

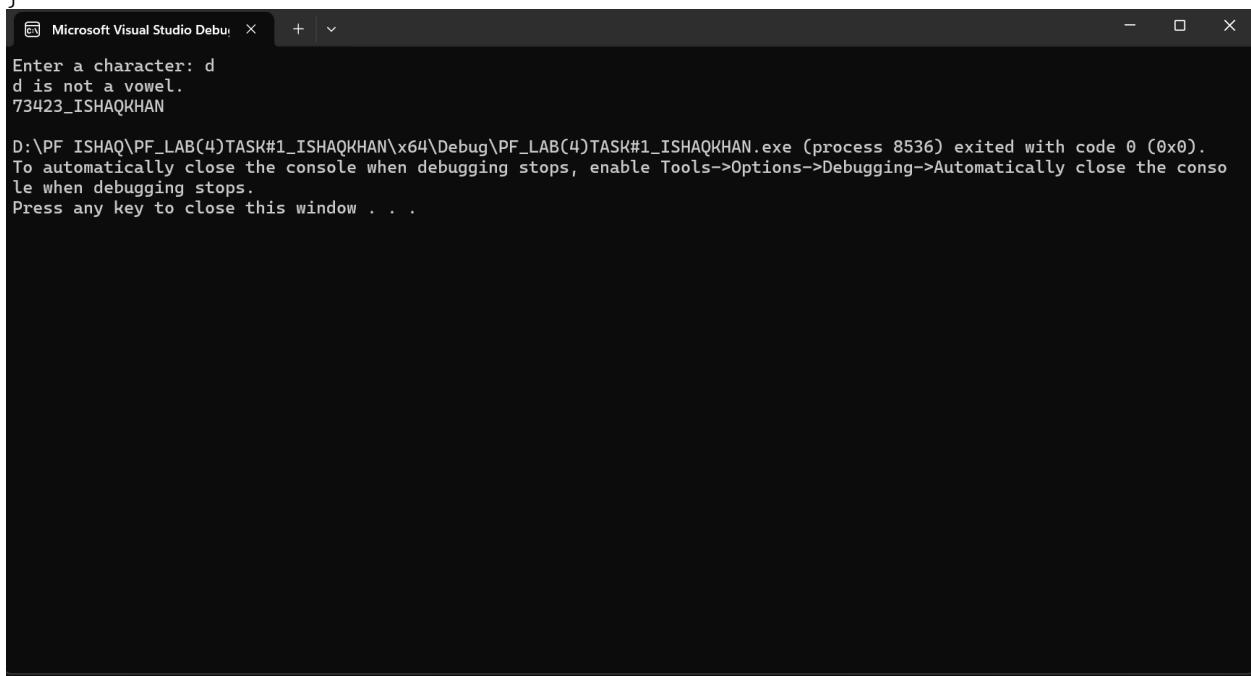
I SHAQKHAN_SAP_73423

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".

```
#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_I SHAQKHAN" << endl;
    return 0;
}
```



