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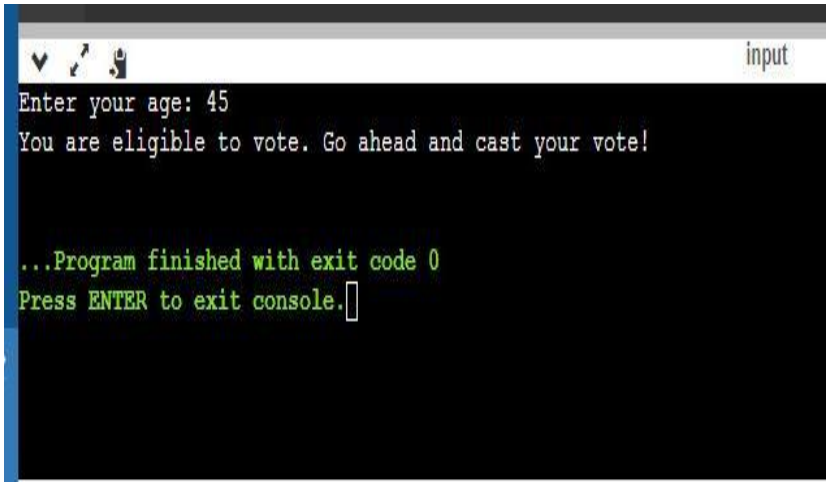
Lab Report: 02

1. Write a program that determines if a person is eligible to vote based on their age (e.g., 18 years or older) using logical operators.

Input

```
#include <iostream>

using namespace std;


int main() {
    int age;


    cout << "Enter your age: ";
    cin >> age;


    if (age >= 18) {
        cout << "You are eligible to vote. Go ahead and cast your vote!" << endl;
    } else {
        cout << "Sorry, you are not eligible to vote yet. Wait until you are 18 or older." << endl;
    }


    return 0;
}
```

Output

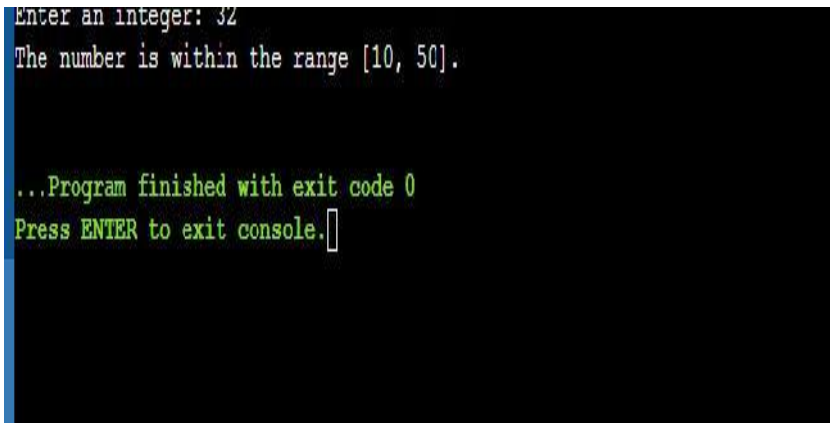


2. Write a program that takes an integer as input and checks if it falls within the range [10, 50]
using logical operators.

Input

```
#include <iostream>

using namespace std;


int main() {

    int number;


    cout << "Enter an integer: ";

    cin >> number;


    if (number >= 10 && number <= 50) {

        cout << "The number is within the range [10, 50]." << endl;

    } else {

        cout << "The number is outside the range [10, 50]." << endl;

    }


    return 0;

}
```

