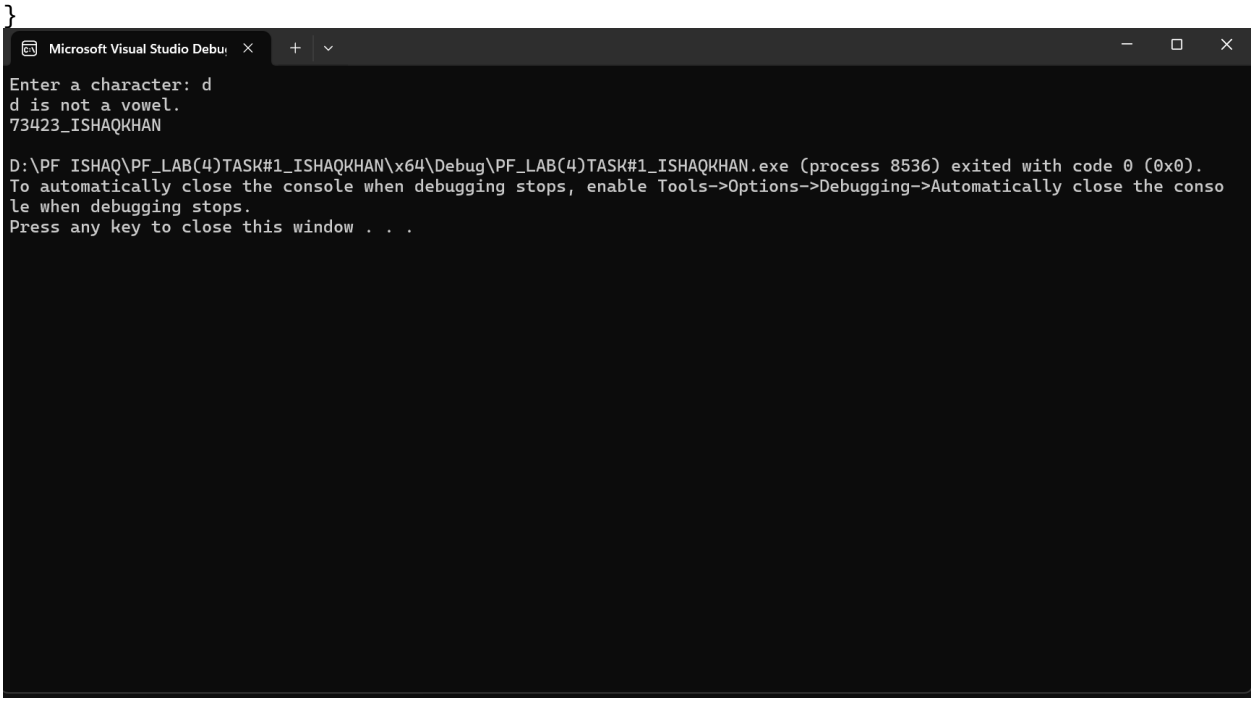
ISHAQKHAN_SAP_73423

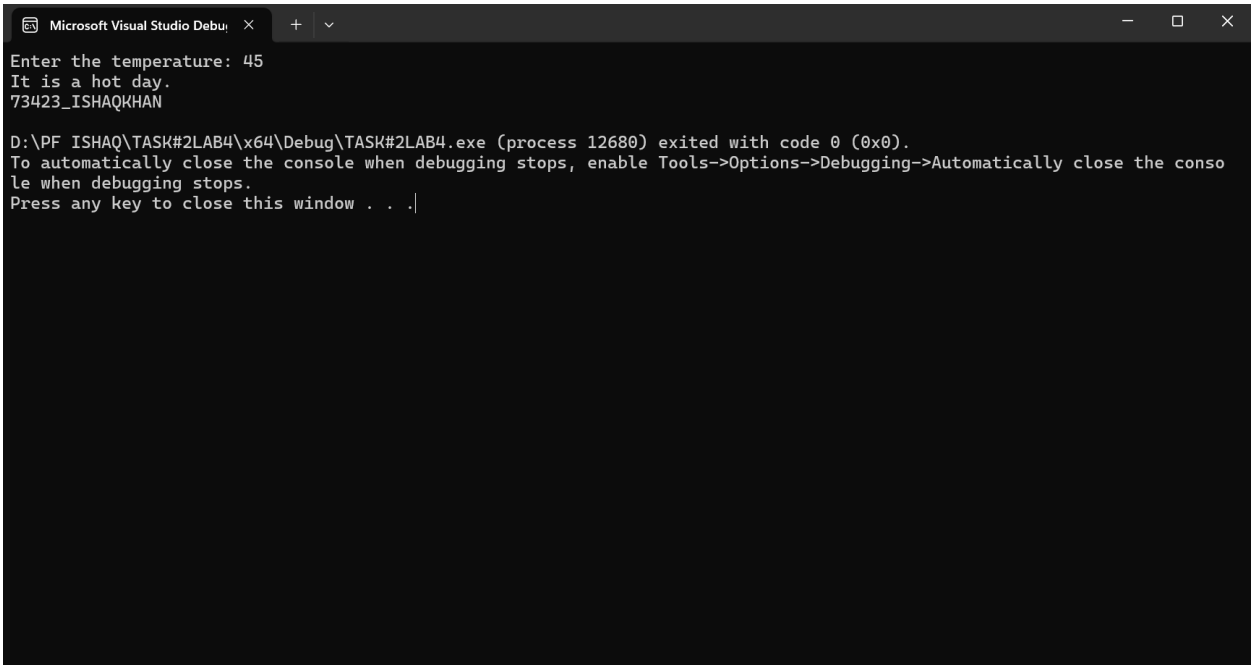
Write a C++ program that uses if–else statements to check whether a given character entered by the user is a vowel or not a vowel.
The program should take one character as input and display:
• "is a vowel" if the entered character is a, e, i, o, or u (in either uppercase or lowercase),
• otherwise, display "is not a vowel".

```cpp
#include <iostream>
using namespace std;
int main() {
    char ch;
    cout << "Enter a character: ";
    cin >> ch;
    if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u' ||
        ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' || ch == 'U') {
        cout << ch << " is a vowel." << endl;
    }
    else {
        cout << ch << " is not a vowel." << endl;
    }
    cout << "73423_ISHAQKHAN" << endl;
    return 0;
}
```



