Programming Assignment-8 on pointers

1. Declare an integer variable **num** and a pointer **ptr** to an integer. Initialize **ptr** to point to the address of **num**. Print the value of **num** using both the variable and the pointer.
2. Write a C program that demonstrates the use of pointer arithmetic to access elements in an integer array in reverse order without using array indices.
3. Implement a program that uses an array of pointers to strings. Sort the array of pointers in lexicographical order without modifying the actual strings.
4. Write a program that uses pointer arithmetic to traverse an integer array in reverse order without using array indices.
5. Create a program that uses an array of pointers to functions to perform different mathematical operations (addition, subtraction, multiplication, division) on two numbers based on user input.
6. Develop a function that takes a string as input and returns the number of vowels using pointer notation without array indexing.
7. Define a structure representing a student with attributes like name, roll number, and marks. Write a program that uses an array of pointers to structures to sort and display students based on their marks.
8. Create a program that uses a 3D array to represent a cube and implement a function to rotate the cube in any given direction (left, right, up, down).
9. Write a program that uses a pointer to a pointer to swap the values of two variables without using a temporary variable.
10. Design a program that uses an array of function pointers to perform various operations on an array (e.g., sum, average, maximum) based on user input.