TRIBHUVAN UNIVERSITY

INSTITUTE OF ENGINEERING

THAPATHALI CAMPUS

Proposal

On

Formula Manager

Submitted By:

Atul Shreewastav (THA077BCT013)

Bidhan Acharya (THA077BCT015)

Nischal Paudel (THA077BCT028)

Yugratna Humagain (THA077BCT047)

Submitted To:

Department of Electronics and Computer Engineering

Thapathali Campus

Kathmandu, Nepal

August, 2021

ABSTRACT

This project is intended to organize some of the basic formulas that are required in our first semester using C. This will enable students to focus on the actual question rather than wasting time searching for formulas. This will help boost productivity of students and also enable them to have a quick recap over all the formulas.

Keywords: C, formula, MinGW, gcc, VS Code

TABLE OF CONTENT

LIST OF FIGURES

LIST OF TABLES

1 INTRODUCTION

“Formula manager” is full package related with all the formula required for the students. As finding a certain formula can get difficult, in general, this program is made to provide the users each and every formula required in the first semester of BCT.

1.1 Background

Formula is an important part of problem-solving in engineering. In some cases, finding a formula for a certain problem can get hectic. In turn when not being able to find certain formula the progress in the problem halts. As there can be multiple formulas for a single problem the task of finding appropriate formulas can be very difficult for students.

1.2 Motivation

When we are stuck at a problem it is human behavior to procrastinate. Procrastination is a damaging trait which involves ignoring an unpleasant, but more important task, in favor of one that is more enjoyable or easier. This app will enable students to enjoy the task of problem solving by letting them have seamless access to the required formulas of their interest.

1.3 Problem Definition

All of us, team members, in some way or the other have experienced the need of one stop solution for referring to formulas for different subjects on the go. It is such a hassle for a student to go and look back for formulas while solving several questions. As an engineering student there are tons and tons of formulas to remember which is not really feasible. This application will help tackle these problems and have better focus on studies.

1.4 Objectives

The main objectives of our project are listed below:

- To develop an application that compiles most of the formulas
- To increase the efficiency of students in solving problems.

2 LITERATURE REVIEW

There is no direct resemblance to our work on the web or other sources but the techniques that we will be using to develop this app are widely using in almost every sectors. File handling, String search within a file, and formulas are the fundamental elements of our project.

2.1 File Handling

In programming, we may require some specific input data to be generated several numbers of times. Sometimes, it is not enough to only display the data on the console. The data to be displayed may be exceptionally large, and only a limited amount of data can be displayed on the console, and since the memory is volatile, it is impossible to recover the programmatically generated data repeatedly. However, if we need to do so, we may store it onto the local file system which is volatile and can be accessed every time. Here, comes the need of file handling in C.

File handling in C enables us to create, update, read, and delete the files stored on the local file system through our C program. The following operations can be performed on a file.

1. Creation of the new file
2. Opening an existing file
3. Reading from the file
4. Writing to the file
5. Deleting the file

2.1.1 Functions for file handling

There are many functions in the C library to open, read, write, search, and close the file. A list of file functions are given below: [1]

Table 2-1: Some Functions used for File Handling in C

No.	Function	Description
1	fopen()	opens new or existing file
2	fprintf()	write data into the file
3	fscanf()	reads data from the file
4	fputc()	writes a character into the file
5	fgetc()	reads a character from file
6	fclose()	closes the file
7	fseek()	sets the file pointer to given position
8	fputw()	writes an integer to file
9	fgetw()	reads an integer from file
10	ftell()	returns current position
11	rewind()	sets the file pointer to the beginning of the file

2.2 String Search within a text file

For this we will be using the built-in functions provided in the MinGW compiler. Some headers like <stdio.h>, <string.h> and <stdlib.h> will be used. The functions of file handling are included in the <stdlib.h> which play significant role in linking the files with the program so that we can make changes to it of our desire.

2.3 Formulas

The formulas are the key element of our project. Formulas are a mathematical relationship or rule expressed in symbols among different parameters used to solve problems. These formulas took years of challenging work of scientists, scholars, mathematicians, professors to be deduced and are widely used in to solve various problems in different fields. Being able to access it easily will really boost up the efficiency of learning that topic and help to approach a problem logically.

