Name (Arabic):_____   Class: _____

Ain Shams University   **Version 3 (11 am-11:45am)**
Faculty of Computer and Information Sciences   **Date: March 21st, 2018**
First Year – Sections 1:6 – Midterm Exam   **Time: 45 minutes**
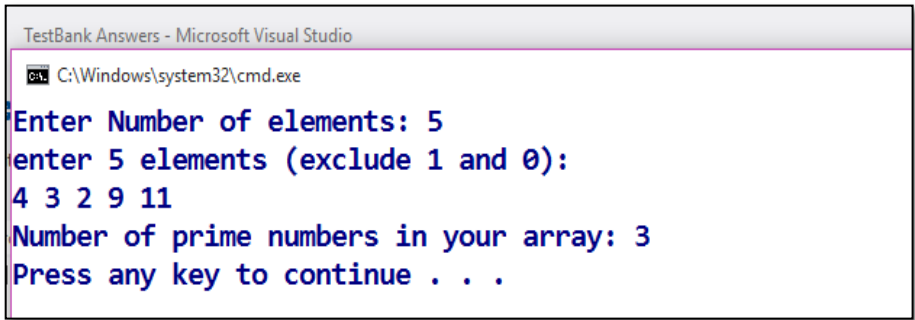**Prof. Zaki Taha**   **Course: CSW150**
Dr. Sally Saad

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Fundamental of Structured Programming Using C++
Please attempt ALL questions, and **think before you write**.

QUESTION (1) Sort the following 6 phases of developing a Program in C++	(3 points)	5-mints	Grade
- Compiling creating object code. `3` - Editing Source Code. `1` - Linking object code to different libraries. `4` - Preprocessing (collecting # directives). `2` - Executing creating **.exe** file. `6` - Loading the required variables in memory. `5`			**3** (partial sub-sorting is correct)

QUESTION (2) Choose the correct answer		(2 points)	5-mints	

(a) The following statements:
```
int a[10] = {1,2}, b[10] = {};
a = b;
```
  (i)   assigns all values in array a to array b.
  (ii) assigns all values in array b to array a.
  (iii) syntax error.

(b) What would be printed by the following:
```
int y[][3] = {{1,2,3},{4,5,6}};
```
  (i)   Creates 2x3 2D array.
  (ii) Creates 0x3 2D array.
  (iii) syntax error.

2 (1 for each selection)

QUESTION (3) Code Development	(5 points)	25-mints

Write a program that asks the user to enter **n** numbers in an array. Then displays the **number of prime numbers included in the array**.
Hint 1: Assume that the user will not input values (0,1).
Hint 2: *2* **is a prime number**

Sample Run:

```
TestBank Answers - Microsoft Visual Studio

C:\Windows\system32\cmd.exe

Enter Number of elements: 5
enter 5 elements (exclude 1 and 0):
4 3 2 9 11
Number of prime numbers in your array: 3
Press any key to continue . . .
```

Answer:
Main source file

```cpp
#include <iostream>
using namespace std;
void main()
{
        const int size=100;
        int occ=0, n;
        int myArr[size];
        char choice;

                occ=0;
                cout<<"Enter Number of
elements: ";
                cin>>n;
                cout<<"enter "<<n<<"
elements (exclude 1 and 0):\n";
                for(int i=0;i<n;i++)
                        cin>>myArr[i];
                bool prime=true;
                int counter=0;
                for(int i=0;i<n;i++)
                {
                        prime=true;
                        for(int
j=2;j<myArr[i]-1;j++)
                        {

        if(myArr[i]%j==0)
                                {

        prime=false;
                                        break;
                                }
                        }
                        if(prime)
                                counter++;
                }
                if(counter>0)
                cout<<"Number of prime
numbers in your array: "<<counter<<endl;
                else
                        cout<<"No Prime
Numbers!"<<endl;
}
```

- Array declaration with big size)→(0.5)
- User friendly msgs (At least one)→(0.5)
- Input size and array values (till n only)→(0.5)
- Loop on array elements and nested loop of Prime number→ (2)
- Flag and break→(0.5)
- Counter→(0.5)
- Output→(0.5)

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Best Wishes ☺
Prof. Zaki Taha
Dr. Sally Saad