The screenshot shows a Microsoft Visual Studio Debug console window. The title bar says "Microsoft Visual Studio Debug". The console output is as follows:

```
Microsoft Visual Studio Debug + | 
Enter a character: d
d is not a vowel.
73423_I SHAQKHAN

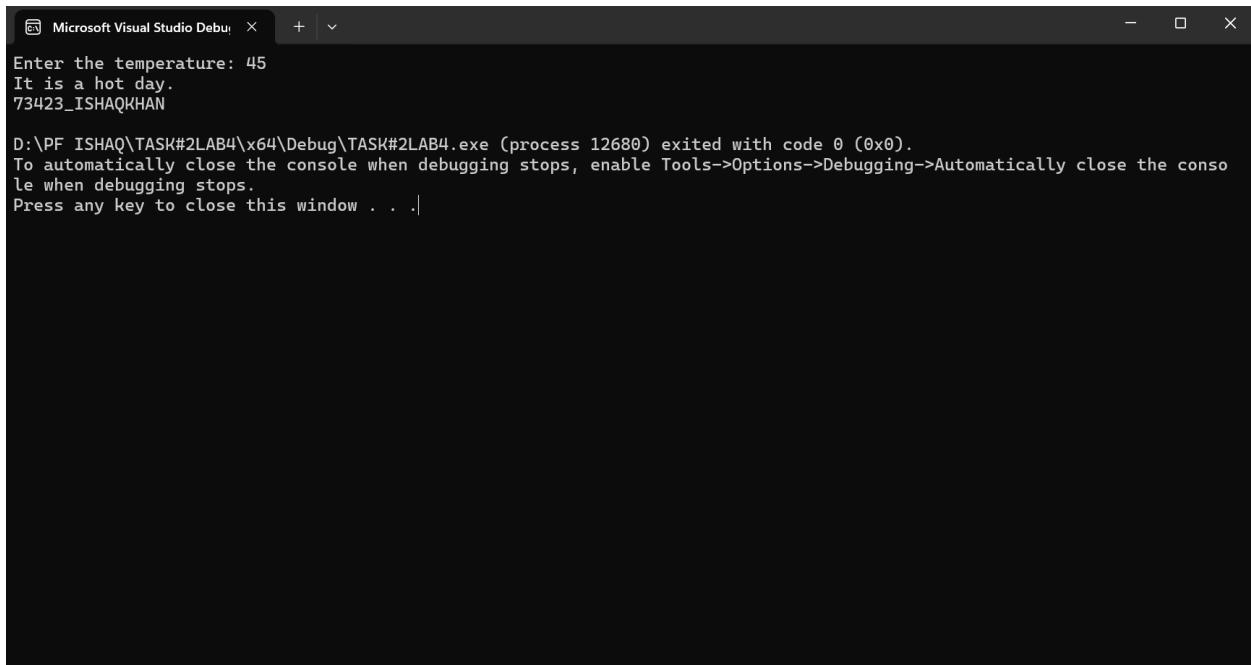
D:\PF_ISHAQ\PF_LAB(4)\TASK#1_ISHAQKHAN\x64\Debug\PF_LAB(4)\TASK#1_ISHAQKHAN.exe (process 8536) exited with code 0 (0x0).
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

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.”

```
#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;
}
```



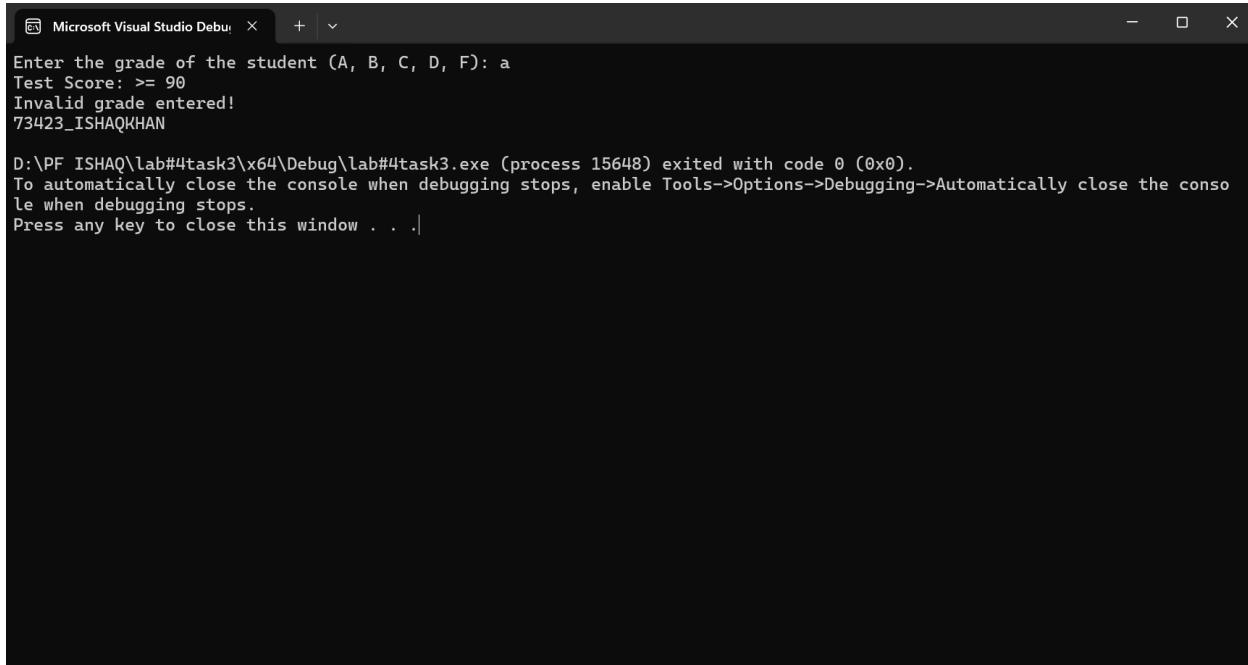
```
Microsoft Visual Studio Debug + | v
Enter the temperature: 45
It is a hot day.
73423_ISHAQKHAN

