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10CS71

Seventh Semester B.E. Degree Examination, June/July 2014
Object-Oriented Modelling and Design

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. With respect to objected oriented modeling and design, explain the concept of OO themes. (06 Marks)
- b. Explain the three models useful to model a system and the relationship among them. (08 Marks)
- c. Using the class diagram given below, prepare an object diagram for the two triangles with a common side under the following condition:
 - i) A point belongs to exactly one polygon.
 - ii) A point belongs to one or more polygon. (06 Marks)

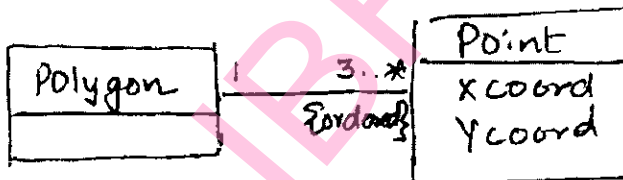


Fig.Q.1(c) Class diagram for polygon and point

- 2 a. A simple digital watch has a display and two buttons to set it, the A button, and the B button. The watch has two modes of operation, display time, set time in the display time mode, the watch displays hours and minutes, separated by a flashing colon. The set time mode has two submodes, set hours, set minutes. The button A selects modes. Each time it is pressed, the mode advances in the sequence: display, set hours, set minutes, display etc. Within the submodes the button B advances the hours or minutes once each time it is pressed. Buttons must be released before they can generate another event. Prepare a state diagram of the watch. (08 Marks)
- b. What is an event? Explain the different types of events with example for each one. (06 Marks)
- c. Explain the following:
 - i) Aggregation vs association. (06 Marks)
 - ii) Aggregation vs composition. (06 Marks)
- 3 a. What do you mean by concurrency? Explain the different types of concurrency among objects. (08 Marks)
- b. What are the guidelines for sequence models? (06 Marks)
- c. Explain the concept of swim lanes used in activity diagram with a simple example for servicing an airplane. (06 Marks)
- 4 a. Explain the sequence of well-defined development stages of a software development process. (10 Marks)
- b. What steps are performed in constructing a domain state model? (10 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. With the help of activity diagram, show the possible responses for the verification of card inserted by the user at the ATM. (08 Marks)
b. How are global resources handled while designing a system and how are boundary conditions handled? (12 Marks)
- 6 Write short notes on:
a. Recursing downwards. (04 Marks)
b. Two-way associations. (06 Marks)
c. Reverse engineering vs forward engineering. (06 Marks)
d. Wrapping. (04 Marks)
- 7 a. What is a pattern? What makes a pattern? What are its properties? (10 Marks)
b. Explain the client-dispatcher-server pattern following the pattern template. (10 Marks)
- 8 a. Explain the view handler management pattern. (10 Marks)
b. What is an Idiom? Explain how is the counted pointer Idiom makes memory management easier. (10 Marks)

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Seventh Semester B.E. Degree Examination, June/July 2014
Embedded Computing Systems

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting
atleast TWO question from each part.**

PART – A

- 1 a. Give the characteristics and constraints of embedded system. (04 Marks)
b. Explain the challenges in embedded computing system design. (08 Marks)
c. Define design methodology. Explain the embedded system design process. (08 Marks)
- 2 a. Differentiate between the Harvard and von Neumann architecture. (05 Marks)
b. Define ARM processor. Explain advanced ARM features. (07 Marks)
c. What is pipelining? Explain the C55x of a seven stages pipeline with a neat diagram of ARM instructions. (08 Marks)
- 3 a. Write the major components of bus protocol. Explain the burst read transaction with a timing diagram. (08 Marks)
b. Describe : i) Timer ii) Cross compiler iii) Logic analyzer. (06 Marks)
c. With neat sketch, explain the glue logic interface. (06 Marks)
- 4 a. Explain the circular buffers for embedded programs. (04 Marks)
b. With a neat sketch, explain the role of assemblers and linkers in compilation process. (08 Marks)
c. Explain with example, the techniques in optimizing. (08 Marks)

PART – B

- 5 a. What is RTOS? List and explain the different services of RTOS. (10 Marks)
b. Describe the concept of multithreading and write the comparison between thread and process. (10 Marks)
- 6 a. Define blocking and non blocking communication. Explain the two styles of interprocess communication, with a example. (10 Marks)
b. What are the assumptions for the performance of a real system running processes? Mention the factors affect context switching time and interrupt latency. (10 Marks)
- 7 a. With a neat sketch, explain the CAN data frame format and typical bus transactions on the I²c bus. (10 Marks)
b. Explain the Ethernet packet format and IP packet structure. (10 Marks)
- 8 a. What is a simulator? Explain the features, advantages and limitations of simulator based debugging. (10 Marks)
b. What are the improvements over firmware software debugging? Explain. (10 Marks)

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Seventh Semester B.E. Degree Examination, June/July 2014
Programming the Web

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting
atleast TWO question from each part.**

