

A Project Proposal Report on  
**Remote Shell Executor over TCP**

Submitted in Partial Fulfillment of the Requirements for  
The Degree of **Bachelor of Engineering in Information Technology**  
Under Pokhara University

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## **Abstract**

This project implements a Remote Shell Executor using TCP sockets in C++ with the Winsock API. The system allows a client to connect to a remote server over a LAN and send shell commands. The server executes the received commands on the host machine and returns the output to the client. This project demonstrates core networking concepts such as client-server communication, socket programming, command execution, and error handling. The application is designed to handle basic shell commands securely and respond gracefully to invalid inputs or disconnections.

# 1. INTRODUCTION

In modern networks, remote access to systems is essential for control, automation, and maintenance. This project aims to create a lightweight remote shell system over TCP where a client can execute commands on a remote server. By using Winsock in C++, the project provides a hands-on understanding of client-server architecture, command processing, and safe communication over a LAN.

## 2. Project Objectives

These are the following objectives of our project, Remote Shell Executor over TCP:

- The client sends shell commands to the server over a TCP connection.
- The server runs those commands and sends back the output to the client.

## 3.Tools & Platform

- Language: C++
- API: Winsock
- IDE: Visual Studio
- OS: Windows 11

## 4.Key Features

- TCP socket-based communication
- Shell command execution with output transfer
- Graceful error and disconnection handling
- Optional: multi-client support using threads

### Timeline:

Date	Task
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July 4	Client-server communication setup
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July 10	Implement command execution logic
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July 12	Final testing and enhancements
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## **5. Conclusion:**

The Remote Shell Executor is a focused, educational project that explores core network programming principles through a real-world use case. It highlights TCP communication and system command execution while maintaining simplicity and clarity in design.

