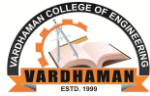


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**VARDHAMAN COLLEGE OF ENGINEERING**  
(AUTONOMOUS)

MCA V Semester Regular Examinations, December - 2013

(Regulations: VCE-R11)

**DATA WAREHOUSING AND DATA MINING**

(Master of Computer Applications)

Date : 3 December, 2013

Time : 3 Hours

Max. Marks : 60

**Answer any FIVE Questions. All Questions carry equal marks**  
**All parts of the questions must be answered in one place only**

1. a) The entity-relationship data model is commonly used in the design of relational databases, where a database scheme consists of a set of entities and the relationships between them. Explain the different types of schemas for multidimensional data models with an example for each schema. 8M
- b) A data cube is a lattice of cuboids. Suppose that you would like to create a data cube for All Electronics sales that contains the following: city, item, year, and sales in dollars. You would like to be able to analyze the data, with queries such as the following:  
 "Compute the sum of sales, grouping by city and item."  
 "Compute the sum of sales, grouping by city."  
 "Compute the sum of sales, grouping by item."  
 What is the total number of cuboids, or group-by's that can be computed for this data cube? Assume necessary data. 4M
2. a) What are discrepancies in data sets? Explain the different tools used for discrepancy detection. 6M
- b) Discuss whether or not each of the following activities is a data mining task. 6M
  - i. Monitoring seismic waves for earthquake activities.
  - ii. Extracting the frequencies of a sound wave.
  - iii. Predicting the outcomes of tossing a (fair) pair of dice.
3. a) Robust data loading poses a challenge in database systems because the input data are often dirty. In many cases, an input record may have several missing values and some records could be contaminated. Work out an automated data cleaning and loading algorithm so that the erroneous data will be marked and contaminated data will not be mistakenly inserted into the database during data loading. 8M
- b) Discuss the activities involved in Data Transformation. 4M
4. a) Let game refer to the transactions containing computer games, and video refer to those containing videos. Of the 10,000 transactions analyzed, the data shows that 6000 of the customer transactions included computer games while 7500 included videos and 4000 included both computer and video games. 8M
  - i. Construct the contingency table and compute the support and confidence for the given rule : buys(X, games) => buys(X, video)
  - ii. Prove that all strong rules are not necessarily interesting if the min\_support=35% and min\_confidence=60%

Use lift measure to find the correlation between games and videos.
- b) Discuss the various factors that affect the computational complexity of Apriori Algorithm. 4M

5. a) Why naïve Bayesian classification is called “naïve”? Briefly outline the major ideas of naïve Bayesian classification. 6M  
b) It is difficult to assess classification accuracy when individual data objects may belong to more than one class at a time. In such cases, comment on what criteria you would use to compare different classifiers modeled after the same data. 6M
6. a) Why it is that BIRCH encounters difficulties in finding clusters of arbitrary shape but OPTICS does not? Can you propose some modifications to BIRCH to help it find clusters of arbitrary shape? 6M  
b) Why is outlier mining important? Briefly describe the different approaches behind statistical-based outlier detection, distanced-based outlier detection, and deviation-based outlier detection. 6M
7. a) The concept of microclustering has been popular for on-line maintenance of clustering information for data streams. By exploring the power of microclustering, design an effective *density-based* clustering method for clustering evolving data streams. 6M  
b) Tremendous and potentially infinite volumes of data streams are often generated by real-time surveillance systems, communication networks and other dynamic environments. Elaborate different types of mining data streams with an example. 6M
8. a) A heterogeneous database system consists of multiple database systems that are defined independently, but that need to exchange and transform information among themselves and answer local and global queries. Discuss how to process a descriptive mining query in such a system using a generalization-based approach. 6M  
b) Spatial association mining can be implemented in at least two ways: (i) Dynamic computation of spatial association relationships among different spatial objects, based on the mining query, and (ii) Precomputation of spatial distances between spatial objects, where the association mining is based on such precomputed results. Discuss how to implement each approach efficiently. 6M

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**VARDHAMAN COLLEGE OF ENGINEERING**  
(AUTONOMOUS)

MCA V Semester Regular Examinations, December - 2013

(Regulations: VCE-R11)

**SOFTWARE TESTING METHODOLOGIES**

(Master of Computer Applications)

Date : 15 December, 2013

Time : 3 Hours

Max. Marks : 60

**Answer any FIVE Questions. All Questions carry equal marks**  
**All parts of the questions must be answered in one place only**

