

National University of Computer and Emerging Sciences



Laboratory Manual
for
Programming Fundamentals Lab

Course Instructor	Ms. Arooj Khalil
Lab Instructor(s)	Ms. Saleha Batool Ms. Nimra Abbas
Section	BCS-1H1 & 1H2
Semester	Fall 2022

Department of Computer Science

FAST-NU, Lahore, Pakistan

Objectives

The objectives of this lab are to cover the following:

- Nested If
- Switch Statement
- While Loop

Question 1: Write a C+ program that read a character and check whether it is VOWEL or CONSONANT using Nested if. (5)

Question 2: Write a Calculator Program using the switch Statement. (5 marks)

Question 3: Let us see the C++ program to calculate the percentage of marks and show grade using the switch statements. (10 marks)

Percentage $\geq 90\%$: Grade A

Percentage $\geq 80\%$: Grade B

Percentage $\geq 70\%$: Grade C

Percentage $\geq 60\%$: Grade D

Percentage $\geq 40\%$: Grade E

Percentage $< 40\%$: Grade F

Question 4: Write a program in C++ to find the sum of the series $1 + 1/2^2 + 1/3^3 + \dots + 1/n^n$. (10 marks)

Sample Output:

Input the value for nth term: 5

$1/1^1 = 1$

$1/2^2 = 0.25$

$1/3^3 = 0.037037$

$1/4^4 = 0.00390625$

$1/5^5 = 0.00032$

The sum of the above series is: 1.29126

Hint: For taking power, 2 steps are required in the code:

- Import the library by

`#include <cmath>`

- Syntax for power: `pow (base, exponent);`

Question 5: Write a program in C++ that prompts the user to enter two integers. The program must output how many numbers are multiples of 3 and how many are the multiples of 5 between the two integers. (10 marks)

Question 6: Write a program in C++ that will calculate the Sum of Positive Numbers only using while loop and the loop breaks when the user enters a negative value. (5 marks)

Question 7: Write a C++ program that generate Fibonacci sequence up to a certain number using while loop. (10 marks)

The Fibonacci sequence is a series where the next term is the sum of the previous two terms. The first two terms of the Fibonacci sequence is 0 followed by 1.

The Fibonacci sequence: 0, 1, 1, 2, 3, 5, 8, 13, 21

Question 8: Write a C++ program that check leap year using Nested If? (5 marks)

Question 9: Write a C++ program to print the right angled triangle star pattern using for loop. (10 marks)