3 PROPOSED SYSTEM ARCHITECTURE

Formula Manager is a Command Line Interface based app i.e., there are no GUI components and inputs will be given from the keyboard and output will be displayed to the Command Line.

3.1 Formula Manger

Formula manager is a simple console application so user directly inputs from the keyboard a keyword related to the formula user is looking for. The app runs a match through the formulas and displays matched results on the console. [2] [3]

3.1.1 Block Diagram

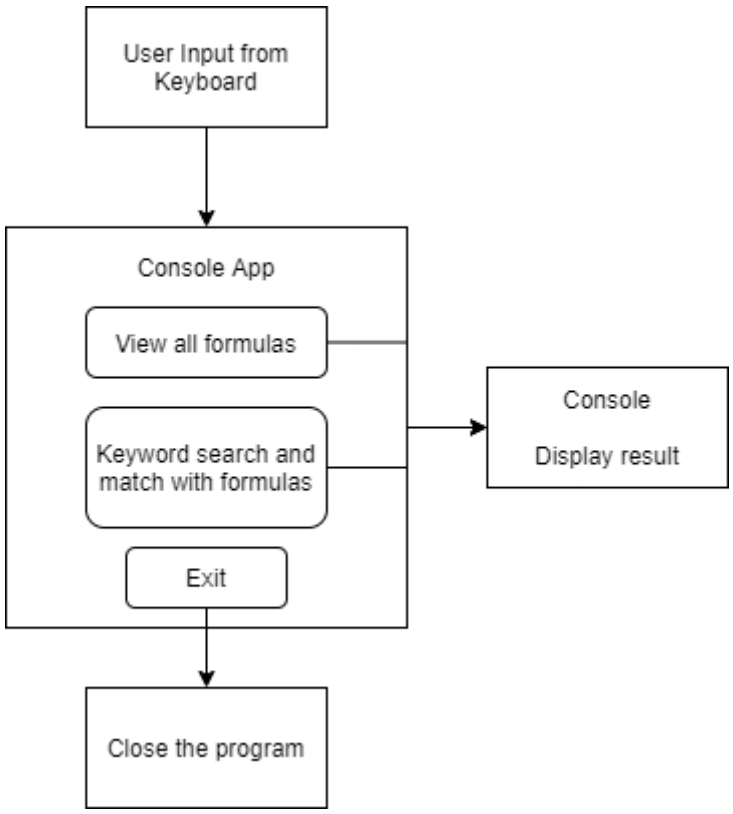


Figure 3-1: Block Diagram

3.1.2 Data Flow Diagram

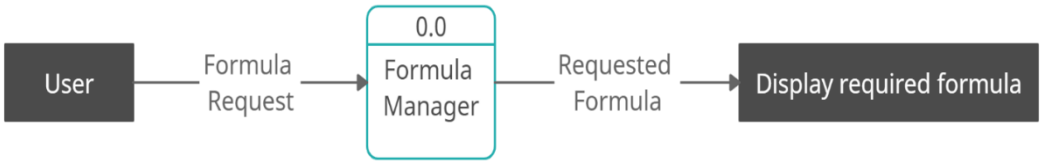


Figure 3-2: Data Flow Diagram

3.2 Tools and Environment

- Visual Studio Code
- MinGW Compiler
  - GCC-6.3.0-1
  - GCC-8.1.0-x86_64-posix-she-rev0
  - GCC-8.1.0-i686-posix-dwarf-rev0
- C Language (Standard: C17)

4 METHODOLOGY

Formula manager works on the principle of search and display. Numbers of formula are stored across different files sorted on the basis of subjects. The subjects are:

- Engineering Mathematics
- Engineering Physics
- Applied Mechanics
- Basic Electrical Engineering

We've tried to include most of the formulas. This has been done with the help of predefined built-in functions provided in the C library. <stdio.h>, <conio.h>, <stdlib.h>, <math.h>, & <graphics.h>

4.1 Homepage

The Home screen will have following options:

1. View Formulas
2. Search for Formulas
3. Exit

4.1.1 View Formulas

This option can be used to have an overview of all the formulas in a list view manner arranged on the basis of subjects.