Output



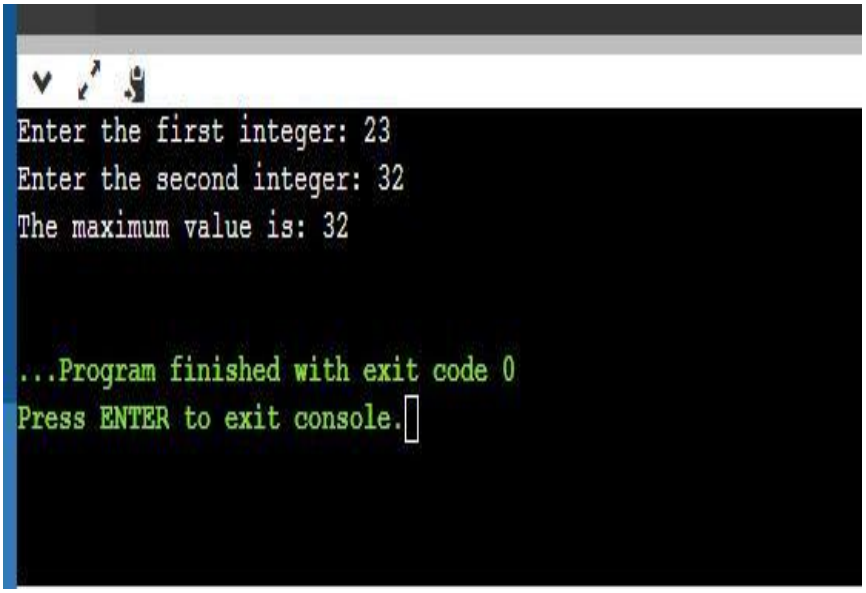
3. Write a C++ program to compare two integers and find the maximum value.

Input

```
#include <iostream>

using namespace std;


int main() {
    int num1, num2;


    cout << "Enter the first integer: ";
    cin >> num1;


    cout << "Enter the second integer: ";
    cin >> num2;


    if (num1 > num2) {
        cout << "The maximum value is: " << num1 << endl;
    } else if (num2 > num1) {
        cout << "The maximum value is: " << num2 << endl;
    } else {
        cout << "Both integers are equal." << endl;
    }
```

```
    return 0;
}
```

Output



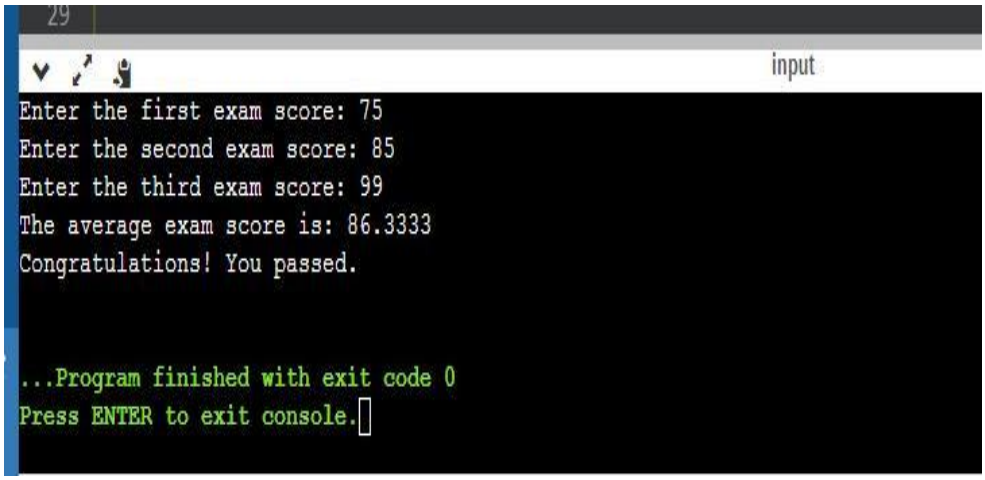
4. Write a C++ program to calculate the average of three exam scores and determine if it's
above a passing grade (e.g., average >= 60).

Input

```
#include <iostream>

using namespace std;


int main() {

    double score1, score2, score3;

    double average;
```

```
    cout << "Enter the first exam score: ";
    cin >> score1;

    cout << "Enter the second exam score: ";
    cin >> score2;

    cout << "Enter the third exam score: ";
    cin >> score3;

    average = (score1 + score2 + score3) / 3.0; // Calculate the average

    cout << "The average exam score is: " << average << endl;

    if (average >= 60) {
        cout << "Congratulations! You passed." << endl;
    } else {
        cout << "Sorry, you did not pass." << endl;
    }

    return 0;
}
```

Output



Home Task:

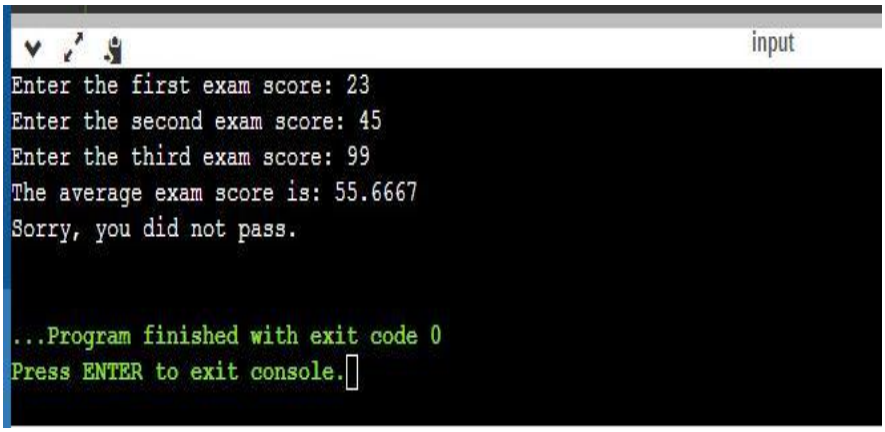
1. Create a program that takes a student's score as input and assigns a grade based on
Predefined criteria using logical operators (e.g., A, B, C, D, and F).
A-Grade: 90-100 Marks
B-Grade: 75-90 Marks
C-Grade: 60-75 Marks
D-Grade: 45-60 Marks
F-Grade: 0-45 Marks

Input

```
#include <iostream>

using namespace std;


int main() {

    int score;

    char grade;


    cout << "Enter the student's score: ";

    cin >> score;


    if (score >= 90 && score <= 100) {
```

```
        grade = 'A';
    } else if (score >= 75 && score < 90) {
        grade = 'B';
    } else if (score >= 60 && score < 75) {
        grade = 'C';
    } else if (score >= 45 && score < 60) {
        grade = 'D';
    } else if (score >= 0 && score < 45) {
        grade = 'F';
    } else {
        cout << "Invalid score. Please enter a score between 0 and 100." << endl;
        return 1; // Exit the program with an error code
    }

    cout << "The student's grade is: " << grade << endl;

    return 0;
}
```

Output

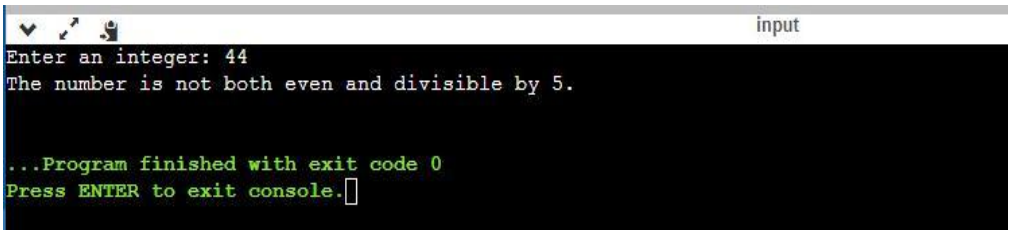


2. Write a program that takes an integer as input and determines if it is both even and divisible by 5.

Input

```
#include <iostream>

using namespace std;


int main() {

    int number;


    cout << "Enter an integer: ";

    cin >> number;


    if (number % 2 == 0 && number % 5 == 0) {

        cout << "The number is even and divisible by 5." << endl;

    } else {

        cout << "The number is not both even and divisible by 5." << endl;

    }


    return 0;

}
```