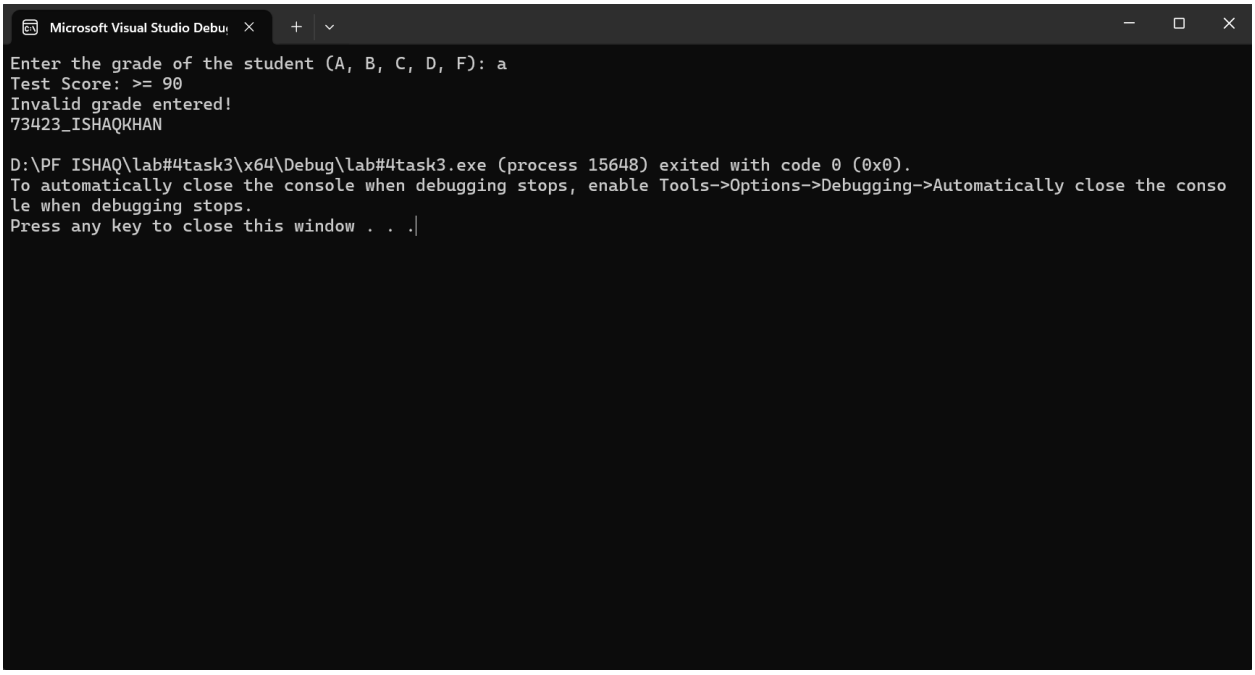
Write a C++ program that takes the temperature as input from the user and displays a message according to the following conditions: • If the temperature is greater than 35, display “It is a hot day.” • If the temperature is between 25 and 35 (inclusive), display “It is a pleasant day.” • If the temperature is less than 25, display “It is a cool day.”

```cpp
#include <iostream>
using namespace std;

int main() {
    double temperature;
    cout << "Enter the temperature: ";
    cin >> temperature;
    if (temperature > 35) {
        cout << "It is a hot day." << endl;
    }
    else if (temperature >= 25 && temperature <= 35) {
        cout << "It is a pleasant day." << endl;
    }
    else {
        cout << "It is a cool day." << endl;
    }
        cout << "73423_ISHAQKHAN" << endl;
   return 0;
}
```



