

TRIBHUWAN UNIVERSITY

**INSTITUTE OF ENGINEERING**

**PULCHOWK CAMPUS**

**A MINI-PROJECT**

**OF**

**C-PROGRAMMING**

**Submitted By: Submitted To:**

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**Title**

**“Equation Solver, Error Analysis and Matrix Problems” in C**

# Group Members:

This project will be accomplished by:

* **Aman Gupta(074BCT503)**
* **Kritan Banstola (074BCT516)**
* **Prabin Lamichhane (074BCT523)**

# Objectives:

The main objectives regarding our project are as follows:

* To explore the features of C language.
* To be familiar with resource reusability by making user defined header files.
* To make the program to occupy less memory as far as possible.
* To make such a program that makes us able to work in major projects further in future.
* To use different user defined functions, to break a program into many simplified & smaller parts to deal with and to make it easier to understand the codes and debug.
* To get a surface understanding of knowledge about software development.
* To learn to work in a team.

# Introduction

This program is intended to solve linear equations of any number of variables, polynomial equations of any degree, problems related to matrix(determinant, transpose, insverse) ,error analysis for set of data obtained from an experiment, and find the line of best fit by least square fitting.

# Related Works

Most of the features to be included in this program are available on some advanced scientific calculators . Also, many programs with similar objectives have also been developed using different programming languages other than C.

# Methodology

This project would be based on C programming language along with its different libraries. This project is mainly based on use of arrays & functions specialized on their tasks to make it easier to debug and divide tasks among the group members.

For the completion of project, first we will collect necessary materials. We will go through various books of C and other resource materials. As this is our very first project in C in this big scale, we will try to understand the algorithm by surfing through various sites related to programming. We will also do a group discussion to share our ideas and knowledge acquired though different resources.

We had to decide the platform, compiler and IDE to facilitate us and make our coding easier and faster. So, we will be using Code Blocks IDE for windows which uses the GCC Compiler. All the aspects of C like File Handling, functions, arrays, structures, etc. are intended to be used.

After being evaluated positively by the teacher, we will try adding the entire external feature implemented for the program and as well as add new features as possible.

Working in the team of three, the load will be equally shared which will also help us to learn about teamwork.

* The program starts with a main menu containing options as listed below:

1.Solve Equations

2.Error Analysis and Regression

3.Matrix Problems

4.Exit

* If **Solve Equations** is chosen, user is asked to input required parameters to solve equations and the results are displayed.
* If **Error Analysis and Regression** is chosen, user is asked for the data from experiment and results are displayed.
* If **Matrix Problems** is chosen, user is asked to input the required matrix and display its determinant, transpose, and inverse according to need of the user.
* If **Exit** is chosen, the program exits.

(note: some representation and features may vary)

# Block Diagram

Asks For data from the experiment

and display result of error analysis

Asks user to input required parameters to solve equations.

\*\*Main Menu\*\*

1. Solve Equations

2. Error Analysis and Regression

3. Matrix Problems

4. Exit

Ask to input the matrix

Display the result

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Exit the program

Display determinant, inverse and transpose.

# Conclusion

This is our final proposal for our mini-project in C-programming. Hopefully, we will fulfill all the above-mentioned objectives and try to add additional features on this project on time. Any suggestions for the betterment of the project are heartily welcomed.