Assignment 1

Instructions:

- Read the questions very carefully and write all the functions as you are instructed in the question. You should take the input following the sample input format. Your output should also match the sample outputs. Note that your code should work for all reasonable inputs, not just sample inputs.
- Adopting any unfair means will result in -100%.
- Submit the codes in ELMS. Name the files 1.cpp, 2.cpp etc. Only submit the .cpp files.

Question 1

Write a function **is_prime** that returns true if an integer **X** (X>0) is a prime, otherwise it returns false. Write a recursive function **count_prime** to count and print the prime numbers of an array of **n** *positive integers* using the function **is_prime**. Also, write a main function that takes an array **A** of **n** *positive integers* as input and prints the number of primes in the array **A** using **count_prime.**

Sample Input	**Sample Output**
5 5 7 1 34 6	5 7 #primes=2
6 5 4 1 37 41 6	5 37 41 #primes=3

Question 2

An integer is a palindrome when it reads the same backward as forward. Write a function **is_palindrome** that can determine whether an integer is palindrome or not. Use recursion to check for palindromes. Write another recursive function **sum_palindrome** that returns the sum **Z** of all palindrome integers within **X** to **Y** (X>0, Y>0, X<Y) using the function **is_palindrome**. Write a main function that takes as input **X** and **Y** and prints **Z** using **sum_palindrome**.

Sample Input **X Y**	**Sample Output** **Z**
3 56	3 4 5 6 7 8 9 11 22 33 44 55 sum 207
556 600	565 575 585 595 sum 2320

Hint:
Look at the following code snippet:

1. **char str[100];**
2. **sprintf(str, "%d", num);**
3. **bool is_palindrome = check_palindrome(str, 0, strlen(str)-1);**

Use **sprintf(str, "%d", num);** to convert a integer into a string, then check if that string is a palindrome or not recursively using a function **bool check_palindrome(char str[], int firstidx, int lastidx)**.

You need to use **#include <cstring>** to use **strlen**.