Term Project by Ryan Phan

The Student

Computer Science 160-041 : Diane Rhodes : November 2021

Purpose and Use

- Multi-functional program that combines multiple other programs into a single “tool box”

```
----------WELCOME TO STUDENT TOOL BOX!----------
Option 1: Calculator
Option 2: Grade Average Calculator
Option 3: Game
Enter Option Number!
```

Calculator

```
-----THIS IS THE CALCULATOR MENU SECTION-----
1. Simple Arithmetic
2. Algebraic
3. Trigonometric
4. Other Arithmetic
5. Factorials
```

Trigonometry

```
1. Sin()
2. Cos()
3. Tan()
1
Pick an option or press 0 to enter your own value:
-----0 - 90 DEGREES | 0 - π/2-----
1. π/6
2. π/4
3. π/3
4. π/2
-----------
5. 2π/3
6. 3π/4
7. 5π/6
8. π
-----------
9. 7π/6
10.5π.4
11.4π/3
12.3π/2
-----------
13. 5π/3
14. 7π/4
15. 11π/6
16. 0
```

Other Arithmetic

```
Enter Operation:
1. Exponent:
2. Square Root:
3. Cubic Root:
```

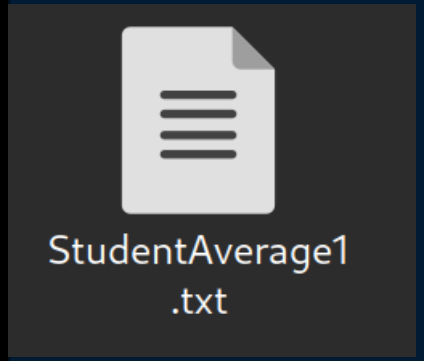
Algebraic

```
------Enter Algebraic Option:-----
1. Quadratic Formula
2. Find Hypotenuse
```

Grade Average Calculator

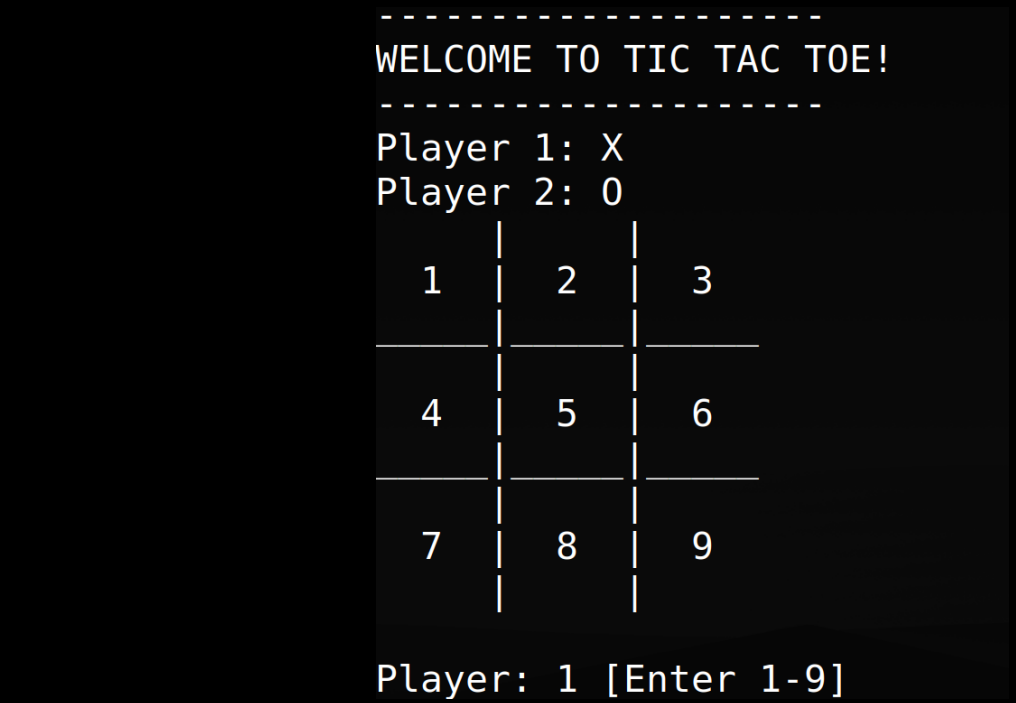
- Calculates and Stores Grade Averages into separate file

```
Alice
Computer Science
90
80
75
GRADE AVERAGE OF: Computer Science: 81.6667
```



