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Seventh Semester B.E. Degree Examination, Dec.2013/Jan.2014
Object Oriented Modeling and Design

Time: 3 hrs.   Max. Marks:100

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

PART – A

1 a. What is object orientation? Explain briefly the stages involved in OO methodology.
      (10 Marks)
   b. Define the following terms with an example:
      i) Objects   ii) Classes   iii) Class diagrams
      iv) Values and Attributes   v) Operations and methods   **(10 Marks)**

2 a. What is an association end? What are the properties of an association end?   **(06 Marks)**
   b. With respect to multiple inheritance, briefly discuss about i) Multiple classification,
      ii) Metadata.   **(06 Marks)**
   c. Define state diagrams and state model. Draw the state diagram for telephone line with
      activities.   **(08 Marks)**

3 a. Explain aggregation concurrency within an object with an example each.   **(08 Marks)**
   b. Consider an online airline reservation system. You want to check airline websites to give
      you ideas.
      i)   List two actors. Explain relevance of each actor.
      ii) One use case is to make a flight reservation. List four additional use cases at the
           comparable level of abstraction. Summarize the purpose of each use case with a
           sentence.
      iii) Prepare a use case diagram for an airline reservation system.   **(12 Marks)**

4 a. List and explain different stages in software development process.   **(10 Marks)**
   b. List the steps to construct a domain state model. For an ATM bank system, prepare data
      dictionary for all modeling elements.   **(10 Marks)**

PART – B

5 a. With a neat sequence diagram, explain process transaction scenario.   **(08 Marks)**
   b. Explain the steps followed in constructing application class model.   **(08 Marks)**
   c. What are the steps in designing a batch transformation?   **(04 Marks)**

6 a. What are the steps to improve organization of class design? Explain.   **(08 Marks)**
   b. When fine tuning classes is essential? How is it achieved?   **(08 Marks)**
   c. Compare forward engineering and reverse engineering.   **(04 Marks)**

7 a. What is a pattern? Explain briefly properties of patterns for software architecture. **(08 Marks)**
   b. Explain Forwarder-Receiver pattern briefly.   **(12 Marks)**

8 a. Explain view handler design pattern.   **(08 Marks)**
   b. Explain singleton design pattern that provides two idioms specific to small talk and C++.
                                                                                 (06 Marks)
   c. Write the steps to implement the counted pointer idiom.   **(06 Marks)**

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Seventh Semester B.E. Degree Examination, Dec. 2013/Jan. 2014
Embedded Computing System

Time: 3 hrs.   Max. Marks:100

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

PART – A

1   a.   What is an embedded system? Explain the purpose of ES? List its major application areas and give one example for each? **(08 Marks)**
    b.   Differentiate the following, with an example :
         i)   Microprocessor and microcontroller
         ii) Embedded system and general purpose computers. **(06 Marks)**
    c.   Write a requirement chart for digital camera? **(03 Marks)**
    d.   List challenges of embedded computing system design? Explain briefly any two challenges. **(03 Marks)**

2   a.   What are the major difference between Von neuman and Hardward architecture? **(04 Marks)**
    b.   Explain the following :
         i)   Restrictions of MUL instruction
         ii) Uses of MLA instruction
         iii) Register indirect addressing in ARM
         iv) Write a ARM assembly code for below C – statement z = (x | 22) and (y >> 2)
         v)   Disadvantages of busy – wait IO? **(07 Marks)**
    c.   What is an interrupt? Explain with neat diagram the interrupt mechanism. **(05 Marks)**
    d.   Solve the following :
         i)   What is the average memory access time of machine whose hit rate is 93% with cache access time of 5ns and mainmemory access time of 80 ns?
         ii) Calculate cache hit rate, if the cache access time is 5 ns, average memory access time is 6.5 ns and main memory access time is 80 ns? **(04 Marks)**

