EEE2021: Computer Programming & Organisation

Lab 2: Conditional Statements

Exercise 1:

Write a program that requires the user to enter two integers, obtains the two numbers, prints the largest one followed by the words **"is the largest."**. If the numbers are equal, print the message **"These numbers are equal."** Use if statements.

Exercise 2:

Given an input temperature and its scale (Celsius or Fahrenheit), convert the corresponding temperature to the other scale by using **if...else** statements.

Exercise 3:

Given an input temperature and its scale (Celsius or Fahrenheit), convert the corresponding temperature to the other scale by using **switch…case** statements.

Extra 1:

Given three values **a, b, c,** which represent the coefficients of a second-degree equation: **a x2 + b x + c = 0** calculate the two solutions (if real) using quadratic formula and conditional statements.

Extra 2:

Write a program to input a char and check whether given character is alphabet, digit or special character using **if…else** statements and **ASCII** values.

Lab 2: Loops

Exercise 1:

Write a program that calculates the sum of the integers from **1 to n** (n is entered by keyboard). First check with a do…while loop if the number n entered by the user is positive. Then use the **while loop** for the calculation.

Exercise 2:

Write a program that utilizes a for to print the numbers from 1 to 10 side-by-side on the same line with three spaces between numbers. Use for loop.

Extra 1:

Write a program that utilizes loops to print the following table of values:

```
N   10*N 100*N 1000*N
1   10   100   1000
2   20   200   2000
3   30   300   3000
4   40   400   4000
5   50   500   5000
6   60   600   6000
7   70   700   7000
8   80   800   8000
9   90   900   9000
10  100  1000  10000
```

The tab escape sequence **\t** can be used in the loop to separate the columns with tabs.

Extra 2:

Write a program to input a number and check whether the number is prime number or not using for loop.

Example:

Input

Input any number: 17

Output

17 is prime number

Lab 2: Functions

Exercise 1:

Write a program to find the square of any number. This should be achieved by defining a dedicated function, e.g., `double square(double num)`, to calculate the square, which is called in the main function. The initial number is given by the user.

Example:

Input a number: 20

The square of 20 is: 400.00

Extra 1:

Write a program that verifies if a three-digit number given by the user,e.g., 371, is an armstrong number and/or a perfect number. This should be achieved by defining two dedicated functions, e.g., `int checkArmstrong(int n)` and `int checkPerfect(int n)`, which are called in the main function.

Example:
Input any number: 371
The 371 is an armstrong number.
The 371 is not a perfect number.