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06CS71

Seventh Semester B.E. Degree Examination, May/June 2010
Object Oriented Modeling and Design

Time: 3 hrs.

Max. Marks:100

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

PART – A

1.
 - a. Explain briefly three models used to describe a system. (06 Marks)
 - b. Explain with a diagram, how an association class participates in another association. (04 Marks)
 - c. With a neat diagram, explain a class model of a work-station window management system. (10 Marks)
2.
 - a. What is an association end? What are the properties of an association end? (06 Marks)
 - b. Define reification. Explain it with a diagram. (06 Marks)
 - c. Explain with a diagram, the basic UML syntax for state diagrams. (08 Marks)
3.
 - a. Explain with a diagram, nested states for a phone line. (06 Marks)
 - b. What is a usecase? Explain the guidelines for usecase models. (08 Marks)
 - c. What do you mean by a swimlane? Explain briefly an activity diagram with swimlanes for servicing an airplane. (06 Marks)
4.
 - a. Explain the sequence of software development stages. (08 Marks)
 - b. What do you mean by system conception? Explain devising a system concept. (08 Marks)
 - c. List the steps to construct a domain state model. (04 Marks)

PART – B

5.
 - a. With a neat sequence diagram, explain process transaction scenario. (08 Marks)
 - b. What are the different aspects of reusability? Explain the reusable things. (08 Marks)
 - c. What are the steps in designing a pipeline for a continuous transformation? (04 Marks)
6.
 - a. Explain the consideration for choosing alternative algorithms. (06 Marks)
 - b. When fine-tuning of classes is essential? How is it achieved? (08 Marks)
 - c. Compare forward engineering and reverse engineering. (06 Marks)
7.
 - a. Explain briefly the properties of patterns for software architecture. (08 Marks)
 - b. Explain pattern categories. (06 Marks)
 - c. What is a forwarder-receiver design pattern? When is it useful? (06 Marks)
8.
 - a. Explain the liabilities imposed by a command processor pattern. (06 Marks)
 - b. Why view handler design pattern is used? Explain the scenario of the view handler creating a new view. (08 Marks)
 - c. Write the steps to implement the counted pointer idiom. (06 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
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06IS72

Seventh Semester B.E. Degree Examination, May/June 2010
Software Architecture

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Define software architecture. Explain the common software architecture structures. (10 Marks)
b. Explain how the architecture business cycle works, with a neat diagram. (10 Marks)
- 2 a. Define architectural style. Mention any four commonly used styles. (04 Marks)
b. Consider the case study of building a software controlled mobile robot. Describe its challenging problems and design considerations with four requirements. Finally give the solution by layered architecture for all the four requirements. (16 Marks)
- 3 a. What are the qualities of the system? Explain the modifiability general scenario. (10 Marks)
b. What do you mean by tactics? Explain the availability tactics, with a neat diagram. (10 Marks)
- 4 a. What do you mean by architectural patterns? How is it categorised? Explain the structure part of the solution for ISO layered architecture. (10 Marks)
b. Explain with a neat diagram, the dynamic scenario of passive filters. (10 Marks)

PART – B

- 5 a. What do you mean by broker architecture? What are the steps involved in implementing distributed broker architecture patterns? (10 Marks)
b. Explain with a neat diagram, the dynamic scenarios of model view controller(MVC). (10 Marks)
- 6 a. What are the steps involved in implementing the microkernel system? (12 Marks)
b. What are the benefits and liabilities of reflection architecture patterns? (08 Marks)
- 7 a. Discuss the five steps implementation of master slave pattern. (10 Marks)
b. Define proxy design pattern. Discuss the benefits and liabilities of the same. (10 Marks)
- 8 a. Explain with a neat diagram, the evolutionary delivery life cycle model. (08 Marks)
b. What are the suggested standard organization points for interface documentation? (12 Marks)

