2. Programs using Arrays and Strings

***CO1**: Impart the skills needed for Object – oriented programming and Console applications development*.

1. Write a program that declares an array VAL of 50 components of type integer. Initialize the array so that the first 25 components are equal to the square of the index variable, and the last 25 components are equal to three times the index variable. Output the array so that 10 elements per line are printed
    a) Using traditional for loop
    b) Using range based for loop.

2. Write a program to read 'n' numbers, find their sum, and print the numbers in reverse order.

3. Write a program to randomly store 50 numbers in the range 100 to 500 in an array A and print the array A. Copy only those values in the range 100 to 200 in the array A to another array B, and display the array B.

4. Write a program that reads the test scores of 'n' students in the range 0–200. It should then determine the number of students having scores in each of the following ranges: 0–24, 25–49, 50–74, 75–99,100–124,125–149, 150–174, and 175–200. Output the score ranges and the number of students.

5. Suppose the weekly hours for all employees are stored in a two-dimensional array. Each row records an employee's seven-day work hours with seven columns. For example, the array shown below stores the work hours for eight employees. Write a program that displays employees and their total hours in decreasing order of the total hours.

	Su	M	T	W	H	F	Sa
Employee 0	2	4	3	4	5	8	8
Employee 1	7	3	4	3	3	4	4
Employee 2	3	3	4	3	3	2	2
Employee 3	9	3	4	7	3	4	1
Employee 4	3	5	4	3	6	3	8
Employee 5	3	4	4	6	3	4	4
Employee 6	3	7	4	8	3	8	4
Employee 7	6	3	5	9	2	7	9

6. Write a program that prompts the user to input a string and outputs the string in uppercase letters. (Use a character array to store the string.)

7. For variable product_code containing a string of letters and digits,
    a) Give an' if statement' that outputs "Verified" if product_code contains both a "Z" and a "9", and outputs "Failed" otherwise.
    b) Give a C++ instruction that prints out just the last three characters in product_code.

8. Write a program that takes your full name as input and displays the abbreviations of the first and middle names except the last name which is displayed as it is. For example, if your name is Chandrasekhara Venkata Raman, then the output should be C. V. Raman.