4.1.2 Search Formulas

This option can be used to search for a specific formula or list of formulas by entering a keyword. The program then searches the database, matches the keyword and returns formula or formulas as per the match

4.1.3 Exit

This option simply closes the program

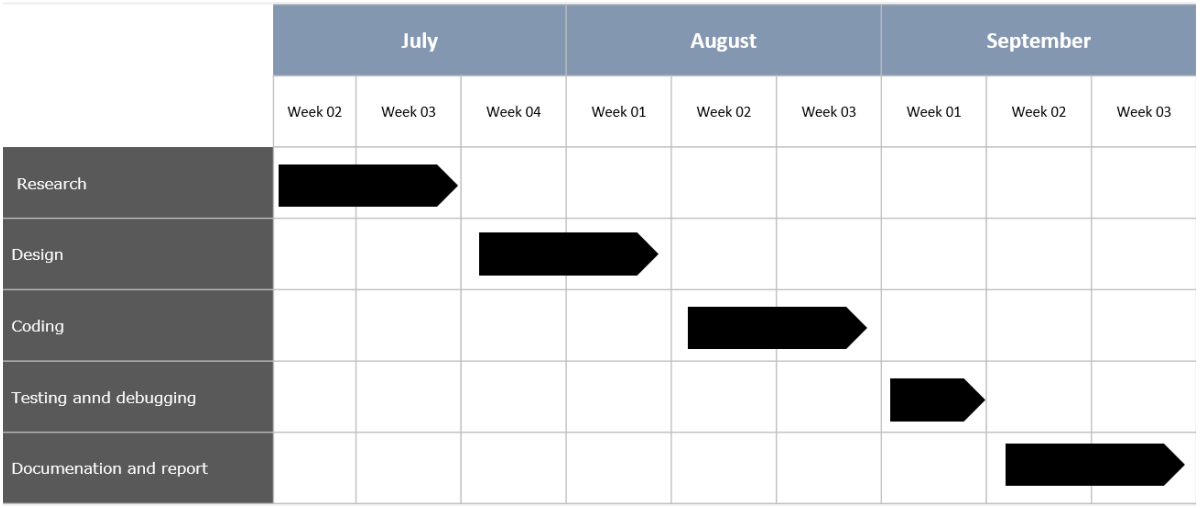
5 SCOPE AND APPLICATIONS

Our app “Formula Manager” has a wide range scope in the field of engineering, mathematics and other fields related to applied sciences. Its usage can range from educational purposes to informational purpose. The project helps to keep record of many formulas. Overall, the formula manager has a lot of scope not just for the present but even in long term as formulas are something that has been and will keep bothering students, teacher, and researchers while dealing with problems.

6 TIME ESTIMATION

A Gantt Chart with Project Activities and Timeline [4]

Table 6-1: Gantt Chart



7 FEASIBILITY ANALYSIS

7.1 Economic Feasibility

This program does not cost much as it is a college project done by the students to get more familiar and efficient in their coding skills with C programming language. All the tools, libraries, and services (Creately, MS teams, etc.) used for the development are available free of cost.

7.2 Technical Feasibility

This application is developed with the help of standard C libraries and the feature of file handling that has been provided by C. Hence, the program is technically feasible.

7.3 Operational Feasibility

This application requires 64-bit operating system with a compatible compiler for C.

7.3.1 Software Requirement:

For the program to run computer must meet the following software specifications:

Operating System: WINDOWS 98 or newer

Application Software: Visual Studio or Dev C or Code Blocks with gcc or any C compiler.

7.3.2 Hardware Requirement:

For the program to run computer must meet the following hardware specifications:

- Processor: i3 and above
- 128 GB HDD and 1GB RAM or higher.

References

[1] Javatpoint, "javaTpoint," [Online]. Available: https://www.javatpoint.com/file-handling-in-c.

[2] S. Engineering, "Wikipedia," [Online]. Available: https://bit.ly/3ilNwSK.

[3] S. Patni, "Geeks For Geeks," [Online]. Available: https://bit.ly/3rPrLOg.

[4] P. UNIVERSITY, "YouTube," [Online]. Available: https://youtu.be/wp0vr6OkW8Y.