Output

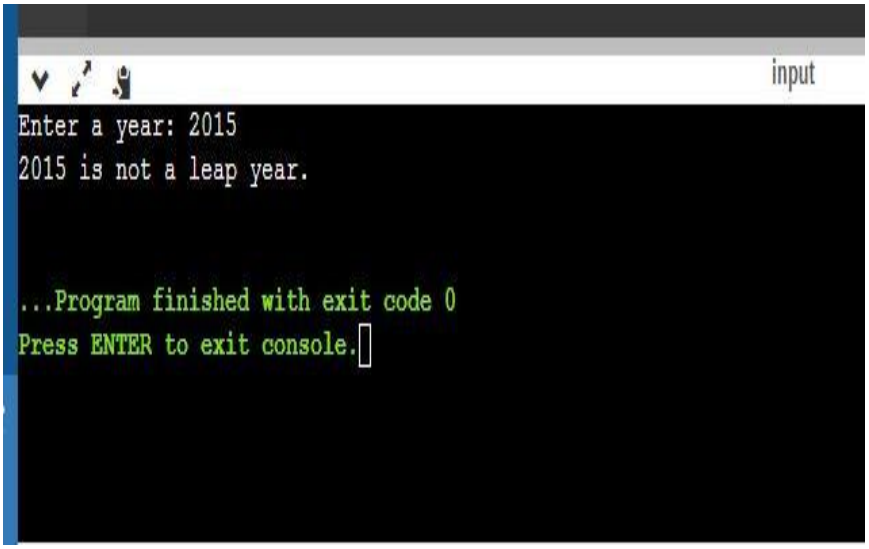


3. Create a C++ program that checks if a user-provided year is a leap year.

Input

```
#include <iostream>

using namespace std;


int main() {
    int number;


    cout << "Enter an integer: ";
    cin >> number;


    if (number % 2 == 0 && number % 5 == 0) {
        cout << "The number is even and divisible by 5." << endl;
    } else {
        cout << "The number is not both even and divisible by 5." << endl;
    }


    return 0;
}
```

Output



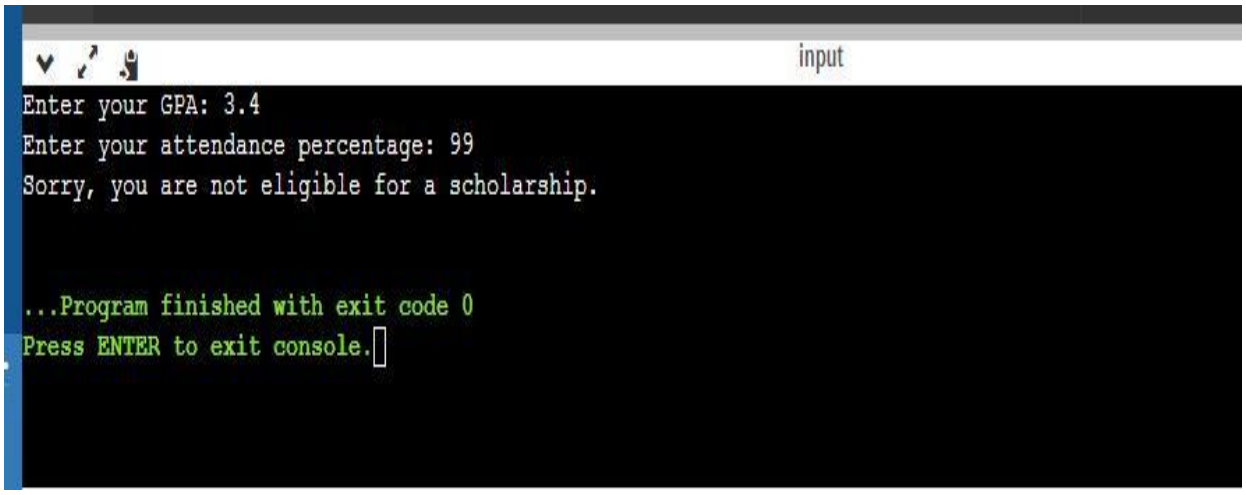
4. Create a C++ program that determines if a student is eligible for a scholarship based on their
GPA (must have GPA >= 3.5) and attendance (must have attended at least 80% of classes).

Input

```
#include <iostream>

using namespace std;


int main() {

    double gpa;

    double attendancePercentage;


    cout << "Enter your GPA: ";

    cin >> gpa;


    cout << "Enter your attendance percentage: ";

    cin >> attendancePercentage;


    if (gpa >= 3.5 && attendancePercentage >= 80) {

        cout << "Congratulations! You are eligible for a scholarship." << endl;

    } else {

        cout << "Sorry, you are not eligible for a scholarship." << endl;

    }


    return 0;
```

}

Output



5. Write a program that checks if a given character is a vowel (a, e, i, o, u) or a consonant using
logical operators.

Input

```
#include <iostream>

using namespace std;


int main() {

    char character;


    cout << "Enter a character: ";
```

```
    cin >> character;

    if (character == 'a' || character == 'e' || character == 'i' || character == 'o' || character == 'u' ||
        character == 'A' || character == 'E' || character == 'I' || character == 'O' || character == 'U') {
        cout << "The character is a vowel." << endl;
    } else {
        cout << "The character is a consonant." << endl;
    }

    return 0;
}
```

Output