

FOCP II - Assignment 1

Submission date 8th Feb 2025

1. Number Manipulation and Prime Numbers

Write a C++ program to take a positive integer n as input and:

1. Check whether n is a prime number.
2. If it is not prime, find all its factors.
3. If it is prime, find the next prime number greater than n .

2. Array Operations

Write a program that performs the following operations on an array:

- a. Accept an integer array from the user (size determined at runtime).
- b. Reverse the array and display it.
- c. Find and display the second largest and second smallest elements in the array.

3. String Manipulation

Write a program that:

- a. Accepts a string from the user.
- b. Checks whether the string is a palindrome (ignoring spaces and case sensitivity).
- c. Counts and displays the frequency of each character in the string (case insensitive).
- d. Replace all vowels in the string with a specific character (e.g., *).

4. Spiral Number Pattern

Print a spiral pattern of numbers for a given size n .

Example for $n = 4$ (4x4 matrix):

1	2	3	4
12	13	14	5
11	16	15	6
10	9	8	7

5. Rotate Matrix 90 Degrees

Rotate a square matrix 90 degrees clockwise.

