

### Question 2:

A. Given a string and substring, write a method that returns number of occurrences of substring in the string. [7 Marks]

abcde f bc  
bc

B. Write a C# program to read two-dimensional array elements, calculate the number of positive elements and its sum, the number of negative elements and its sum, and then calculate the number of zero's elements. [8 Marks]

### Question 3:

A. Use Switch statement to write a c# program that calculates B from A

[ (3A-6) if (A=-3)] [8 Marks]

B= [ (5 A<sup>2</sup>) if (A=2 or 4) ]

[ (A+ 3A<sup>3</sup>) if (A=5 or -5)]

B. Convert the for statement to for each and vise versa [7 Marks]

1. static void Main(string[] args)	2. static void Main(string[] args)
<pre>{     Char[] arr = {'a','e','o','u'};     For (int i=0; i&lt;arr.Length; i++)         Console.WriteLine(arr[i]); }</pre>	<pre>{     int total = 0;     int[] scores=new int[10];     foreach(int x in scores)         total += x; }</pre>

### Question 4:

A. Write a c# program that asks the user to enter array of String names and sort it alphabetically. [7 Marks]

B. Write a c# function to calculate N! where N=N(N-1).....1 then use this function to calculate the p value from the relation ship

$$P = \frac{(r+h)!}{(r-h)!}$$

Where r, h are positive numbers and  $r > h$ . [8 Marks]

Good Luck



[Q4]a-Show the exact output produced by the following code: [6 marks]

```
namespace test2
{
    class Program
    {
        static void Main(string[] args)
        {
            int x, y;
            x = 5;
            y = 1;
            while (x > 0)
            {
                x = x - 1;
                y = y * x;
                Console.WriteLine(y);
            }
        }
    }
}
```

b- Write a C# program to calculate the sum of 3<sup>rd</sup> row elements and the sum of 4<sup>th</sup> column elements in a two dimensional array[5][5]. [6 marks]

[Q5] a) Define the following terms: class, object, access modifiers, constructor, and property. [6 marks]

b) Write a class named person that has the following private data members (attributes): firstName, lastName of type String and age of type int. In addition the class should have the following public member methods

- A constructor: would accepts the Person's firstName, lastName, and age as arguments and assign these values to the object's attributes.
- Accessors (properties): appropriate properties should be created to allow values to be retrieved/assigned from/to an object's attributes.
- Method named isTeen without any parameters, it needs to return true if the value of the age field is greater than 12 and less than 20, otherwise, return false.
- Method named getFullName without any parameters, it needs to return the full name of the person.

Finally in main program create an object from class person named P with following initial values ("Ahmed", "Ali", 14), and call the isTeen and getFullName methods.

Good Luck  
Prof. Dr. Abdelmgeid Amir ali



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### Question 3:

A. Use Switch statement to write a c# program that calculates B from A

$$[(3A - 6) \quad \text{if} \quad (A = -3)] \quad [8 \text{ Marks}]$$

$$B = [(5A^2) \quad \text{if} \quad (A = 2 \text{ or } 4)]$$

$$[(A + 3A^3) \quad \text{if} \quad (A = 5 \text{ or } -5)]$$

B. Convert the for statement to for each and vice versa [7 Marks]

1. static void Main(string[] args) { Char[] arr = {'a', 'i', 'e', 'o', 'u'}; For (int i=0; i<arr.Length; i++) Console.WriteLine(arr[i]); }	2. static void Main(string[] args) { int[] scores = new int[10]; int total = 0; foreach(int x in scores) total += x; }
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### Question 4:

A. Write a c# program that asks the user to enter array of String names and sort it alphabetically. [7 Marks]

B. Write a c# function to calculate  $N!$  where  $N = N(N-1) \dots 1$  then use this function to calculate the p value from the relation ship

$$p = \frac{(r+h)!}{(r-h)!} \quad \text{Where } r, h \text{ are positive numbers and } r > h. \quad [8 \text{ Marks}]$$

Good Luck





Answer about the following questions:

[Q1] a- Answer by (True or False) for each of the following expressions:

[6 marks]

i) C# is an object-oriented programming language.

ii) C# is the only language available for programming .NET applications.

iii) C# is case-sensitive.

iv) The break statement, when executed in a repetition structure, causes immediate exit from the repetition structure. ✓

v) In C#, the name of a method is defined capitalized. X

(0, 1, 2, 3) (3, 0)  
(2, 1) (1, 2) (2, 3) (3, 2)

b- Write a C# program to calculate the sum of 2<sup>nd</sup> row elements and the sum of 3<sup>rd</sup> column elements in array[3,3].

[6 marks]

[Q2] a- Show the exact output produced by the following code:

[6 marks]

```
namespace test1
```

```
{    class Program
```

```
{        static void Main(string[] args)
```

```
{            int i = 0;
```

```
            Boolean t = true;
```

```
            Boolean f = false, b;
```

```
            b = (t && ((i++) == 0));
```

```
            b = (f && ((i+=2) > 0));
```

```
            Console.WriteLine(i);    }
```

```
        }
```

b- By using methods (Functions), write a C# program to calculate the following Equation:  $P = \frac{n!}{(n+m)!}$

[6 marks]

[Q3] a- Write a C# program to reorder a group of names alphabetically.

[6 marks]

b- What will be the output of the C#.NET code snippets given below?

i- Console.WriteLine ("abc\ndef");

ii- int val;

for (val = -5; val <= 5; val++)

{ switch (val)

{ case 0:

Console.Write ("MiniA");

break; }

if (val > 0)

Console.Write ("A");

else if (val < 0)

Console.Write ("M"); }

[6 marks]



Answer the following Questions:

Question 1:

A. What is the output of the following code Segments? [10 Marks]

<p>(a)</p> <pre>static void Main(string[] args) {     int i;     for (i = 0; ; )     {         Console.WriteLine("hello");     }     Console.ReadLine(); }</pre>	<p>a) No output. x b) hello x c) hello printed infinite times d) Code will give error as expression syntax.</p>
<p>(b)</p> <pre>static void Main(string[] args) {     int a = 5, b = 10;     if (Convert.ToBoolean(Convert.ToInt32(++a)))            Convert.ToBoolean(Convert.ToInt32(++b)))     {         Console.WriteLine(a + " * " + b);     }     else         Console.WriteLine(" C# "); }</pre>	<p>a) 6 11 b) 6 16 c) 6 12 d) 6 10</p>
<p>(c) Which of these methods of class String is used to separate a substring from a String object?</p>	<p>a) substring() b) Substring() c) SubString() d) None of the mentioned</p>
<p>(d) Which of these methods of class are used to remove the leading and backward whitespaces?</p>	<p>a) startsWith() b) trim() c) Trim() d) doTrim()</p>
<p>(e)</p> <pre>static void Main(string[] args) {     String c = "Hello",     String a;     a = c.Replace('l', 'w');     Console.WriteLine(a);     Console.ReadLine(); }</pre>	<p>a) Hello! ✓ b) Hewlo ✓ c) Helwo d) Hewwo</p>

B. Write a C # program to calculate the power x, y using recursion [5 Marks]  
Ex: Power (2,3) =8

power(int x, int y) 2<sup>0</sup> = 1  
if (y == 0)  
return 1;  
3 \* power(2,2)  
else return x \* power(x, y-1)  
3 \* 3 \* power(2,1)  
3 \* 3 \* 3 \* power(2,0)

(1)

(ints]  
Worked).  
=35; and  
correct

t?

234

) 0123

nt, how to

available for

[8 Points]

i++)  
telLine(i): 3  
eLine(i \* i):  
qual? Write

0  
1  
2  
3  
16