Write a program that inputs grade of a student and display his test score on the following criteria: Test Score Grade Test Score >= 90 A >= 90 80 – 89 B 80 – 89 70 – 79 C 70 – 79 60 – 69 D 60 – 69 Below 60 F Below 60

```cpp
#include <iostream>
using namespace std;

int main() {
    char grade;
    cout << "Enter the grade of the student (A, B, C, D, F): ";
    cin >> grade;
    if (grade == 'A' || grade == 'a') {
        cout << "Test Score: >= 90" << endl;
    }
     if (grade == 'B' || grade == 'b') {
        cout << "Test Score: 80 - 89" << endl;
    }
     if (grade == 'C' || grade == 'c') {
        cout << "Test Score: 70 - 79" << endl;
    }
     if (grade == 'D' || grade == 'd') {
        cout << "Test Score: 60 - 69" << endl;
    }
     if (grade == 'F' || grade == 'f') {
        cout << "Test Score: Below 60" << endl;
    }
     {
        cout << "Invalid grade entered!" << endl;
    }
     cout << "73423_ISHAQKHAN" << endl;
    return 0;
}
```



Create a Calculator using the switch Statement

1. Write a program to provide following functionality of a calculator using switch case statement.

- Addition of two integers
- Subtraction of two integers
- Multiplication of two integers
- Division of two integers
- Addition of two Floating Point Numbers
- Subtraction of two Floating Point Numbers
- Multiplication of two Floating Point Numbers
- Division of two Floating Point Numbers
- Sine
- Cosine
- Tangent
- Square root
- Square
- Cube

