C# Lab Assignments

Lab 1: Hello, World! and Basic Input/output

Assignment:

1. Write a program that prints "Hello, World!" to the screen.
2. Modify the program to ask the user for their name and greet them with a personalized message.

Lab 2: Input/output with Strings

Assignment:

1. Write a program that asks the user for their full name and age, then prints a message like "Hello, [Name]! You are [Age] years old.".
2. Modify the program to ask for the user's favorite color and include it in the greeting.

Lab 3: Input/output with Arithmetic Operations

Assignment:

1. Write a program that asks the user to input two numbers and prints the result of their sum, difference, multiplication, and division.
2. Modify the program to display a message if the division by zero is attempted.

Lab 4: Temperature Conversion

Assignment:

1. Write a program that takes a temperature in Celsius from the user and converts it to Fahrenheit.
2. The formula is: Fahrenheit= (Celsius× 9/5) + 32.

Lab 5: Simple Interest Calculation

Assignment:

Write a program that calculates the simple interest using the formula: Simple Interest= (P * R * T)/100, Where P is the principal amount, R is the rate of interest, and T is the time in years.

Lab 6: Calculating the Area of a Circle

Assignment:

Write a program that takes the radius of a circle as input and calculates its area using the formula: Area=π * r * r Where `r` is the radius, and `π` is approximately 3.14159.

Lab 7: Input/output with Time Calculation

Assignment:

Write a program that asks the user to input a number of seconds and converts it into hours, minutes, and seconds.

Lab 8: String Length and Character Count

Assignment:

Write a program that takes a string as input and prints the number of characters in the string, excluding spaces.

Lab 9: Body Mass Index (BMI) Calculator

Assignment:

Write a program to calculate BMI using the formula:
BMI = weight / (height * height) where weight is in kilograms and height is in meters. Declare variables weight and height, then calculate and print the BMI.

Lab 10: Variables and Constants

Assignment:

Declare variables of the following types: int, float, double, char, string, and bool. Initialize each variable with a value. Print the values of each variable along with its type using Console.WriteLine().

Lab 11: Variables and Constants

Assignment:

Write a program to calculate the area of a circle and a rectangle using variables and constants. Prompt the user to input values

Lab 12: Using Constants

Assignment

Declare two constants: const double PI = 3.14159; and const int DAYS_IN_WEEK = 7. Write a program that calculates the circumference of a circle using the formula C = 2 * PI * radius. Print the result along with the number of days in a week.

Lab 13: Calculating Area of Rectangle

Assignment

Declare two variables width and height for the dimensions of a rectangle. Calculate the area using the formula Area = width * height. Use constants to define conversion factors, for example, inches to centimeters. Print the area in both square inches and square centimeters.

Lab 14: C# Coding Standards

Assignment:

Write a simple C# program to accept an employee's name, age and monthly salary and display them on the screen. The code should be written following the coding standards, including proper naming conventions, indentation, comments, and meaningful variable names.

Lab 15: C# Coding Standards

Assignment:

Refactor a provided C# program to follow proper coding standards (naming conventions, comments, etc.).

Provided Code:

```
class program
{
    static void main()
    {
        int num1=5;
        int num2=3;
        Console.WriteLine(num1+num2);
```

```
    }
}
```

Lab 16: Assignment Operator

Assignment:

Write a program demonstrating the use of the assignment operator = to assign values to variables.

Lab 17: Find the Power of a Number

Assignment:

Write a C# program that calculates the power of a number using the `Math.Pow()` method. The program should take the base and exponent as input from the user.

Lab 18: Check Voting Eligibility

Assignment:

Write a C# program that checks if a person is eligible to vote. The eligibility criteria are:

- The person must be at least 18 years old.
- The person must be a citizen.

The program should take the age and citizenship status as input from the user.

Lab 19: Determine if a Person is Eligible for a Loan

Assignment:

Write a C# program to check if a person is eligible for a loan. The eligibility criteria are:

- The person must be at least 21 years old.
- The person must earn at least $30,000 per year.
- The person must not have any outstanding loans.

The program should take the age, income, and loan status (yes/no) as input.

