

Lab 2: Programming Fundamentals

Control Structures I

Instructions

- Make your own files like Q1.cpp, Q2.cpp.
- You can zip the files to upload on slate.
- Please read the questions carefully, read them twice even thrice to understand them completely.
- In case of any query, please raise your hands and we will be there to solve your query.
- Identify the appropriate data types of variables that you want to use in the program.
- Always print the appropriate messages for the inputs and outputs of program in proper formatted style.
- *You are required to complete and submit all tasks in lab time. Evaluation will be done at end of the lab time.*
- You are advised to delete your code while you are leaving lab, in case of plagiarism you can be awarded with F grade in lab.
- Please concentrate, understand and code. Good Luck :)

Q 1. Write a c++ program that takes a number from user as input and displays whether it is odd or even.

Q 2. Write a program that asks the user to enter two numbers. The program should use the conditional operator to determine which number is the smaller and which is the larger.

Q 3. Write a program that asks the user to enter a number of seconds.

- There are 60 seconds in a minute. If the number of seconds entered by the user is greater than or equal to 60, the program should display the number of minutes in that many seconds.
- There are 3,600 seconds in an hour. If the number of seconds entered by the user is greater than or equal to 3,600, the program should display the number of hours in that many seconds.
- There are 86,400 seconds in a day. If the number of seconds entered by the user is greater than or equal to 86,400, the program should display the number of days in that many seconds.

Q 4. Write a program that asks the user to enter a number within the range of 1 through 10. Use conditional statements to display the Roman numeral version of that number. Input Validation: Do not accept a number less than 1 or greater than 10. For the time being you may assume user will not give invalid input

Q 5. Write a program that takes room temperature as input from user and displays a message whether room is cold/hot. Room temp below 23 C will be considered as cold and temp above the said threshold will be considered as hot

Q 6. The date June 10, 1960 is special because when we write it in the following format, the month times the day equals the year.

6/10/60

Write a program that asks the user to enter a month (in numeric form), a day, and a two-digit year. The program should then determine whether the month times the day is equal to the year. If so, it should display a message saying the date is magic. Otherwise it should display a message saying the date is not magic.

Q 7. Write a program which asks user to enter two numbers and display a message which number is greater. Also show appropriate message if numbers are equal.
e.g First number is greater / 2nd Number is greater.

Q 8. Write a program which takes height of user as input and display a message whether he is short medium or large.
Height smaller than 5 feet will be considered as small and height greater than 6.2 feet will be large and middle values will be considered as medium height.

Q 9. The area of a rectangle is the rectangle's length times its width. Write a program that asks for the length and width of two rectangles. The program should tell the user which rectangle has the greater area, or if the areas are the same.

Q 10. Write a program that calculates and displays a person's body mass index (BMI). The BMI is often used to determine whether a person with a sedentary lifestyle is over-weight or underweight for his or her height. A person's BMI is calculated with the following formula:

$$\text{BMI} = \text{weight} * 703 / \text{height}^2$$

where weight is measured in pounds and height is measured in inches. The program should display a message indicating whether the person has optimal weight, is under-weight, or is overweight. A sedentary person's weight is considered to be optimal if his or her BMI is between 18.5 and 25. If the BMI is less than 18.5, the person is considered to be underweight. If the BMI value is greater than 25, the person is considered to be overweight.