1. a) Give the various bugs encountered at different phases of software development life cycle. 8M  
b) Which is better – Functional testing or Structural testing? Justify your answer. 4M
2. a) Consider the below pseudo code: 8M  
Input (a, b, c);  
 $d \leftarrow b*b - 4*a*c$ ;  
if (d>0) then  
     $r \leftarrow 2$ ;  
if (d=0) then  
     $r \leftarrow 1$ ;  
if (d<0) then  
     $r \leftarrow 0$ ;  
Output (r);  
Give the steps/procedure for constructing a control flow graph (CFG) by considering the above pseudo code.  
b) Illustrate with an example, the path sensitization. 4M
3. a) Distinguish between Inspections, Reviews, and Walkthroughs. 6M  
b) Illustrate with an example, the different data flow testing strategies. 6M
4. a) Describe the different domain errors encountered when a software tester assume the bugs. 4M  
b) Explain with an example, One-dimensional domain testing and two dimensional domain testing. Give the different bugs encountered in the above domain testing techniques. 8M
5. a) Design a decision table for the simple ATM banking system assuming the necessary data. 6M  
b) Briefly describe the KV charts for functions of a single variable and double variables. 6M
6. a) List the design guidelines for implementing a finite-state machine behavior. 6M  
b) Give the principles of state testing. How the bugs impact on state testing. 6M
7. a) Illustrate with an example, how the properties of relations are applicable to the software testing. 6M  
b) Describe in detail the Node-Reduction algorithm. 6M
8. a) Describe the steps used for synchronization of test cases. Illustrate the difficulties faced when synchronizing the various types of applications. 6M  
b) Give the procedure for testing the data driven applications and web applications using QTP. 6M

Hall Ticket No

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Question Paper Code : D1039



**VARDHAMAN COLLEGE OF ENGINEERING**  
(AUTONOMOUS)

MCA V Semester Regular Examinations, December - 2013

(Regulations: VCE-R11)

**MIDDLEWARE TECHNOLOGIES**

(Master of Computer Applications)

Date : 6 December, 2013

Time : 3 Hours

Max. Marks : 60

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**Answer any FIVE Questions. All Questions carry equal marks**  
**All parts of the question must be answered in one place only**

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1. a) Explain briefly evolution of corporate computing models from monolithic to distributed computing. 8M  
b) List any four pitfalls of client server computing. 4M
2. a) What is remote method invocation? Explain the process with the help of neat sketch. 6M  
b) Explain RMI API with an example. 6M
3. a) What are the different types of .Net assemblies? 6M  
b) What are Delegates? How they are Different From Normal C# Methods? 6M
4. a) What is attribute based programming? How is this achieved in C#? 6M  
b) Illustrate the concept of late binding with a suitable example. 6M
5. a) Illustrate CORBA dynamic invocation with the help of ORB. 8M  
b) Contrast between static and dynamic method invocations in CORBA. 4M
6. a) Explain briefly BOA shared server and BOA persistent server for CORBA. 6M  
b) With suitable example illustrate CORBA constants and primitive types. 6M
7. a) Explain briefly taxonomy of event adapters. 6M  
b) What java beans can do for CORBA? 6M
8. a) Explain briefly Enterprise Java Beans/Container protocol. 6M  
b) Describe CORBA Object Transaction Monitor. 6M

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**VARDHAMAN COLLEGE OF ENGINEERING**  
(AUTONOMOUS)

MCA V Semester Regular Examinations, December - 2013

(Regulations: VCE-R11)

**DESIGN PATTERNS**

(Master of Computer Applications)

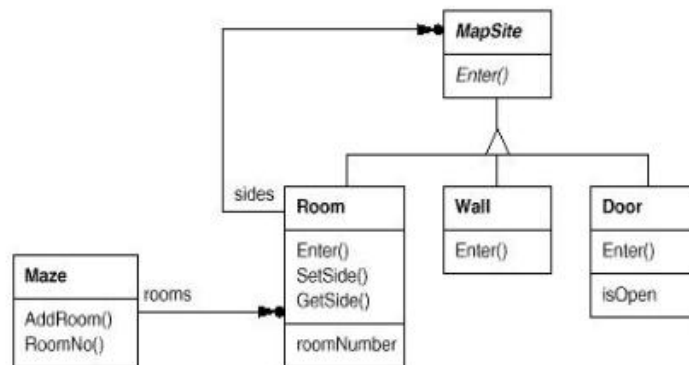
Date : 10 December, 2013

Time : 3 Hours

Max. Marks : 60

**Answer any FIVE Questions. All Questions carry equal marks**  
**All parts of the question must be answered in one place only**

- What is a design pattern? List the four key elements of a design pattern. 6M
  - Under what circumstance is object composition preferred over inheritance? Illustrate with an example. 6M
- Assume that you are working as an intern at PQR Inc., California. The company has given you the task of designing a pattern for Boolean Library. The Boolean Formulas library is a library for representing Boolean terms (AND, OR, XOR, NOT and variables), for printing the formulas in two different styles, in infix notation on a single line or prefix notation on multiple lines with indentations and for evaluating the formulas. Explain how design patterns capture solutions to design problems for the given application. 12M
- Consider the following class diagram for maze game. Design a C++ class for Maze using abstract factory pattern. 6M