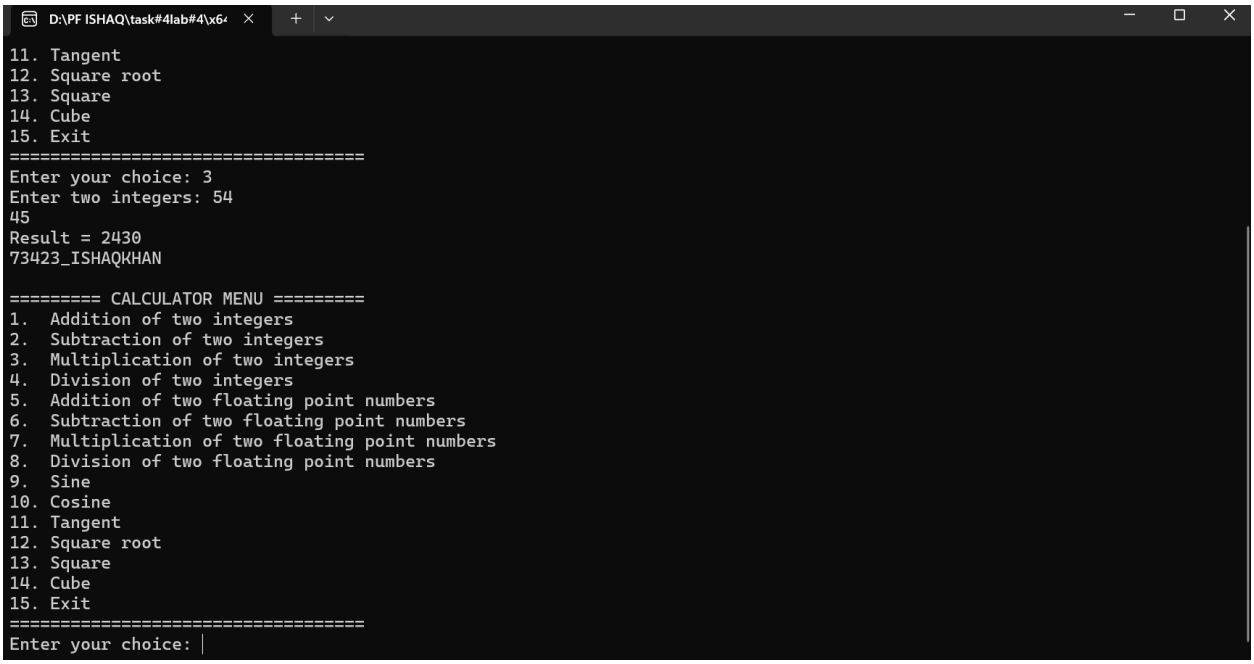
User should be able to select his desired operation from the Menu given to him. The program should only terminate when user selects exit operation from the MENU.
For sine, cosine, Tangent and Square root you can use functions available in math.h library.

```
#include <iostream>
#include <cmath>
#define M_PI 3.14159265358979323846
using namespace std;

int main() {
    int choice;
    bool running = true;

    while (running) {
        cout << "\n========= CALCULATOR MENU =========\n";
        cout << "1.  Addition of two integers\n";
        cout << "2.  Subtraction of two integers\n";
        cout << "3.  Multiplication of two integers\n";
        cout << "4.  Division of two integers\n";
        cout << "5.  Addition of two floating point numbers\n";
        cout << "6.  Subtraction of two floating point numbers\n";
        cout << "7.  Multiplication of two floating point numbers\n";
        cout << "8.  Division of two floating point numbers\n";
        cout << "9.  Sine\n";
        cout << "10. Cosine\n";
        cout << "11. Tangent\n";
        cout << "12. Square root\n";
        cout << "13. Square\n";
        cout << "14. Cube\n";
        cout << "15. Exit\n";
        cout << "===================================\n";
        cout << "Enter your choice: ";
        cin >> choice;

        switch (choice) {
        case 1: {
            int a, b;
```

```
    cout << "Enter two integers: ";
    cin >> a >> b;
    cout << "Result = " << a + b << endl;
    break;
}

case 2: {
    int a, b;
    cout << "Enter two integers: ";
    cin >> a >> b;
    cout << "Result = " << a - b << endl;
    break;
}

case 3: {
    int a, b;
    cout << "Enter two integers: ";
    cin >> a >> b;
    cout << "Result = " << a * b << endl;
    break;
}

case 4: {
    int a, b;
    cout << "Enter two integers: ";
    cin >> a >> b;
    if (b != 0)
        cout << "Result = " << a / b << endl;
    else
        cout << "Error! Division by zero." << endl;
    break;
}

case 5: {
    float x, y;
    cout << "Enter two floating point numbers: ";
    cin >> x >> y;
    cout << "Result = " << x + y << endl;
    break;
}

case 6: {
    float x, y;
    cout << "Enter two floating point numbers: ";
    cin >> x >> y;
    cout << "Result = " << x - y << endl;
    break;
}

case 7: {
    float x, y;
    cout << "Enter two floating point numbers: ";
    cin >> x >> y;
    cout << "Result = " << x * y << endl;
    break;
}

case 8: {
```

```
            float x, y;
            cout << "Enter two floating point numbers: ";
            cin >> x >> y;
            if (y != 0)
                cout << "Result = " << x / y << endl;
            else
                cout << "Error! Division by zero." << endl;
            break;
        }

        case 9: {
            double angle;
            cout << "Enter angle in degrees: ";
            cin >> angle;
            angle = angle * M_PI / 180;
            cout << "Sine = " << sin(angle) << endl;
            break;
        }

        case 10: {
            double angle;
            cout << "Enter angle in degrees: ";
            cin >> angle;
            angle = angle * M_PI / 180;
            cout << "Cosine = " << cos(angle) << endl;
            break;
        }

        case 11: {
            double angle;
            cout << "Enter angle in degrees: ";
            cin >> angle;
            angle = angle * M_PI / 180;
            cout << "Tangent = " << tan(angle) << endl;
            break;
        }

        case 12: {
            double num;
            cout << "Enter number: ";
            cin >> num;
            if (num >= 0)
                cout << "Square Root = " << sqrt(num) << endl;
            else
                cout << "Error! Square root of negative number not defined." <<
endl;
            break;
        }

        case 13: {
            double num;
            cout << "Enter number: ";
            cin >> num;
            cout << "Square = " << pow(num, 2) << endl;
            break;
        }

        case 14: {
```

```
            double num;
            cout << "Enter number: ";
            cin >> num;
            cout << "Cube = " << pow(num, 3) << endl;
            break;
        }

        case 15:
            cout << "Exiting the calculator. Goodbye!" << endl;
            running = false;
            break;

        default:
            cout << "Invalid choice! Please select a valid option." << endl;
        }
    }
    cout << "73423_ISHAQKHAN" << endl;
    return 0;
}
```



2. Write a program that takes as input any number of seconds (as int) and then converts it in hours, minutes and seconds. For example, if you enter 7802 the program should print:

2 hrs 10 mins 2 secs

(Hint: Use integer division and modulus operators)

```cpp
#include <iostream>
using namespace std;

int main() {
    int totalSeconds;
    cout << "Enter total seconds: ";
    cin >> totalSeconds;

    int hours = totalSeconds / 3600;
    int remainingSeconds = totalSeconds % 3600;

    int minutes = remainingSeconds / 60;
    int seconds = remainingSeconds % 60;

    cout << hours << " hrs " << minutes << " mins " << seconds << " secs" << endl;
    cout << "73423_ISHAQKHAN" << endl;
    return 0;
}
```