National University of Computer and Emerging Sciences



Lab Manual # 6

Programming Fundamentals Lab

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**Objectives:**

In this lab, students will practice:

1. Conditional statements
2. Loops

**Questions:**

1. Write a C++ program to find the largest among three numbers using if-else statements.
2. Write a c++ program which find the sum of all digits of a number. e.g. sum of all all digits in n=1234 = (1+2+3+4).

**Hint** about how to split number into digits. Well, take a remainder of 1234 when divided by 10. its remainder will be 4, now divide this number by 10. it will become 123 at there integer division in c++. now take remainder once again which is 3 so this is second digit from the right side. Keep on this until this number is reduced to zero.

1. Write a program that checks if a year entered by the user is a leap year or not. Leap years are divisible by 4 but not by 100 unless they are also divisible by 400.

**Hint**:

Leap years are divisible by 4.

Years divisible by 100 are not leap years, except for...

Years divisible by 400, which are leap years

1. Develop a simple number-guessing game where the computer generates a random number, and the player tries to guess it. Provide hints like "too high" or "too low."

Copy paste this code into your IDE and modify the main function beyond the line with a comment: // write your code here



1. Create a program that checks if a given positive integer is a prime number (a number divisible only by 1 and itself).
2. Write a program to generate the first n terms of the Fibonacci sequence, where each term is the sum of the two preceding ones (e.g., 0, 1, 1, 2, 3, 5, 8, …)
3. Write a program which takes a number from user and checks if that number is Armstrong or not.

**Hint**:

A number is thought of as an Armstrong number if the sum of its own digits raised to the power number of digits gives the number itself.

1. Develop a program that checks if a given integer is a palindrome **Hint**: 121 is a palindrome because if we reverse it, it remains same. Similarly {1, 1001, 000, 12344321} are all palindrome. You will have to reverse a number.

**Algorithm**: to reverse n=123 to 321

set reverse = 0

step 1: let remainder r=3 when n is divided by 10

step 2: now divide n/10 = 12

step 3: reverse = 10 \* reverse + r

keep on until n = 0