El-Minia University
Computer Science Dept.
May -2023

Programming language (1)
Final exam (CS 142)
Time allowed (2 hrs.)

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.

b- Write a C# program to calculate the sum of 2nd row elements and the sum of 3rd 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]

Question 2:

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

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

[8 Marks]

$$B = \begin{cases} (3A - 6) & \text{if } (A = 3) \\ (5A^2) & \text{if } (A = 2 \text{ or } 4) \\ (A + 3A^3) & \text{if } (A = 5 \text{ or } -5) \end{cases}$$

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

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

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 3rd row elements and the sum of 4th 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 Amin ali

Question 2:

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

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

B= [(5 A^2) if (A=2 or 4)]

[(A+ 3A^3) if (A=5 or -5)]

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

```
for (int i=0; i<arr.Length; i++)
{
    Console.WriteLine(
}
```

```
foreach(int x in arr)
{
    total += x;
}
```

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

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

Good Luck

[Q3]i. Write a C++ program which reads unknown number of integers and counts the number of odd numbers and the count of even numbers. Assume the input integers are all positive. Use any negative number as a sentinel. (7 marks)

ii. Study the following code segment. (6 marks)

```
int N = 7;   int i, x;
for (i = 1; i <= N; i++) {
cin >> x;
cout << i << ". " << x << " ";
if(i % 3 == 0) { cout << endl; }}
cout << endl;
```

- What is displayed with the given input? Watch the endl characters.

Input: 11 12 13 14 15 16 17 18 19

[Q4]i.Write a C++ program to read a one dimensional array of N values, and determine the minimum element and its location? (7 marks)

ii. What is printed in each case: (6 marks)

```
string N = "17";
cout << N + "10 / 4" << endl;
```

[Q5] i. Write a C++ program to find the value y from the relation: (7 marks)

$$y=\begin{cases}(3x-7) & if(x=-5)\\ (5x^2) & if(x=2)or(x=5)\\ (x-4x^3) & if(x=-4)or(x=4)\end{cases}$$

i. What is the output of the following code segment? (6 marks)

```
int k;
double j;
k = 2;
j = 2.0;
if(k == j)
    cout << "Okay:";
else
    cout << "Not okay.";
```

Good Luck

Prof. Abdelmgeid Amin Ali

Faculty of Computers & Information

Final Exam of Programming Language1 (CS112)

Grade or Level: 1st Level

Academic Year: 2018/2019

Time: 3 hours

Date: May, 2019

Answer the following questions:

[Q1] i. What is the output from each code segment below? (6 marks)

a. int x = 1, y = 0;
if (x > 0 && y < 0) {
x = y = 23; }
cout << x << " " << y << endl;

b. int x = 1, y = 0;
if (x > 0 || y < 0) {
x = y = 23; }
cout << x << " " << y << endl;

x = 10; y = 40;
if (x >= 10) {
if (y < 40) {
y++; }}
else
y--;
cout << x << " " << y << endl;

ii. By using functions write a C++ program to calculate the factorial of any entrance number, and use this function in your program to calculate the P value from the relationship:

$$p = \frac{n!(m+n)!}{(m-n)!}, \quad N! = N(N-1)(N-2)\ldots\ldots 1$$

(6 marks)

[Q2] i. Write a program to reorder a group of names alphabetically. (7 marks)

ii. If A and B are boolean variables, then the expression (!A) || (!B) is equivalent to which of the following conditions:
(6marks)

a) (! (A && B)) b) (! (A || B)) c) (!A) && (!B) d) true

```
int x, y;
    x = 5;
    y = 1;
    while (x > 0)
    {
      x = x - 1;
      y = y * x;
      cout<<y<<endl;
    }
int k;
double j;
k = 2;
j = 2.0;
if(k == j)
    cout << "Okay:".
else
    cout << "Not okay.";
```

