



CL-1002

Programming Fundamentals

Lab # 4

Objectives:

- Introduction to sentinel control loops.
- Exhibit the understanding of pseudocode and flow chart.

Note: Carefully read the following instructions (*Each instruction contains a weightage*)

1. Use proper **font family** and **font size** of **heading**, **sub heading** and **normal text**.
2. First think about statement problem then write/draw your logic on copy.
3. Write pseudocode of every task on **Microsoft Word**.
4. File title should in proper format (**22F-1001-Lab2**)
5. Draw flowcharts on your paper and submit in hard form.
6. **Do not copy from any source otherwise you will be penalized with negative marks.**

Problem: Write pseudocode and flow chart of decision-based and iterative problems.

1. Write pseudocode that display first ten natural numbers. (1,2,3....10)
2. Write pseudocode that display first ten natural numbers in reverse order. (10,9,8,7.....1)
3. Write pseudocode that display your name 5 times using loop.
4. Write pseudocode that display all odd numbers between 20-40. (21,23,25.....39)
5. Write pseudocode that take a number from user and display its square and cube. (number=3, square=9, cube=81)
6. Write pseudocode that add first five natural number. (1+2+3+4+5)
7. Write pseudocode that display the average of first ten natural numbers. (1+2+3....+10)/10
8. Write pseudocode to read the age and nationality of a candidate and determine whether it is eligible for casting his/her own vote or not. Only Pakistan national and 18 above can cast their vote. (Using nested if)
9. Write pseudocode to find largest number from three number given by user.
10. Write pseudocode that calculate the factorial of user define number (number = 4, fact = 4*3*2*1)
11. Write a program that take base and power from user and perform calculation (like base=3, pow=2 , calculation: 9)
12. Write a program that display the number, its square and cube till n number. Where n is any number taken from user.

(n = 3

1 1 1



2 4 8
3 9 81)

13. Write a program that take any three digit number and break it into three pieces (number = 754 → 7, 5, 4)
14. Write a program to find sum of the series (9 + 99 + 999 + 9999 N terms). Where N is input.
15. Write a program that take a number from user and display whether it is prime or not. (a number that is divisible only by itself and 1 (e.g. 2, 3, 5, 7, 11, 13, 17)).

Note: Draw the flowcharts of all above problems.

Previous tasks:

Problem 1: Draw flow chart of a program that checks exams of two students. Program checks of two exams have more than 60% similarity then both students are declared as fail. Otherwise checks of a student has more than 50% marks then student is declared as pass, if student has less than 50% marks then student is declared as fail.

Problem 2: Draw flow chart of a program that charges income tax to different employees of FAST-NUCES. If employee is in faculty he/she is charged 4% of his salary as income tax. If employee is in management staff he/she is charged 3% of his salary as income tax. If employee is an attendant/guard he/she is charged 2% of his salary as income tax.

Problem 3: Draw a flow chart for a program that asks the user for choice of shape. If user enters 'circle' as choice then it asks you to enter 'radius' and program return area of the circle. If user enters 'triangle' as choice then program asks you enter the length of sides and returns the parameter of the triangle. If user enters 'rectangle' then program asks you to enter height and width and finally returns the area of the rectangle.

Problem 4: Draw flow chart of a program that suggests degree programs of a BS degree applicants. If student's intermediate marks are less than 40% he/she is straight away rejected with message saying "not qualified". Otherwise, if student's aggregate is above 60% he/she is admitted to BSCS program. Otherwise, if student's aggregate is above 55% he/she is admitted to BSSE program. Otherwise, if student's aggregate is above 50% he/she is admitted to BSAI program. Otherwise, if student's aggregate is above 45% he/she is admitted to BSBA program. Otherwise, student is shown message as "not qualified".

Best of Luck 😊