3   a.   Explain with neat diagram, the bus with a DMA controller. **(05 Marks)**
    b.   Explain the following briefly :
         i)   Counter
         ii) Watchdog timer
         iii) Break point
         iv) Timer. **(04 Marks)**
    c.   Differentiate PCI and USB by their characteristics. **(03 Marks)**
    d.   Assume that the bus has a 1 MHz bus clock period, width is 2 bytes per transfer, data transfer itself takes 1 clock cycles, address and handshaking signals before data is 2 clock cycles and sending ACK after data is 1 clock cycles
         i)   What is the total transfer time in clock cycles to transfers of total 612000 bytes of data?
         ii) What is the total burst mode transfer time in clock cycle, if B = 2 byte with 2 byte wide
         iii) Calculate the total real time to transfer data. **(08 Marks)**

4 a. Consider the following ARM assembly code, which illustrate some sample C statement.

LDR	LDR	ADD	STR	LDR	LDR	ADD	STR	LDR	ADD	STR	LDR	LDR	SUB	STR
r_0, a	r_1, b	r_2, r_0, r_1	r_2,w	r_0, c	r_1, d	r_2, r_0, r_1,	r_2, x	r_1, e	r_0, r_1, r_2,	r_0,u	r_0, a	r_1, b	r_2, r_1, r_0,	r_2, z

Answer total following :
i)   Write the sample C code fragment for the above ARM assembly code
ii) Draw a lifetime graph that shows uses of register in register allocation for the above C statement
iii) Modify the obtained C code statement using operator scheduling for register allocation
iv) Draw a lifetime graph for the modified 'C' code appear
v)   Write a ARM assembly code for the modified 'C' code using register allocation.

(10 Marks)

b. Consider the following 'C' code statement
if (a > b)
x = a + b ;
else
x = a − b ;
i)   Write CDFG for the above 'C' statement
ii) Generate the ARM assembly code for the above 'C' statement. (07 Marks)

c. Explain briefly different types of performance measures on programs. (03 Marks)

PART – B

5 a. What is RTOS? Explain with an example the hard real time and soft real time. (06 Marks)
   b. Differentiate process and threads. What are the parameters of PCB of a process? Why should each process have a distinct PCB? (08 Marks)
   c. What is the significance of spinlock? (02 Marks)
   d. What is semaphores? Explain briefly the different types of semaphores? (04 Marks)

6 a. Explain with neat diagram, the concept of memory mapped object. (08 Marks)
   b. Explain the following :
       i)   Message passing
       ii) Remote procedure call for IPC. (06 Marks)
   c. What are the factors needs to be evaluated in selection of an RTOS? Explain. (06 Marks)

7 a. Explain with neat diagram the various fields of IP packet. (08 Marks)
   b. List the features of internet LAN. (04 Marks)
   c. With neat diagram, explain the various fields of CAN frame. (06 Marks)
   d. Briefly explain any two features of HTTP protocols. (02 Marks)

8 a. Explain the following :
       i)   Simulator
       ii) Target system
       iii) Debugging
       iv) Logic analyzer. (08 Marks)
   b. Explain features advantages and limitations of simulator based debugging. (06 Marks)
   c. Explain the types of multitasking. (06 Marks)

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Seventh Semester B.E. Degree Examination, Dec. 2013/Jan. 2014
Programming the Web

Time: 3 hrs.

Max. Marks: 100

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

PART – A

1   a. What is MIME? Explain his type specifications. **(04 Marks)**
    b. Give the general form of HTTP request phase and also explain, in detail. **(08 Marks)**
    c. Explain the different image formats, write XHTML document to illustrate use of <img> (with all attributes). **(08 Marks)**

2   a. Explain the different levels of style sheets are available in CSS. **(04 Marks)**
    b. Crate XHTML document that contains student information viz name, usn, subject 1, subject 2 and subject 3. Insert values for each student in five lows. Also row background of each student should be in the different color. **(08 Marks)**
    c. Explain following tags, with example :
       i) Select   ii) Frame   iii) Textarea   iv) Div. **(08 Marks)**