[Q3] a- Write a program to calculate area and circumference of a triangle. Where

$$Area=\sqrt{s(s-a)(s-b)(s-c)}, \quad s=\frac{a+b+c}{2},$$

circumference=2s=a+b+c. [8 points]

b) Find the error(s) in each of the following: [7 points]

```
) For ( x = 100, x >= 1, x++ )
out << x << endl;
```

```
i) The following code should print whether integer value is odd
r even:
witch ( value % 2 ) {
ase 0:
out << "Even integer" << endl;
ase 1:
ut << "Odd integer" << endl;}
.)The following code should print the odd integers from 19to 1:
r ( x = 19; x >= 1; x += 2 )
ut << x << endl;
```

Minia University
Faculty of Computers & Information

Mid-Term Exam – April-2019
Programming Language (1) - CS112
Time allowed (1 hr.)

Answer about the following questions:

[Q1] a) What is the output of the following code segments

```
int i = 0;
bool t = true;
bool f = false, b;
b = (t && ((i++) == 0));
b = (f && ((i+=2) > 0));
cout<<i<<endl;
```

```
cout<<"abc\ndef"<<endl;
```

```
int x, y;
x = 5;
y = 1;
while (x > 0)
{
x = x - 1;
y = y * x;
cout<<y<<endl;
}
```

```
int k;
double j;
k = 2;
j = 2.0;
if(k == j)
    cout << "Okay:";
else
    cout << "Not okay.";
```

b) Write a C++ Program to print the following:

```
1
22
333
4444
55555
```

[Q2] Use Switch Statement to write a C++ program to calculate Y

$$Y = \begin{cases} (3x-7) & \text{if } (x=-5) \\ (5x^3) & \text{if } (x=2) \text{ or } (x=1) \\ (x-4x^3) & \text{if } (x=-4) \text{ or } (x=4) \end{cases}$$

Minia University
Faculty of Computers & Information
1st Year students

Programming Fundamentals Course
Lab Exam

First Term
December, 2019
Time allowed: 1:00 hr

Model (A) Name: [illegible]

Sec: ..... 1 .....

20

Notes: Create Your Project on (D:\) and rename solution file to be (*YourName_SecNo_ModuleNo*)

***

1. [7 points] Write a complete C++ program that declare a **function** called getSum(int N) which return the sum of this series, where N represent the series level.

$$SUM = 1 + 3^3 + 5^3 + 7^3 + \ldots\ldots N^3$$

2. [13 points] Write a complete C++ program that adds elements of the first row of a two-dimensional with the last column of second two-dimensional and save the adds in one-dimensional array as follows:

$$\underset{\text{first}}{\begin{bmatrix}1 & 2 & 3\\ 4 & 5 & 6\\ 4 & 6 & 9\end{bmatrix}} + \underset{\text{second}}{\begin{bmatrix}1 & 2 & 3\\ 4 & 5 & 6\\ 7 & 8 & 9\end{bmatrix}} = \underset{\text{result}}{[1+3,\ 2+6,\ 3+9]}$$

University
ulty of Computers & Information

Mid-Term Exam – April 2018

Structured Programming -CS

Time allowed (1 hr.)

Answer about the following questions:

[Q1] a) Write a C++ program which reads unknown number of integers and counts the number of odd numbers and the count of even numbers. Assume the input integers are all positive. Use any negative number as a sentinel.

b) Show the output for the following program part:

i)

```
int val;
for (val=-5;val<=5;val++)
{  switch (val)
    { case 0:
         cout<<("EgypT");
         break;    }
       if (val > 0)
       cout<<("T");
    else if (val < 0)
       cout<< ("E"); }
cout<<"\n";
```

ii)

```
int i = 0;
i++;
cout<<(i++)<<endl;
cout<<(i--)<<endl;
cout<<(i)<<endl;
```

