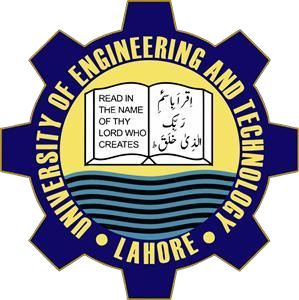
**Project** **Proposal**



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# Department of Computer Science

# University of Engineering and Technology Lahore, New Campus

**Project Title:**

**EncryptoChat: A Secure Real-Time Chat Application**

**Introduction**:  
EncryptoChat is a web-based chat application designed to provide secure communication between users. It allows users to sign up, log in, search for other users, and exchange messages encrypted with industry-standard ciphers (AES, DES, RSA). The unique feature is real-time cipher switching, enabling users to change encryption methods during a conversation for enhanced security and flexibility.

**Objective**:  
The goal is to create a user-friendly, secure, and functional chat platform using Python and its ecosystem, suitable for learning and demonstrating secure communication principles. The project included advanced concepts like encryption and real-time messaging.

**Problem Statement:**In today’s digital world, privacy and security are critical for online communication. Many chat applications lack transparency in their encryption methods or don’t allow users to control how their messages are secured. Existing solutions are often complex, proprietary, or require significant setup, making them inaccessible to beginners or small-scale users. There’s a need for a simple, open-source chat app that:

* Provides robust encryption (AES, DES, RSA).
* Allows users to switch ciphers dynamically.
* Stores user data and messages securely.

EncryptoChat addresses these needs by offering a secure, customizable, and beginner-friendly chat platform built with Python.

**Features:**EncryptoChat includes the following core features:

* **User Authentication:** 
  + **Sign-Up**
  + **Login**
  + **Logout**
* **User Search:**
* **Secure Messaging:**
* **Real-Time Cipher Switching:**
* **Data Storage:**

**Technical Requirements:**

**Software**:

* **Operating System**: Windows
* **Development Environment**:
  + **Visual Studio Code**
  + **Python 3.10.1**
* **Libraries**:
  + Flask
  + flask-socketio
  + pycryptodome
  + passlib
  + sqlite3
* **Frontend**:
  + HTML5, Bootstrap 4
  + JavaScript with Socket.IO
* **Browser**: Chrome, Brave

**Database**:

* SQLite (file-based).

**Conclusion:**

EncryptoChat is an exciting project that combines web development, database management, and cybersecurity in a beginner-friendly package. By using Python, Flask, and standard encryption algorithms, it provides a practical learning experience and a functional chat tool. The project ensures rapid development while covering all core features. With clear guidance, the project will succeed in delivering a secure, interactive chat application.