PART – A

- 1 a. Explain HTTP and also explain web servers operation and general server characteristics. (08 Marks)
- b. Explain MIME type specification in request/response transaction. Give the syntactic difference between HTML and XHTML. (08 Marks)
- c. Discuss the following tags with syntax and examples : i) <pre> ii) <meta>. (04 Marks)
- 2 a. What are selector forms? Explain the different types of selector forms with example. (08 Marks)
- b. Write document level style sheet to illustrate pseudo clauses. Discuss the conflict resolution in CSS. (08 Marks)
- c. Create an XHTML document that includes atleast two images and enough text to precede the images, flow around them (one on left and one on right) and continue after the last image (Note : Use CSS tags). (04 Marks)
- 3 a. Explain Javascript arrays with examples. (08 Marks)
- b. Write a Javascript that contains a function named validate – phoneno, which tests the phone number of the format ddd – dddd – ddddddd <091 – 8256 – 1234567> and display whether the given number is valid or not using alert. (04 Marks)
- c. Write a note on character and character classes. Describe briefly three major uses of java script on the client side. (08 Marks)
- 4 a. Explain with example, the different approaches of addressing XHTML elements in Javascript. (05 Marks)
- b. Explain the three phases of event processing in the DOM2 event model. (05 Marks)
- c. Write a Javascript which displays the message when the mouse button is pressed no matter where it is on the screen. (05 Marks)
- d. Explain the different types of positioning, with example. (05 Marks)

PART – B

- 5 a. What is the document type definition (DTD)? Describe the approach to declare elements, entities and attributer. (08 Marks)
- b. Explain the purpose of XML parser. (06 Marks)
- c. Describe briefly an XML name space. What are the two categories of user defined XML schema data type? (06 Marks)
- 6 a. Describe with example, the various types of variables in PERL. (08 Marks)
- b. What is query string? How is it transmitted to the server with the GET and POST methods? (06 Marks)
- c. Write a CGI program that collects the data from the form and writes it to a file (assume the form data). (06 Marks)

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- 7 a. Discuss arrays in PHP. (08 Marks)
b. Explain file operation in PHP. (06 Marks)
c. What is cookie and session tracking, how are they handled in PHP. (06 Marks)
- 8 a. With example, explain simple input and output functions in ruby. Explain code blocks and iterators. (10 Marks)
b. Discuss access – control in ruby. (05 Marks)
c. Write a ruby program to display the second smallest number in the list, along with its position in the list. (05 Marks)

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Seventh Semester B.E. Degree Examination, June/July 2014
Advanced Compute Architectures

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting
atleast TWO question from each part.**

PART – A

1.
 - a. Define computer architecture. List and explain four important technologies, which lead to the improvements in computer system. (10 Marks)
 - b. Find the number of dies per 300 mm (30cm) wafer for a die that is 1.5 cm on a side. (02 Marks)
 - c. Define Amdahls law. Derive an expression for CPU clock as a function of instruction count, clock per instruction and clock cycle time. (08 Marks)
2.
 - a. List three major hurdles of pipelining. Explain the concept of minimizing data hazards stalls by forwarding. (10 Marks)
 - b. Briefly explain how the MIPS instructions can be implemented in at most five clock cycles. (05 Marks)
 - c. List and explain five different ways of classifying exceptions in a computer system. (05 Marks)
3.
 - a. What is instruction level parallelism? Explain control dependence using code fragment. (08 Marks)
 - b. Explain the states in 2 – bit prediction scheme used for dynamic Branch prediction. (06 Marks)
 - c. With a neat diagram, explain the basic structure of a MIPS floating pint unit using Tomasulo's algorithm. (06 Marks)
4.
 - a. With a neat diagram, explain the four steps involved in executing instructions using hardware based speculation. (10 Marks)
 - b. What is branch target buffer? With a neat diagram, explain the steps when using branch target buffer for a simple five stage pipeline. (10 Marks)

PART – B

5.
 - a. To achieve a speedup of 80 with 100 processors what fraction of the original computation can be sequential? (04 Marks)
 - b. Explain the two cache coherence protocols used for enforcing coherence. (06 Marks)
 - c. Explain directory based cache coherence for a distributed memory multiprocessor system along with the state transition diagram. (10 Marks)
6.
 - a. List and explain any four basic cache optimization techniques. (10 Marks)
 - b. With a neat diagram, explain the translation buffer of fast address translation. (10 Marks)
7.
 - a. List any five advanced optimizations of cache performance and explain briefly the compiler optimization to reduce miss rate. (10 Marks)
 - b. Explain briefly how memory protection is enforced via virtual memory and via virtual machines. (10 Marks)
8.
 - a. Explain the architecture of IA64 intel processor and also the prediction and speculation support provided. (10 Marks)
 - b. Write short notes on benchmarks. (05 Marks)
 - c. Explain the internal organization of 64M bit DRAM. (05 Marks)

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Seventh Semester B.E. Degree Examination, June/July 2014
JAVA and J2EE

Time: 3 hrs.