[Q2]a)Use Switch Statement to write a C++ program to calculate Y from :

$$Y = \begin{cases} (3x-7)y^2 & (x=-5) \\ (3x^2)y^2 & (x=2)or(x=5) \\ (x-4x^2)y^2 & (x=-4)or(x=4) \end{cases}$$

b)
Which of the following do - while statements is equivalent to: ?

```
x= 6
while (x < 9)
    {
      y = x + 7;
      x ++;
    }
```

a)
```
x=6;
x ++;
do
 {
   y = x + 7;
   x ++;
 } while (x < 9);
```

b)
```
x= 6;
do
 {
   y = x + 7;
   x++;
 }while (x < 9);
```

c)
```
x=6;
do
 {
   y = x + 7;
   x ++;
 }while ( x <= 9);
```

d) none of the above

Good Luck

Prof. Dr. Abdelmgeid Amin Ali

[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 3rd row elements and the sum of 4th 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 Amin Ali

[III] a) Write a function to calculate the factorial of any entrance number, and use this function in your program to calculate the P value from the relationship: (7 marks)

$p=\frac{(r+h)!}{(r-h)!}$, where r,h are positive numbers,and r>h.

b) Write a C++ program to reorder a group of names alphabetically. (8 marks)

[IV] a) By using switch statement, write a C++ program to find the value y from the relation: (7 marks)

$$y=\begin{cases}(3x-7) & if(x=-5)\\ (5x^2) & if(x=2)or(x=5)\\ (x-4x^3) & if(x=-4)or(x=4)\end{cases}$$

b) Show the exact output produced by the following code: (8 marks)

```
int main()
{ int y = 0;
for (int x = 1; x <= 20; x(++
{     if ((x % 7) == 0)
   {   cout<<"X ="<<x<<endl; )
         y;++
   cout<<"Y =" << y<<endl; )}
```

Best wishes

Prof. Dr. abdelmged Amin ali

Wisis University

Faculty of Computers and Informatics

Final Exam June -2021

Programming Language I -CS 142

First year

Time Allowed (3 hrs)

Answer the following Questions:

Question 1:

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

(a)

```
static void Main(string[] args)
{
    int i;
    for (i = 0; ; i)
    {
        Console.WriteLine("hello");
    }
    Console.ReadLine();
}
```

a) No output

b) hello

c) hello printed infinite times

d) Code will give error as expression

(b)

```
static void Main(string[] args)
{
    int a = 5, b = 10;
    if (Convert.ToDouble(Convert.ToInt32(a)) ...
    Convert.ToDouble(Convert.ToInt32(b)) ...
    {
        Console.WriteLine(a + " " + b);
    }
    else
    Console.WriteLine(" C# ");
}
```

a) 8 11

b) 5 10

c) 15

d) 5 10

(c) Which of these methods of class String is used to separate a substring from a String object?

a) substring()

b) Substring()

c) SubString()

d) None of the mentioned

(d) Which of these methods of class str are used to remove the leading and backward whitespaces?

a) trim(0, str)

b) trim()

c) Trim()

d) doTrim()

(e)

```
static void Main(string[] args)
{
    String s = "Hello";
    String t;
    t = s.Replace('l', 'w');
    Console.WriteLine(t);
    Console.ReadLine();
}
```

a) Hellow

b) Hewlo

c) Helwo

d) Hewwo

B. Write a C # program to calculate the power x, y using recursion [5 Marks]

Ex: Power (2,3) =8

Question 2:

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

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

$$B = \begin{cases} (3A-6) & \text{if } (A=3) \\ (4\,A^{3}) & \text{if } (A=2 \text{ or } 4) \\ (A-3A^{2}) & \text{if } (A=5 \text{ or } 5) \end{cases}$$

[8 Marks]

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)
{	{
char [] arr = {'a', 'e', 'i', 'o', 'u'};	int[] arr = new int [10];
for (int i=0; i<arr.Length; i++)	int total = 0;
Console.WriteLine(arr[i]);	foreach(int x in arr)
	total += x;
	}

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

$$P=\frac{(r+k)!}{(r-k)!}$$ Where r, k are positive numbers and r>k [8 Marks]

Good Luck

Question 2:

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

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 [8 Marks]

$$B = \begin{cases} (3A-6) & \text{if } (A=-3) \\ (5A^2) & \text{if } (A=2 \text{ or } 4) \\ (A=3A^3) & \text{if } (A=5 \text{ or } -5) \end{cases}$$

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

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

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