Assignment 2

Instructions:

- Write the code by yourself. **Adopting any unfair means will result in -100%.**
- Your output should match the sample outputs. 10% marks for this.
- Submit the codes in ELMS. Name the files **1.cpp**, **2.cpp**, **3.cpp**.
    - **1.cpp** contains solution to the first problem, **2.cpp** contains solution to the second problem, and **3.cpp** contains solution to the third problem.

Question 1 [20%]

Write a code for the following scenario:
Input: an array **A** of n integers
Output: the count of prime numbers in that array
The code should contain
1. a function is_prime to check whether a number is prime or not
2. a **divide and conquer** function print_primes that prints the prime numbers and returns the number of primes in an array
3. a main method that takes the array as input from the user and prints the count of prime in that array.

Identify the mistakes you made in Online and write them in the comment of the solution.

Sample Input n A1, A2…	Sample Output
7 1 3 9 7 12 8 2	3 7 2 #primes=3

Question 2 (40% marks)

Suppose you are a coder. You write code for money and charge each customer the same amount, **M**, irrespective of how many hours it takes to write the code. Your customers have sent you **n** coding requests for tomorrow. Each coding request contains the customer id (c_i), the start time (s_i) and the duration (d_i) of the coding task. Write a code to maximize your income tomorrow. Note that you can only write code for one customer at a time. Note that you need **X** hour break between two code writing tasks.

Sample input **M X** **N**	Sample output

c_1, s_1, d_1 ... c_n, s_n, d_n	
10 0 4 a 2 8 b 3 4 d 8 1 c 7 1	Profit: 3x10=30 Chosen tasks: b c d

Question 3 (40% marks)

Consider the problem of making change for **N** cents using the fewest number of coins. Assume that each coin's value is an integer. Write a greedy algorithm to make change consisting of quarters (25 cents), dimes (10 cents), nickels (5 cents), and pennies (1 cent).

Sample input N	Sample output
173	25 cents --- 6 10 cents --- 2 1 cents --- 3 Total 11 coins