TRIBHUWAN UNIVERSITY
INSTITUTE OF ENGINEERING
CENTRAL CAMPUS, PULCHOWK

PROJECT PROPOSAL
FOR
OBJECT ORIENTED PROGRAMMING

Submitted To:
Department of Electronics and Computer Engineering

Submitted By:
Team Members   **Signature**
-Ranjan Shrestha(074BEX435)
-Ujjwal Pokharel(074BEX447)
-Sailesh Shrestha(074BEX437)

<u>ACKNOWLEDGEMENT</u>

We accept wholeheartedly that the concept of object oriented programming is a revolution in the field of software development taking over the procedure oriented programming in many aspects. And, C++ was one of the primary languages to implement this brilliant technique and as it was created to be the extended version of C, we could blend the powerful programming features provided by C with the OOP technique to make it arguably better in many ways for larger application development.

With the inclusion of object oriented programming through C++ in our curriculum, we received the opportunity to learn about these modern concepts of programming under the mentorship of our sir Mr. Daya Sagar Baral. So, to explore deeper real-world knowledge on C++ and OOP and actually make something out of it, we make ourselves ready to do this project and develop our own application.

We propose to build a <u>multi-featured socket chat</u>, which we'll be describing thoroughly in this document.

<div align="center">

<u>Team members</u>
Ranjan Shrestha (074BEX435)
Ujjwal Pokharel (074BEX447)
Sailesh Shrestha (074BEX437)

</div>

TABLE OF CONTENTS

1.INTRODUCTION

1.1 Introduction to Object Oriented Programming Paradigm

Object Oriented Programming(OOP) is the modern technique of program organization and development that modularizes related data and functions into user-defined data types 'classes' and allows classes to create their instances i.e. objects, along with different powerful features to make large program development more organized,faster and easier to maintain. Some of the important object oriented programming languages are C++, Smalltalk, Simula(earliest OOPL), Python, JAVA, etc. OOP overcomes the drawbacks observed during application development in Procedure Oriented Languages like C, BASIC,etc.

1.11 Striking Features of OOP Languages
- Emphasis is on data rather than procedure.
- Programs are divided into objects.
- Data structures are designed such that they characterize the objects.
- Functions that operate on the data of an object are tied together in the data structure.
- Data is hidden and cannot be accessed by external functions.
- Objects may communicate through functions.
- New data and functions can be added whenever necessary.
- Follows Bottom-Up approach in program design.

1.12 Basic Concept of Object Oriented Programming Languages
- Objects
- Classes
- Data abstraction and encapsulation
- Inheritance
- Polymorphism
- Dynamic Binding
- Message Passing

1.13 Benefits of OOP over POP
- Elimination of redundant code using inheritance
- Saving of development time and higher productivity through standard building modules
- Secure programs using data hiding
- Possible to have multiple instances of an object to exist without interference
- Easy to partition the work in a project
- OOP based systems can be easily upgraded from small to large systems

1.2 A BRIEF INTRODUCTION TO C++
- An OOP language developed as a 'superset' of C

- Developed by Bjarne Stroustrup at AT&T Bell Laboratories in Murray Hill,, New Jersey, USA
- Stroustrup combined the best of both C and Simula67 to create C++.
- Initially called 'C with classes'

1.3 INTRODUCTION TO OUR PROJECT

The project we'll be working on is a Multi-featured Socket Chat, that creates a network for authenticated users to communicate in a pair or in a group(through chat rooms) and allows file transfer along with Morse Code Communication Feature. A proper database will be used to store the data of the software and a registration feature is also available for the first-time users. Only the registered users will be able to access the features inside it. We propose to include Morse Code Communication feature as a fun and educational feature. An inbuilt converter will be able to encode plain text into Morse Code and decode Morse Code into plain text. Also, a Morse Code to Text table will be provided for convenience. As another fun feature of our project, the users communicating with each other can challenge each other at simple good-old Tic-Tac-Toe game. When no other users are available, the lone user can play Tic-Tac-Toe with the AI . That's our proposed program overview.

2. OBJECTIVES OF OUR PROJECT

For the Users

- To provide a secure well featured communication interface for users communicating over a network(local)
- To allow users to communicate in Morse Code Format along with the encoding and decoding features
- To provide users with the fun feature of playing a simple mind game against each other or with the AI

For us:

- To understand the essence of object oriented programming and powerful features of C++
- To get familiar with network programming using sockets (UNIX)
- To get familiar with GUI programming
- To get familiar with Morse Code Communication and learn as we build upon it
- To implement the algorithms for game development and auto game play by the computer
- To learn connecting the program with the database

3. EXISTING SYSTEM

As far as we've seen, chat software in C++ exist but with the rise of other modern languages, those software don't quite come into the light. Also, chatting, file transfer and gaming are implemented as different programs. And,since some of our features are quite unique in our program, it's going to be newer than the existing in many ways.