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06CS/IS73

Seventh Semester B.E. Degree Examination, May/June 2010
Programming the Web

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Explain atleast two uses of the following :
 i) MIME type specifications ii) PERL iii) PHP
 iv) Java script v) XML (10 Marks)
- b. Explain with an example the following tags :
 i) Select ii) Frames iii) Colspan
 iv) Radio button v) Style class selector. (10 Marks)
- 2 a. Explain the following, with respect to table creation in XHTML documents :
 i) Align and valign attributes
 ii) tr, th and td attributes
 iii) Rowspan and colspan attributes
 iv) Cell padding and cell spacing attributes. (10 Marks)
- b. Create XHTML document to describe a table with the following contents :
 The columns of the table must have the headings pine, maple, Oak and fir. The rows must have the labels average height, average width, typical lifespan and leaf type. Fill the data cells with some values. (10 Marks)
- 3 a. Explain the following CSS tags, with an example for each :
 i) Class selectors ii) Pseudo classes iii) Background images
 iv) Text decoration v) Alignment of text. (10 Marks)
- b. Create an XHTML document that includes atleast two images and enough text to precede the images, flow around them (one on the left and one on the right) and continue after the last image (NOTE : use CSS tags for the problem). (10 Marks)
- 4 a. Describe briefly three major uses of Java script on the client side. (06 Marks)
 b. Describe briefly the basic process of event-driven computation. (04 Marks)
 c. Write a function in java script to check whether the given string has the form string1, string2 letters where both strings must be all lowercase letters except the first letter and "letter" must be upper case. If the string is of the given format the function should return true or false otherwise. (10 Marks)

PART – B

- 5 a. What are the two ways in which an event handler can be associated with an event generated by a specific XHTML element in the DOMQ event model? (06 Marks)
 b. Describe the approach to addressing XHTML elements using forms and elements. (06 Marks)
 c. Write XHTML file and java script, scripts to sort a set of number in either ascending order or descending order. The sorting order is input from the user which is either "ascending" or "descending". The sorted numbers should be displayed with proper headings. (08 Marks)

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- 6 a. Explain the following, with an example each :
- i) Absolute positioning
 - ii) Dynamic content
 - iii) Element visibility
 - iv) Stacking elements. (12 Marks)
- b. Write an XHTML document to display an image and three buttons. The buttons should be labeled simply 1, 2 and 3. When pressed, each button should change the content of the image to that of a different image. (08 Marks)
- 7 a. Explain the three types that can be used to describe data in an element declaration, with an example for each. (06 Marks)
- b. What are the four possible parts of an attribute declaration in a DTD? (04 Marks)
 - c. Describe briefly an XML name space. (04 Marks)
 - d. Briefly explain the purposes of XML processor. (06 Marks)
- 8 a. In what three fundamental ways do Perl arrays differ from the arrays of other common high-level programming languages? Give examples for each. (06 Marks)
- b. Write a perl program to read three numbers a, b and c each on its own line, from the keyboard and display the result of the expression $10ab - ((c-1)/17.44)$. (06 Marks)
 - c. What are the three categories of operations that are essential in web documents but that cannot be done with XHTML? (04 Marks)
 - d. Briefly explain why should a file to be read or written by a CGI program be locked against multiple simultaneous operations. (04 Marks)

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06CS74

Seventh Semester B.E. Degree Examination, May/June 2010
Embedded Computing Systems