3   a. Explain the different primitive types in JavaScript. **(06 Marks)**
    b. Write a JavaScript to validate the name, the name should be entered using prompt. The first and last name should note more than 10 characters and middle name must contain only initial. If so display validation corresponding name. The format is the first_name second_name third_name. There should be single white space between First_name Second_name and Thrid_name. **(14 Marks)**

4   a. Explain the different types of positioning elements, with example. **(08 Marks)**
    b. Write XHTML and JavaScript script which has five buttons labeled five different colors. The even handler for these buttons must produce a message starting the choosen favorite color. The even handler must be implemented as a function. Whose name must be assigned to the onclick attribute of the radio button element. The choosen color must be sent to the event handler as a parameter use a onclick event to trigger a call to alert, which should display brief description of the selected color. **(08 Marks)**
    c. Explain Navigator object, with an example. **(04 Marks)**

PART – B

5   a. What is DTD? What are the main advantages of XML schema over DTD's. **(06 Marks)**
    b. Explain the three types that can be used to describe data in an element declaration, with an example each **(09 Marks)**
    c. How does an XSLT processor use an XSLT stylesheet with an XML document? **(05 Marks)**

6   a. Explain the different categories of a variables in Perl along, with an example. **(09 Marks)**
    b. Write a Perl program to copy contents from one file to another. **(04 Marks)**
    c. What is CGI? Explain CGI pm modle, with an example. **(07 Marks)**

7 a. Explain any six string functions in PHP. (06 Marks)
   b. With an neat diagram, explain logical internal structure of array in PHP. (04 Marks)
   c. Write a PHP functions that reads contents from a file and write into a file. (06 Marks)
   d. Explain the different types of scalar types are available in PHP. (04 Marks)

8 a. Discuss the different pattern matching operations are available in ruby with example each. (09 Marks)
   b. Explain keyboard input and screen output in ruby. (04 Marks)
   c. Explain with a neat diagram, directory structure of rails 1 application. (07 Marks)

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Seventh Semester B.E. Degree Examination, Dec. 2013/Jan. 2014
Advanced Computer Architecture

Time: 3 hrs.   Max. Marks:100

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

PART – A

1   a. List and explain four important technologies which have led to the improvements in computer system. **(10 Marks)**
     b. Give a brief explanation about trends in power in integrated circuits and cost. **(10 Marks)**

2   a. With a neat diagram, explain the classic five stage pipeline for a RISC processor. **(10 Marks)**
     b. What are the major hurdles of pipelining? Illustrate the branch hazards, in detail. **(10 Marks)**

3   a. Mention the techniques used to reduce branch costs. Explain static and dynamic branch prediction used for same. **(08 Marks)**
     b. What are data dependencies? Mention the different types of data dependencies. Explain name dependences, with example. **(06 Marks)**
     c. What is correlating predictors? Explain with example. **(06 Marks)**

4   a. Explain the basic VLIW approach for exploiting ILP, using multiple issues. **(08 Marks)**
     b. What are the key issues in implementing advanced speculation techniques? Explain in detail. **(08 Marks)**
     c. Write a note on value predictors. **(04 Marks)**

PART – B

5   a. Explain the different taxonomy of parallel architecture. **(08 Marks)**
     b. With a neat diagram, explain the basic structure of a centralized shared memory and distributed shared memory multiprocessor. **(06 Marks)**
     c. Explain snooping with respect to cache – coherence protocol. **(06 Marks)**

6   a. Assume we have a computer where CPI is 1.0 when all memory accesses hit in the cache. The only data accesses are loads and stores, and these total 50% of the instructions. If the miss penalty is 25 cycles and miss rate is 2% how much faster would be computer if all instructions were cache hits? **(08 Marks)**
     b. Briefly explain four basic cache optimization methods. **(12 Marks)**

7   a. Which are the major categories of advanced optimizations of cache performance? Explain any one in detail. **(10 Marks)**
     b. Explain in detail, the architecture support for protecting processes from each other via virtual memory. **(10 Marks)**

8   a. Explain detecting and enhancing loop level parallelism for VLIW. **(06 Marks)**
     b. Explain intel – IA – 64 architecture, with a neat diagram. **(06 Marks)**
     c. Explain hardware support for exposing parallelism for VLIW and EPIC. **(08 Marks**

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Seventh Semester B.E. Degree Examination, Dec. 2013/Jan. 2014
JAVA and J2EE

Time: 3 hrs.

