring **instant message delivery**.
* Highly **scalable** for handling large numbers of concurrent users.

## ****1.4.5 AI-Powered Features****

### ****AI Chatbot (Natural Language Processing - NLP)****

✔ **Reasoning:**

* Provides **real-time assistance for students and faculty**.
* Uses **NLP (Natural Language Processing) algorithms** to interpret **user queries**.
* Reduces the **workload of administrative staff** by handling **frequently asked questions (FAQs)**.
* **Continuously learns and improves responses** based on previous interactions.

## ****1.4.6 Version Control & Collaboration****

### ****GitHub (Version Control System)****

✔ **Reasoning:**

* Enables **collaborative development** with **version control**.
* Ensures **safe and secure code storage**, reducing the risk of data loss.
* Provides **branching and merging features**, allowing developers to test and deploy updates efficiently.
* Helps in **tracking changes, debugging, and issue resolution**.

## ****1.4.7 Development & Debugging Tools****

### ****Microsoft Visual Studio 2022 Community Edition****

✔ **Reasoning:**

* **Integrated Development Environment (IDE)** designed for **ASP.NET, C#, and SQL Server development**.
* Offers **powerful debugging tools** to identify and resolve issues quickly.
* Provides **built-in database management**, making development easier.
* Supports **multiple extensions** to enhance productivity and efficiency.

## ****1.4.8 Deployment & Hosting****

### ****Cloud-Based or On-Premise Hosting****

✔ **Reasoning:**

* Ensures **24/7 availability of GCTConnect** for students and faculty.
* Supports **automatic scaling & load balancing** to handle high traffic.
* Provides **data backups & disaster recovery mechanisms** to prevent data loss.
* Ensures **secure data transmission & encryption** for user privacy.

## ****Conclusion****

Each tool and technology used in GCTConnect was selected to **optimize performance, security, and user experience**. The combination of **ASP.NET 8, C#, Microsoft SQL Server, SignalR, AI Chatbot, and GitHub** ensures that the system is **robust, scalable, and efficient** for real-time communication and academic collaboration.