Lab 20: Eligibility Check

Assignment:

Write a C# program that checks whether a person is eligible to apply for a job based on the following criteria:

1. The person must be between 18 and 35 years old.
2. The person must have at least 2 years of work experience.
3. The person must either have a college degree **or** 5 years of work experience.

Your program should:

- Prompt the user to enter their age, work experience (in years), and whether they have a college degree (yes/no).
- Use **relational operators** (>, <, >=, <=, ==) and **logical operators** (`&&`, `||`) to evaluate these conditions.
- Print whether the person is eligible to apply for the job or not.

Lab 21: Check if a Character is a Vowel or Consonant

Assignment:

Write a C# program that takes a character as input and checks if the character is a vowel or consonant using relational and logical operators.

Lab 22: Check If a Number is Positive, Negative, or Zero

Assignment:

Write a C# program that takes a number as input and checks whether the number is positive, negative, or zero using relational and logical operators.

Lab 23: Check if a Number is Divisible by 5 and 11

Assignment:

Write a C# program that checks if a number is divisible by both 5 and 11.

Lab 24: Simple Calculator

Assignment:

Write a C# program that takes two numbers and an operator (+, -, *, /) as input, and performs the corresponding operation. Use an if-else statement to determine which operation to perform

Lab 25: Grading System

Assignment:
Write a C# program that accepts the marks of a student in a subject and assigns a grade based on the following criteria:

1. If the marks are greater than or equal to 90, the grade is 'A'.
2. If the marks are between 80 and 89, the grade is 'B'.
3. If the marks are between 70 and 79, the grade is 'C'.
4. If the marks are between 60 and 69, the grade is 'D'.
5. If the marks are below 60, the grade is 'F'.

Your program should:

- Prompt the user to enter the marks (out of 100).
- Use nested if statements to determine and print the grade based on the marks entered.

Lab 26: Swap two values

Assignment:

Write a program that swaps the values of two variables using a third variable and without using a third variable.

Lab 27: Arithmetic Operations

Assignment:

Write a program that takes two numbers as input and performs all arithmetic operations on them (addition, subtraction, multiplication, division, modulus, increment, and decrement).

Lab 28: Find the Average of Three Numbers

Assignment:

Write a C# program that takes three numbers as input from the user and calculates the average of those numbers. The result should be displayed with two decimal places

Lab 29: Currency Conversion

Assignment:

Write a C# program to convert a given amount of money from USD to another currency (e.g., EUR). Assume a conversion rate, for example, 1 USD = 0.85 EUR. The program should take the amount in USD as input and display the equivalent amount in EUR.

Lab 30: Input is within a range

Assignment:

Write a program that checks if the input number is within a certain range (e.g., between 1 and 100) and also checks if it is even or odd using relational and logical operators.

Lab 31: Check a number is divisible by 3 & 5

Assignment:

Write a program to check whether a number is divisible by both 3 and 5 using an if statement.

Lab 32: Check whether a given year is leap year

Assignment:

Write a program to check whether a year is a leap year or not using an if-else statement.

Lab 33: Check whether a number is positive, even and greater than 50

Assignment:

Write a program that checks whether an input number is positive, even, and greater than 50 using nested if statements.

Lab 34: Calculate student grade

Assignment:

Write a program that accepts the grades (marks) of a student in three subjects. The program should determine the following:

1. If the student has passed in all subjects (passing mark is 40 in each subject).
2. If the student has passed, check if the average grade is 70 or above. If so, print "Distinction".
3. If the student has not passed in any subject, print the number of subjects failed.

Lab 35: Salary and Tax Calculation

Assignment:

Write a program that calculates the tax to be paid based on the annual salary of an employee. The tax rules are as follows:

1. If the salary is less than $10,000, no tax is applied.
2. If the salary is between $10,000 and $50,000, a 10% tax is applied.
3. If the salary is above $50,000, a 20% tax is applied.
4. If the employee is a senior citizen (aged 60 or above), they get an additional tax exemption of $5,000 from their taxable income.
5. Your program should

- Prompt the user to enter their annual salary and age.
- Use nested `if` statements to calculate the appropriate tax based on the salary and age.
- Print the tax amount to be paid.