Max. Marks:100

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

PART – A

1 a. Explain how JAVA is robust and architecture neutral. **(08 Marks)**
  b. Write a note on JAVA environment. **(06 Marks)**
  c. Discuss three OOP principles. **(06 Marks)**

2 a. Distinguish between method overloading and overriding in JAVA, with suitable examples. **(06 Marks)**
  b. What is super? Explain the use of super with suitable example. **(06 Marks)**
  c. Write a JAVA program to implement stack operations. **(08 Marks)**

3 a. What is thread? Explain two ways of creating a thread in JAVA with example. **(10 Marks)**
  b. What is the need of synchronization? Explain with an example how synchronization is implemented in JAVA. **(10 Marks)**

4 a. Name and explain the different types of swing buttons with syntax. **(10 Marks)**
  b. Write the steps to create J-table. Write a program to create a table with column heading "fname, lname, age" and insert atleast 5 records in the table and display. **(10 Marks)**

PART – B

5 a. Give an example and explain J2EE multitier architecture. **(06 Marks)**
  b. Explain the different types of statement object. Give example for each. **(06 Marks)**
  c. Write a program to execute a database transaction. **(08 Marks)**

6 a. Explain the life cycle of servlets. **(05 Marks)**
  b. List and explain core classes and interfaces that are provided in javax.servlet package. **(10 Marks)**
  c. Write a short note on HTTP request and response. **(05 Marks)**

7 a. What is JSP tag? Explain the different types of JSP tags. **(10 Marks)**
  b. What is a cookie? Explain the working of cookie in JAVA with code snippets. **(10 Marks)**

8 a. Explain the functions of EJB transaction attributes. Write a program to set the transaction attribute. **(10 Marks)**
  b. What is entity JAVA bean? Explain the CMP entity bean. Give the skeleton of an entity bean. **(10 Marks)**

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Seventh Semester B.E. Degree Examination, Dec. 2013/Jan. 2014
Storage Area Network

Time: 3 hrs.

Max. Marks:100

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

PART – A

1 a. Explain the architecture and evolution of storage technology, with diagram. **(05 Marks)**
   b. Describe ILM implementation in detail, with its benefits. **(05 Marks)**
   c. Explain disk drive components, with suitable diagram. **(10 Marks)**

2 a. Describe RAID levels with reference to nested RAID, RAID3 and RAID5, with neat diagram. **(10 Marks)**
   b. Explain the components of ISS with reference to LUN and LUN masking, with diagram. **(05 Marks)**
   c. Discuss intelligent storage array, in detail. **(05 Marks)**

3 a. Explain disk drive interface, with diagram. **(05 Marks)**
   b. Describe SCSI – 3 architecture, in detail. **(05 Marks)**
   c. Explain FC connectivity with related diagrams. **(10 Marks)**

4 a. Describe NAS implementations and benefits, with a neat diagram. **(10 Marks)**
   b. Explain ISCSI connecting topologies with a suitable diagram. **(05 Marks)**
   c. Describe FCIP in detail. **(05 Marks)**

PART – B

5 a. Explain object storage and retrieval in CAS, with suitable diagrams. **(10 Marks)**
   b. Describe storage virtualization types in detail and discuss its challenges. **(10 Marks)**

6 a. Describe the failure analysis in BC. Mention some important BC technology solution. **(10 Marks)**
   b. Explain back up topologies, in detail. **(10 Marks)**

7 a. Explain local replication technologies, in detail. **(10 Marks)**
   b. Explain the various remote replication modes. **(05 Marks)**
   c. Write a note on DWDM. **(05 Marks)**

8 a. Explain the security attributes of storage security frame works. **(04 Marks)**
   b. Describe SAN security architecture with diagram. **(06 Marks)**
   c. Describe storage management activities in detail, with example. **(10 Marks)**

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