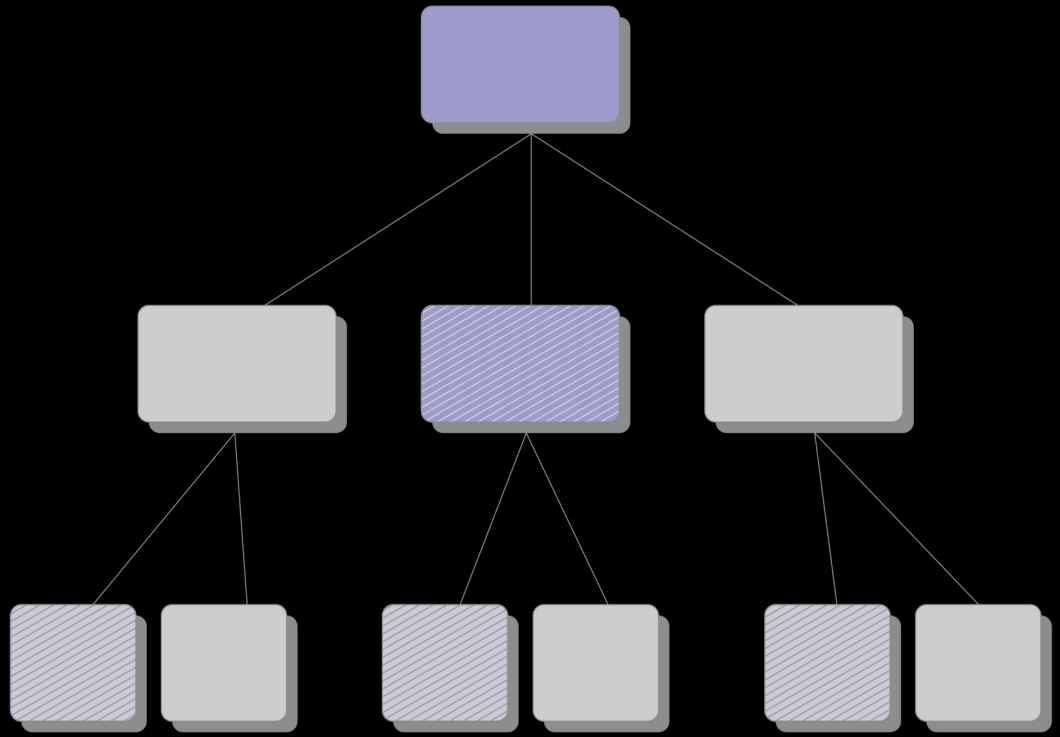

```
-----ENTERING GRADE AVERAGE CALCULATOR-----
Enter student name:
Alice
Enter class name:
Computer Science
Enter amount of grades:
3
Grade: [1: ]
90
Grade: [2: ]
80
Grade: [3: ]
75
Grade #: 1 = 90
Grade #: 2 = 80
Grade #: 3 = 75
```

Tic-Tac-Toe Game!



Code Design

- Main Root Branch
  - Main Menu
- Secondary Branches in split into specific sub-category
  - Calculator,Student Grades,Games MENU
- Connected Branch calls function according to derived branch
  - Display the program



Code Snippets

Main Function

```
#include "Includes/Menu.h"
#include "Includes/GradeCalculator.h"


// ! v6 - for Microsoft.exe File:
// ! 23 November 2021
// ** g++ -o main main.cpp Includes/Grad



int main()
{
    system("cls");
    menuOption();

    return 0;
}
```

```
void menuOption()

{
    int menuOption;
    cout << "----------WELCOME TO STUDENT TOOL BOX!----------" << endl;
    cout << "Option 1: Calculator " << endl;
    cout << "Option 2: Grade Average Calculator " << endl;
    cout << "Option 3: Game " << endl;

    cout << "Enter Option Number!" << endl;
    std:: cin >> menuOption;

    switch(menuOption)
    {
        case 1:
            menuOption = 1;
            cout << "-----ENTERING CALCULATOR-----" << endl;
            calculatorMenu(); // go to calculator menu page
            //calculateOperation(); // Function is Initiated from Calulator.cpp
            break;
        case 2:
            menuOption = 2;
            cout << "-----ENTERING GRADE AVERAGE CALCULATOR-----" << endl;
            studentAverageGradeCalc();
            break;
        case 3:
            menuOption = 3;
            cout << "-----ENTERING GAME OPTION-----" << endl;
            gameMenu();
            break;

        default:
            cout << "INVALID OPTION" << endl;
            break;

    }

}
```

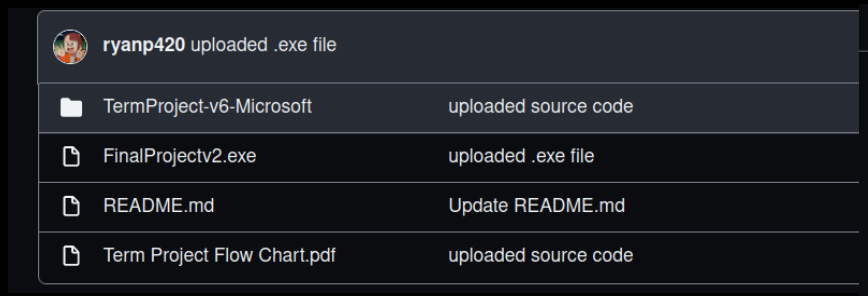
Menu Code and Header File

```
#include <iostream>
//using namespace std;
using std:: cout;
using std:: endl;

void gameMenu();
void algebraicMenu();
void calculatorMenu();
void menuOption();
```

More Code

Github.com/ryanp420



ryanp420 uploaded .exe file

TermProject-v6-Microsoft	uploaded source code
FinalProjectv2.exe	uploaded .exe file
README.md	Update README.md
Term Project Flow Chart.pdf	uploaded source code

README.md

TermProjectFinal

Term Project for CSC-160 with Microsoft Excecutable and source code

- The code uses `system("cls")` for Microsoft based systems vs `system("clear")` for MACOS and Linux based systems (Unix)

⚠️ This is a Terminal Console Program

Application Functions

1. Grade Calculator
    - Simple Arithmetic (✅)
    - Other Arithmetic (✅)
    - Algebraic (✅)
    - Trigonometric (✅)
    - Factorials (✅)
2. Grade Average Calculator (✅)
    - Enter amount of Grades for Each Class and Each Student
    - Outputs Averages of Grades and stores in .txt File "StudentAverage1.txt"
3. Game (✅)
    - TicTacToe Game

Packages

No packages published
Publish your first package

Languages

C++ 99.7% C 0.3%

Final Thoughts

- Building a complex multi-layered program is hard
- Would be much harder with a partner or group
- At certain points, even my own code confused me
- Planning is key to lessen confusion and build coherent foundation for project / program
- Hope to build better projects with more uses and not just a program that runs in the command line