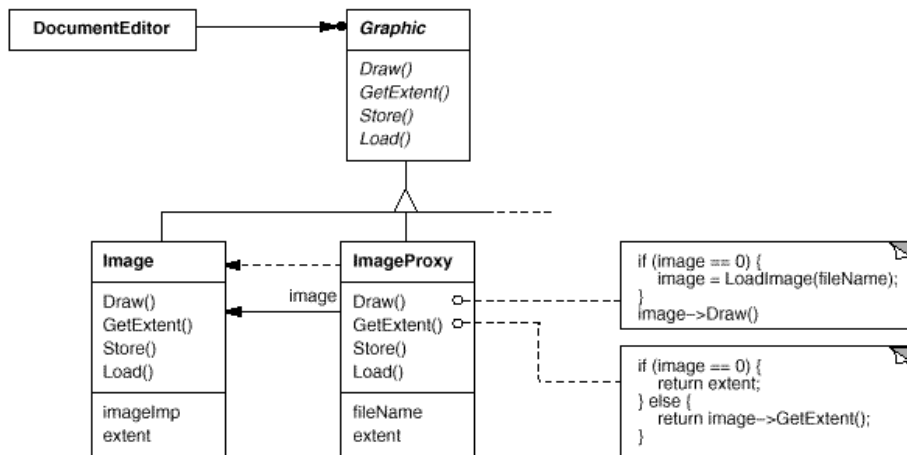


- Define a MazePrototypeFactory subclass of the MazeFactory class given below: 6M

```

class MazeFactory
{
public:
    MazeFactory();
    virtual Maze* MakeMaze() const
    { return new Maze; }
    virtual Wall* MakeWall() const
    { return new Wall; }
    virtual Room* MakeRoom(int n) const
    { return new Room(n); }
    virtual Door* MakeDoor(Room* r1, Room* r2) const
    { return new Door(r1, r2); }
}
  
```

4. a) "Equipment such as computers and stereo components are often organized into part-whole or containment hierarchies. Equipment declares operations that return the attributes of a piece of equipment, like its power consumption and cost. Subclass of Equipment might include Leaf class that represents disk drives. CompositeEquipment is the base class for equipment that contains other equipment. It's also a subclass of Equipment and defines the operations for accessing and managing sub-equipment". For the given scenario define the required classes with appropriate method declarations so as to become a composite pattern. 10M
- b) List any two circumstances where Adapter patterns are applicable. 2M
5. For the following class diagram, write C++ class declarations for Graphic, Image and ImageProxy with appropriate method prototypes in order to implement virtual proxy. 12M



6. a) Explain briefly the benefits and liabilities of Chain of Responsibility. 6M  
 b) Describe intent, applicability and structure of Iterator pattern. 6M
7. a) List the benefits and drawbacks of mediator pattern. 6M  
 b) Give the intent, synonym and related pattern for:  
     i) Strategy      ii) Visitor 6M
8. Outline the history of design patterns. 12M

Hall Ticket No 

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Question Paper Code : D1044



**VARDHAMAN COLLEGE OF ENGINEERING**  
(AUTONOMOUS)

MCA V Semester Regular Examinations, December - 2013  
(Regulations: VCE-R11)

**SOFTWARE PROJECT MANAGEMENT**  
(Master of Computer Applications)

Date : 11 December, 2013

Time : 3 Hours

Max. Marks : 60

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**Answer any FIVE Questions. All Questions carry equal marks**  
**All parts of the questions must be answered in one place only**

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1. a) Most software cost models can be abstracted into a function of five basic parameters. 8M  
What are they? Also explain the parameters in detail.  
b) Discuss the drawbacks of waterfall model. 4M
2. a) Elaborate the Key practices that improve overall software quality. 6M  
b) Explain in detail the transition of software management from conventional system to modern system. 6M
3. a) What are the basic skills a Project Manager should possess? 4M  
b) Explain the principles of modern software management. 8M
4. a) Give the management perspectives of model based software architectures. 6M  
b) Explain the Iteration work flow process. 6M
5. a) Explain about work breakdown structure. 6M  
b) Derive the two perspectives of project planning and explain the same. 6M
6. a) Explain the architecture and architecture base line of workflows. 6M  
b) Explain about automation of building blocks. 6M
7. a) Discuss the cost and schedule estimating process. 6M  
b) Explain about seven core metrics, management indicators. 6M
8. Write a short note on: 12M
  - i. Software Management Principles
  - ii. Team work among stakeholders
  - iii. CCPD-R