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. How does an embedded system differ from a general purpose computer? (04 Marks)
- b. What are the possible devices available to a system designer to use it as a processor in an embedded system? What are the important considerations when selecting a processor? (10 Marks)
- c. What are the challenges faced in designing an embedded system? (06 Marks)
- 2 a. Explain briefly the different software modules and tools for designing an embedded system. (06 Marks)
- b. Describe the internal serial communication ports available in microcontroller 68HC11. (08 Marks)
- c. Draw the functional diagram of a typical parallel port showing the handshaking signals. Describe the communication using it. (06 Marks)
- 3 a. Explain how port-based input/output is different from bus-based input/output. (04 Marks)
- b. Describe the features of CAN bus and its protocol for serial communication. (08 Marks)
- c. What is PCI bus? Explain the features of PCI bus and standards available. (08 Marks)
- 4 a. How are the various interrupt sources classified? (06 Marks)
- b. What is interrupt latency? How the worst case latency can be estimated? (06 Marks)
- c. What are the points that must be known and the information that must be available before writing a software for a device driver in assembly language? (08 Marks)

PART – B

- 5 a. Explain the state machine programming model. Draw the state transition diagram to show the finite state machine of a task in a multi-tasking program. (08 Marks)
- b. What are the parameters of a task control block (TCB) of a task? Why should each task have a distinct TCB? (06 Marks)
- c. Differentiate between function, task and ISR. (06 Marks)
- 6 a. What is a process manager? What are the services of process manager? (06 Marks)
- b. How does memory allocation differ in RTOS as compared to conventional OS? Explain what is memory locking. (06 Marks)
- c. Briefly explain the three ways in which RTOS handles the ISRs in a multitasking environment. (08 Marks)
- 7 a. What are the steps by RTOS to meet hard-real time dead lines? (06 Marks)
- b. What are the methods of optimizing memory space in RTOS? (06 Marks)
- c. Describe earliest deadline first (EDF) and rate monotonic schedule (RMS) scheduling models. (08 Marks)
- 8 a. What is a target system? With the help of a block diagram, illustrate the different components of target a system. How does the target system differ from the final embedded system? (08 Marks)
- b. What is locator? What are the features of locator? (06 Marks)
- c. With a neat block schematic, explain how would you get an embedded software into the target system? (06 Marks)

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06CS/IS753

Seventh Semester B.E. Degree Examination, May/June 2010
JAVA and J2EE

Time: 3 hrs.-

Max. Marks:100

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

PART – A

- 1 a. Explain any five object oriented features supported by java, with examples. (10 Marks)
b. Explain the salient features of java. (06 Marks)
c. What is polymorphism? Explain with an example. (04 Marks)
- 2 a. Explain the applet architecture and demonstrate how to pass parameters for font size, font name, and type conversion in applets. (10 Marks)
b. What is an inner class? Write a program to demonstrate inner class. (06 Marks)
c. Explain the java's built in exceptions. (04 Marks)
- 3 a. What is synchronization? What is role of synchronization in threads? Demonstrate a program using synchronized methods. (10 Marks)
b. Explain the producer-consumer problem with a program. (06 Marks)
c. What is an adapter class? Demonstrate, with an example. (04 Marks)
- 4 a. Briefly explain the containers and components in swings. (10 Marks)
b. Explain the JScrollPane and JComboBox with a program. (10 Marks)

PART – B

- 5 a. Briefly explain the callable statement object. Write a program to call a stored procedure. (10 Marks)
b. What is transaction processing? Write a program to execute a database transaction. (10 Marks)
- 6 a. What is a servlet? Explain the life-cycle of the servlet. (06 Marks)
b. List out the differences between CGI and servlets. (04 Marks)
c. What is a cookie? List out the methods defined by cookie. Write a program in HTML for adding a cookie. (10 Marks)
- 7 a. What is JSP? Explain the different types of JSP tags. (06 Marks)
b. What is RMI concept? Explain the server side and client side methods. (10 Marks)
c. What are the advantages of JSP? (04 Marks)
- 8 a. Briefly describe the enterprise javabeans. (08 Marks)
b. Differentiate between stateless and stateful session bean. (04 Marks)
c. Explain the functions of EJB transaction attributes and write a program to set the transaction attribute. (08 Marks)

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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 compiler 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 : compute_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)

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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 in 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 implant multicasting. (10 Marks)
- b. Write a program in C# to implant operator over loading 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)