4. PROPOSED SYSTEM

a. Description

Since all of our proposed software's features have already been mentioned, we find that our proposed system is definitely an extension to the existing system implementing some fun and educational features.

b. Block Diagram
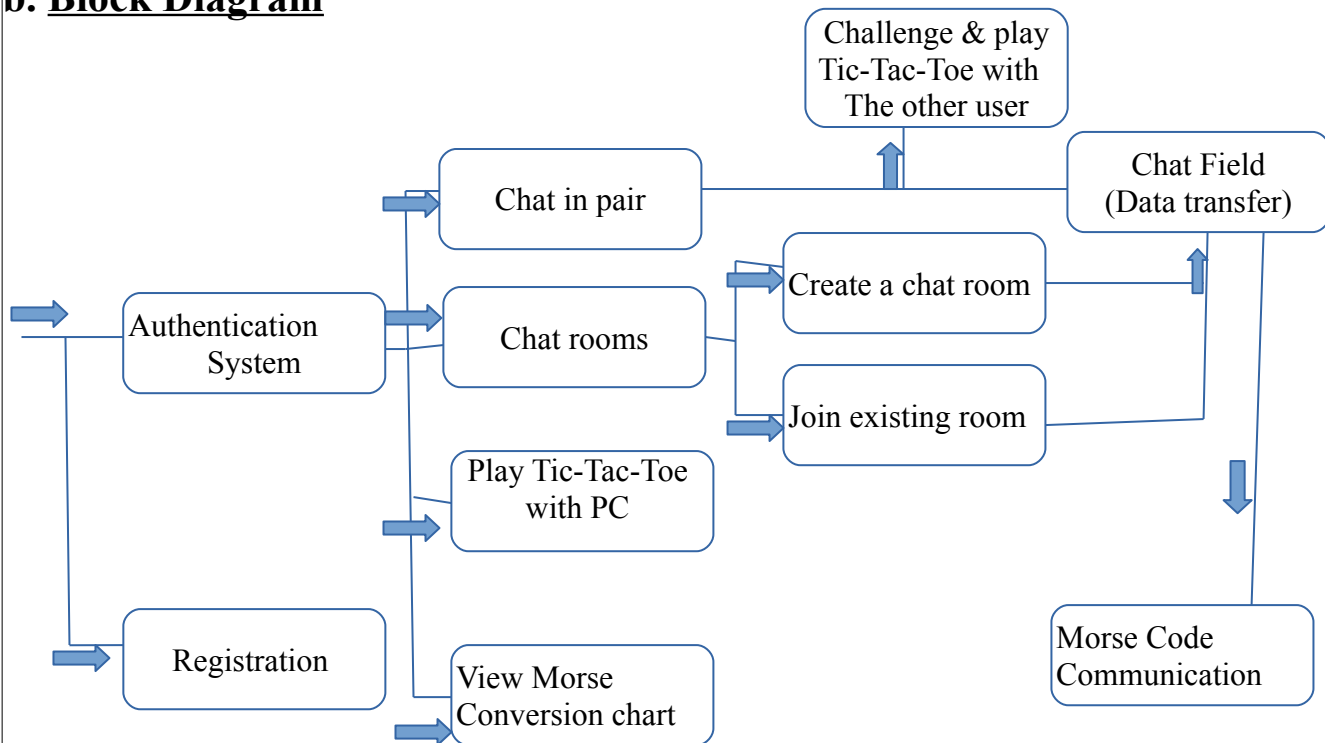
5. __METHODOLOGY__

For the implementation of our project, as required, we will be using the following resources.

- C++ for entire coding
- GTKMM(A C++ Interface of GTK+) for the Graphical User Interface
- TCP/IP Sockets for Networking
- MySQL Database for Data Management
- + possibly some other resources to explore

6. __PROJECT SCOPE__

With its major limitation being limited to a Local Area Network only, we can admit it may not be very practical with the communication. But in a small area network, file transfers can be very handy and chatting in it can still be fun, especially with the Morse Code Communication feature and the game. Also, it can be a fun place to develop our skills on Morse Code and challenge each other at it.

7. __PROJECT SCHEDULE__

With many events coming ahead, we plan to go on with its development steadily and part by part.

We'll be handing each other specific researches to do and tasks to complete. Also, we'll be learning the libraries required for it parallelly.

- ◆ Simple Layout Development with gtkmm
- ◆ Study on TCP Socket chat
- ◆ File transfer in TCP
- ◆ Learning to create Tic-Tac-Toe and also the Min-Max Algorithm for AI
- ◆ Morse Code Conversion Study and implementation
- ◆ Assembling the programs into a unit

Time for the project will be allocated soon regularly ,as other projects(esp. Locus) are to be developed in a shorter deadline. The assembly of these programs into a single unit will be done after the Locus and we will be trying to complete all other parts before it.

8. __FINAL WORDS__

So, that's all we've included in our proposal ,sir. We expect you to analyze and accept our proposal and also give us tips and suggestions regarding our project. Hope to receive your full co-operation. Thank you.