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Seventh Semester B.E. Degree Examination, May/June 2010
C# Programming and .NET

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

PART - A

- 1 a. Briefly explain the history of .NET. Explain the building components of .NET and their responsibilities. (06 Marks)
- b. Explain Jitter, along with its benefits. Explain how CLR host an application on .NET platform. Give the block diagram. (06 Marks)
- c. What is an assembly? Explain each component of an assembly. Differentiate between single file assembly and multifile assembly. (08 Marks)
- 2 a. Explain how CSC. exe computer is used to build C# application. Explain any five flags with appropriate examples. (06 Marks)
- b. Write a program to count the number of object instances created inside or outside of an assembly. (08 Marks)
- c. With a program, demonstrate, how an assignment operation, between value types and reference types differ. (06 Marks)
- 3 a. Explain the method parameter modifiers. Demonstrate with a function definition and function call for each modifier. (06 Marks)
- b. Explain the functions of system, object class. Give overridden definition for ToString() and equals (). (08 Marks)
- c. Write a program in C# to read a Jagged array and display the sum of all the elements of three inner arrays. (06 Marks)
- 4 a. Explain how encapsulation is enforced in C#, with a small program for each method. (08 Marks)
- b. Implement the following hierarchy of classes to demonstrate abstract functions in C#.
- Class employee : [Fields : name, Emp_id, Basic_sal,
 Methods : abstract method compute-Bonus()
 virtual method calculate - Sal()
]
- Class manager : Derived from employee
 [Fields : Total_Sales
 Methods : comute_Bonus() to give
 - 5 % of basic_Sal as bonus if
 Total_Sales > 10,000
 - 2 % of basic_Sal as bonus if
 Total_Sales < 10,000
 Calculate_Sal() to calculate the salary as basic + 12 % DA + Bonus.
]
- Write driver program to create an array of 3 managers and display their total salary. Use appropriate constructors. (12 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

PART – B

- 5 a. Explain the process of finalizing objects in .NET environment. Give the members of system. GC and explain their usage, with examples. (09 Marks)
- b. Write a program in C# to throw and handle the following exceptions in banking application.
MinimumBalanceException : when balance is less than 1000
ArgumentOutOfRangeException : If the amount deposited is greater than the capacity of an int, which is an argument to deposit function. Display the details of each exception. Use required members and methods to support the logic. (11 Marks)
- 6 a. What is an interface? With a program demonstrate the implicit and explicit access of interfaces. (08 Marks)
- b. Write a program in C# to sort an array of student objects having rollno, name and marks in two subjects.
– display the array sorted on names
– display the array based on average marks. (12 Marks)
- 7 a. What are delegates? Explain the members of system. MulticastDelegates : Give a small program to implement multicasting. (10 Marks)
- b. Write a program in C# to implement operator overloading of + and – for adding subtracting two square matrices. (10 Marks)
- 8 Write short notes on :
- a. Interfaces of system collection
- b. Indexers
- c. Shared assemblies
- d. Mutable and immutable strings. (20 Marks)

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Seventh Semester B.E. Degree Examination, December 2010

C# Programming and .Net

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. What are the building blocks of .Net frame work? Show their relationship, with a neat block diagram. Explain CTS, in detail. (10 Marks)
- b. What is .Net assembly? What does it contain? Explain each of them. (10 Marks)
- 2 a. Explain with a neat diagram, the workflow that takes place between your source code, a given .Net compiler and the .Net execution engine. (10 Marks)
- b. What is cordbg.exe? List and explain any five command line flags recognized by cordbg.exe while running .Net assemblies under debug mode. (07 Marks)
- c. What is csc.rsp file? Where is it located? (03 Marks)
- 3 a. Why System .Object is called master node? List and explain any three instance methods and static methods of System .Object. (10 Marks)
- b. What are the method parameter modifiers? Explain any two C# method parameter modifiers, with an example. (05 Marks)
- c. With an illustrative example, explain what happens when reference type is passed by value and when reference type is passed by reference. (05 Marks)
- 4 a. What are the three pillars of object oriented programming in C#? Differentiate between "is-a" and "has-a" relationships. (05 Marks)
- b. What is a property in C#? Why is it used? What is the advantage of using property over traditional accessor and mutator methods? (05 Marks)
- c. Define a person class with three data members : age, name and sex.
 - Create appropriate constructor.
 - Derive a class called employee from person that adds a data member code to store employee code.
 - Derive another class called specialist from employee.
 - Add a method to each of the derived class to display information about what it is.

Write a driver program to generate an array of three ordinary employees and another array of three specialist and display information about them. Also display the information of the specialist by calling the method inherited from employee class. (10 Marks)

PART – B

- 5 a. List and explain with code, the core members of system. Exception type. (10 Marks)
- b. Define a method that would sort an array of integers. Incorporate exception handling mechanism for "index out of bounds" situation. Develop a main program that employs this method to sort a given set of integers. (10 Marks)

- 6 a. What is an interface? Why they are used in C# programming? With an example, explain any four interfaces of System . Collection. (10 Marks)
- b. Write a C# program which contains the following:
- An interface called dimension with the methods length () and width (), which returns length and width in centimeters.
 - Another interface called metric dimension with the methods lengthinches () and widthinches (), which returns length and width in inches.
 - A class box that implements both the above said interfaces. This class has two data members lengthinches and widthinches.
- Define appropriate constructor for the class box. Write a main program to create an instance of box and to display the box length and width in inches and centimeters by invoking the appropriate methods of two interfaces. (10 Marks)
- 7 a. What is a delegate? Differentiate between synchronous and asynchronous delegate, with examples. (10 Marks)
- b. Write a complete C# program to calculate and display simple interest by writing appropriate methods which could be called through delegate method of programming. (10 Marks)
- 8 a. Explain the two conceptual views of .Net assembly with a neat diagram. What are the core benefits of this? (10 Marks)
- b. Write short notes on the following:
- i) Classic COM binaries versus .Net assemblies
 - ii) Cross language inheritance. (10 Marks)
