C Programming Basics - Exercise

1. Write a C program to determine the local maximums in a given array of integers. A number x[i] is said to be a local maximum if it is greater than both x[i-1] and x[i+1].
   Sample:
   Input: 25, 19, 22, 23, 21, 12, 10, 17, 11, 13, 10
   Output: 23, 17, 13
2. Write a function in C to identify the smallest index 'i' such that x[i] is even.
   Function Prototype: int getLeastIndexOfEven(int a[]);
   Sample:
   Input: 25, 19, 22, 23, 21, 12, 10, 17, 11, 13, 10
   Output: 2
3. Write a function in C to identify the smallest 'i' such that x[i] and x[i+1] are both even. Note: The function "getLeastIndexOfEven" implemented in Question 2 is to be used to get compute the result.
   Function Prototype: int getLeastIndexOfBothEven(int a[]);
   Sample:
   Input: 25, 19, 22, 23, 21, 12, 10, 17, 11, 13, 10
   Output: 5
4. Write a function in C to sort an array of names in ascending or descending order. Note: consider that the names are saved as character pointers.
   Function prototype: void sortNames(char *names[], int n); // n is the number of names
   Sample:
   Input: "Bob", "Steve", "Patrick", "Davie"
   Output: "Bob", "Davie", "Patrick", "Steve"
5. Write a function in C compute the sum of both diagonal elements of an array with equal number of rows and columns.
   Function prototype: void sumDiagonals(int **array, int n); // n is the number of rows in //_the array
   Sample:
   Input:

1	2	3	1
2	7	3	2
1	8	4	5
2	3	4	6

   Output: 32
6. Write a C program that defines a structure of the following form to store details of a worker:

```
struct workers
{
        int empid;
        char name [20];
        char designation[20]
        float salary;
        int experience;
        int joiningYear;
};
```

   Use structure pointers to perform the following operations:
   a. store the details of n workers
   b. identify the workers having experience less than a specified number of years