

National University of Computer and Emerging Sciences



Lab Manual # 6

Programming Fundamentals Lab

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Section	BCS-1K
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Objectives:

In this lab, students will practice:

Loops

Questions:

1. Write a program for Given three integers a, b, and c, write a program that prints out the largest of the three numbers only if it is even numbers are more, and the smallest if it's odd numbers are more.
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.
3. 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
4. Implement a program that reads a person's age and monthly salary. If their age is below 25 and the salary is above 5000, or if their age is above 40 and the salary is below 3000, print a message "Special Category". Otherwise print "You Basic"
5. Write a program that inputs a six digit positive integer and prints the sum, and product of its six digits. Make sure that the number has to be a six digit number i.e. the numbers are in the range (100000 to 999999).
6. 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, ...)
7. 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.
8. 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 = $10 * \text{reverse} + r$

keep on until $n = 0$