Max. Marks:100

*Note: Answer FIVE full questions, selecting
atleast TWO question from each part.*

PART – A

- 1 a. How 'compile once and run anywhere' is implemented in Java, explain. (04 Marks)
- b. List and explain the Java buzzwords. (06 Marks)
- c. Explain : i) >>>> ii) short circuit logical operators iii) for each. (06 Marks)
- d. Describe the process of building and running Java program. (04 Marks)
- 2 a. Describe the significance of final and super, with examples. (06 Marks)
- b. What is an exception? Explain the different exception handling mechanisms, with an example. (08 Marks)
- c. Write an applet program to display the message "VTU BELGAUM". Set the background color to cyan and foreground color to red. (06 Marks)
- 3 a. What is synchronization? Explain with an example, how synchronization is implemented in Java. (06 Marks)
- b. What is producer – consumer problem? Explain the solution for producer – consumer problem with a program. (08 Marks)
- c. What is delegation event model? Describe the significance of adapter class, with an example. (06 Marks)
- 4 a. What is swing? List the main swing features. Explain the different types of panes of swing containers. (06 Marks)
- b. Create a swing application having two buttons named alpha and beta. When either of the buttons pressed, it should display "alpha pressed" and "beta pressed" respectively. (06 Marks)
- c. List the different types of swing buttons. Write a program to create four types of buttons on JApplet. Use suitable events to show actions on the buttons and use JLabel to display the action invoked. (08 Marks)

PART – B

- 5 a. Explain the four types of JDBC drivers. (06 Marks)
- b. Describe the various steps of JDBC with code snippets. (08 Marks)
- c. Explain : i) callable statement ii) prepared statement. (06 Marks)
- 6 a. Explain the different stages in the life cycle of a servlet. (06 Marks)
- b. What is a cookie? List out the methods defined by cookie. Write a program to add a cookie. (08 Marks)
- c. Write a program to describe parameter reading using servlets. (06 Marks)
- 7 a. Define JSP. Explain the different types of JSP tags by taking suitable examples. (10 Marks)
- b. What is RMI? Describe with code snippet RMI at server side. (10 Marks)
- 8 a. What is deployment descriptor? List the deployment descriptor for EJB1-1. (06 Marks)
- b. With a skeleton, explain entity Java bean. (06 Marks)
- c. Explain : i) JAR file ii) Stateless bean versus stateful bean. (08 Marks)

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10CS/IS761

Seventh Semester B.E. Degree Examination, June/July 2014
C# Programming and .NET

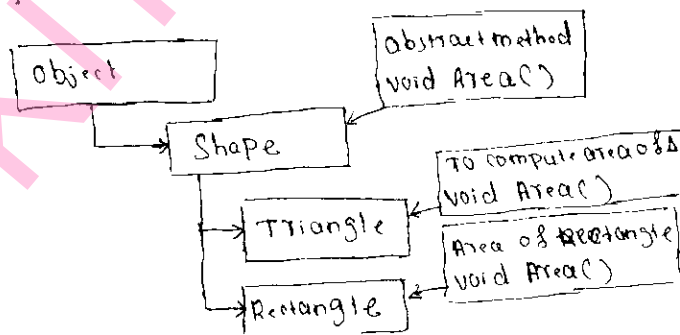
Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. What are the problems with earlier programming languages? Explain. And How .Net provides solution for it. (10 Marks)
- b. What defines the set rules in .Net in order to interact one language with other? Explain with example. (10 Marks)
- 2 a. With neat diagram, explain the workflow of .Net execution engine. (10 Marks)
- b. How do you build C# application using CSC. exe? Write source code in C# to compute the sum, subtraction and multiplication of two members passed as command line argument. (10 Marks)
- 3 a. Write a C# program to compute row sum and column sum of the rectangular array. (10 Marks)
- b. Explain the core members of the system string pass with explain. (10 Marks)
- 4 a. With a C# program to compute the area of triangle and rectangle for the following hierarchy to illustrate polymorphism. (10 Marks)



- b. Define encapsulation. Explain containment/delegation model with example. (10 Marks)

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. (10 Marks)
- b. Write a program in C# to implement the queue operations INSERT and DELETE with appropriate generic exception for overflow and underflow of queue. Display the elements of queue. (10 Marks)

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- 6 a. Explain how do you build cleanable objects in C# with example. (10 Marks)
b. What is an interface? Explain the three methods to obtain interface references with example. (10 Marks)
- 7 a. Write a complete C# program to compute and display sum difference, and multiplication of two numbers by writing appropriate methods which could be called through multicast delegate method of programming. (10 Marks)
b. What are asynchronous delegates? Write the source code in C# to illustrate it. (10 Marks)
- 8 a. Design a C# application for linked list with following operation:
i) Add car
ii) Remove car
iii) Count the number of cars
iv) Cars present. (10 Marks)
b. Write short notes on the following:
i) Cross language inheritance
ii) Operator overloading. (10 Marks)