D:\PF ISHAQ\TASK#2LAB4\x64\Debug\TASK#2LAB4.exe (process 12680) exited with code 0 (0x0).
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

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

```
#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!";
    }
    cout << "73423_ISHAQKHAN" << endl;
    return 0;
}
```



The screenshot shows the Microsoft Visual Studio Debug console window. The output is as follows:

```
Microsoft Visual Studio Debug + ▾
Enter the grade of the student (A, B, C, D, F): a
Test Score: >= 90
Invalid grade entered!
73423_ISHAQKHAN

D:\PF ISHAQ\lab#4task3\x64\Debug\lab#4task3.exe (process 15648) exited with code 0 (0x0).
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .|
```

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 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;
}

```

```

11. Tangent
12. Square root
13. Square
14. Cube
15. Exit
=====
Enter your choice: 3
Enter two integers: 54
45
Result = 2430
73423_ISHAQKHAN

===== CALCULATOR MENU =====
1. Addition of two integers
2. Subtraction of two integers
3. Multiplication of two integers
4. Division of two integers
5. Addition of two floating point numbers
6. Subtraction of two floating point numbers
7. Multiplication of two floating point numbers
8. Division of two floating point numbers
9. Sine
10. Cosine
11. Tangent
12. Square root
13. Square
14. Cube
15. Exit
=====
Enter your choice: |

```

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)

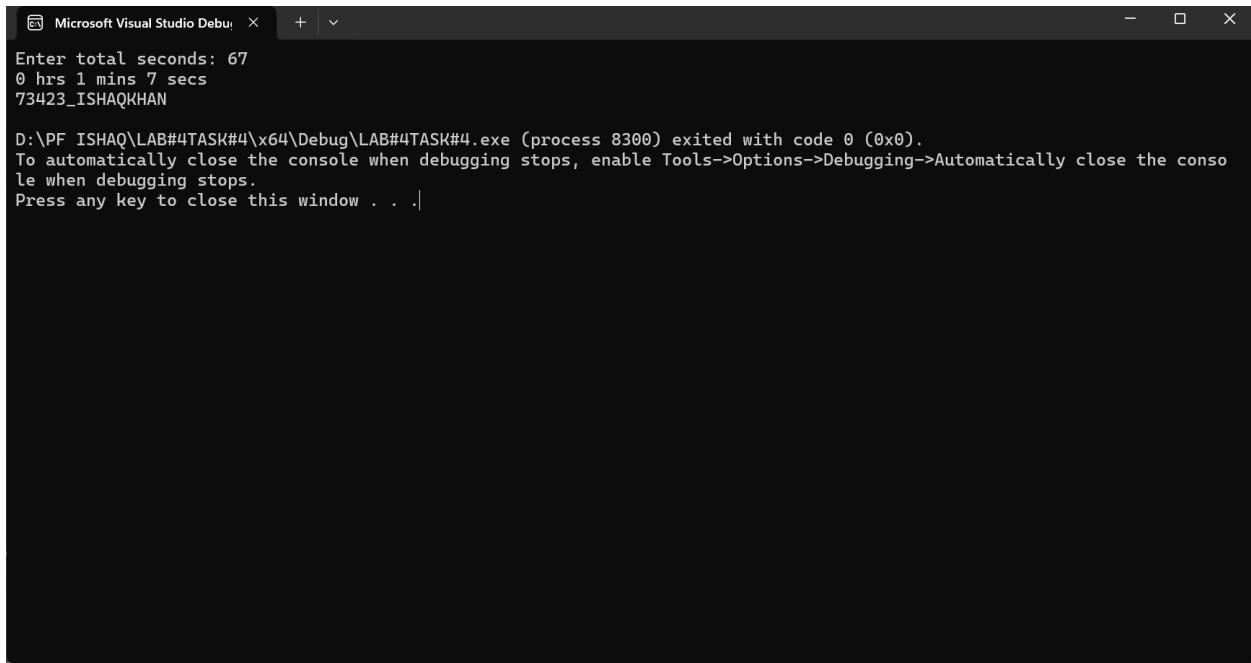
```
#include <iostream>
using namespace std;

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;
}
```



The screenshot shows the Microsoft Visual Studio Debug console window. It displays the following text:

```
Microsoft Visual Studio Debug X + - □ ×
Enter total seconds: 67
0 hrs 1 mins 7 secs
73423_ISHAQKHAN

D:\PF ISHAQ\LAB#4TASK#4\x64\Debug\LAB#4TASK#4.exe (process 8300) exited with code 0 (0x0).
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .|
```