Practice Problem on Structure, File, Recursion and Pointer

Recursion:

1. WAP that prints a string in reverse order.
   Sample input : abcd
   Sample output : dcba
2. WAP that takes an integer 'n' as input and prints the 'n'th term of the fibonacci series.
   Sample input : 5
   Sample output : 5
   fibonacci series : 0 1 1 2 3 5 8 ....
3. WAP that takes two integers as parameters and outputs their greatest common divisor (GCD)
4. WAP to find the largest/smallest integer from a given integer array.
5. WAP to sum all the integers in an integer array. Print the summation in main function.
6. WAP for sum of individual digits of a given integer.
7. WAP to reverse the digit of a given integer.

Sample input	***Sample output***
13579	97531
4321	1234

8. WAP to copy string into another string.
9. WAP to copy string into another string in reverse order.
10. WAP to check if a string is palindrome.

Pointer:

1. WAP that passes two array pointers to a function and prints '1' if the array elements are same and '0' if they are not. Function prototype would be: *int sameArray(int *a, int *b, int size);*
2. Find the element with highest frequency in the array using pointer.
3. WAP that passes two strings as pointer to a function and prints '1' if they are equal and '0' if they are not.
4. WAP that passes an integer array as pointer to a function and reverse all the elements of that array. Finally print the elements of the array in main function.
5. WAP using a user defined function that finds the maximum and minimum number from an integer array. The main() function will print the maximum and minimum numbers on monitor. Remember that global variables are not allowed in the program. Function prototype would be: *void getMinMax(int * numbers, int size, int * min, int * max);*
6. WAP to search an element in array using pointers.
7. WAP to copy one array to another using pointers.
8. WAP to concatenate two strings using pointers.
9. WAP to count vowels and consonants in a string using pointer.
10. WAP to swap two numbers using pointers.

Structure/File:

1. Write a program to store and print the roll no., name, age, address and marks of 15 students from a file named “input.txt” using structure.
2. Write a structure to store the roll no., name, age (between 11 to 14) and address of 15 students from a file named “input.txt”. Store/write the following information of the students into a file named “output.txt” :
    a. Write a function to print the names of all the students having age 14.
    b. Write another function to print the names of all the students having even roll no.
    c. Write another function to display the details of the student whose roll no is given (i.e. roll no. entered by the user).
3. Write a structure to store the name, account number and balance of customers (more than 10) from a file named “input.txt” and store/write the following information into a file named “output2.txt”:
    a. Write a function to print the names of all the customers having balance less than $200.
    b. Write a function to add $100 in the balance of all the customers having more than $1000 in their balance and then print the incremented value of their balance.
4. Write a structure to store the name, id and cgpa of students (more than 5 students) from a file named “student.txt” and store/write the name and id of the students having maximum and minimum cgpa, into a file named “output3.txt”.
5. Define a structure that will contain the coordinate of a point in 2D Cartesian plane. Now write a C program that will take as input coordinates of two points, and calculate the distance between them.