

MCA, Semester IV Examinations, May 2018
Data Warehousing and Mining

Sr. No. 11077

Time: 3 Hours

Max. Marks: 80

Note: Attempt any five questions including question No. 1 which is compulsory. Select one question from each unit.

1.

8x3=24

- a) Explain the concept of support vector machine.
- b) Explain the concept of Evaluation of clustering.
- c) What do you mean by market based analysis?
- d) What is typical OLAP operations?
- e) Explain Data warehouse schemes.
- f) What is Data Reduction? Explain.
- g) Explain Baye's classification.
- h) What is Data Transofrmation? Explain.

Unit – I

2. Explain the following in detail:

- a) History and characteristics of data warehouse in detail
- b) Data Cube Computation Methods

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3. What do you mean by data warehouse? Explain the Principles of Data Warehousing in detail. Also explain Three Tier Data Warehouse Architecture in detail.

14

Unit – II

4. a) What is Data Mining? Explain the importance of Data Mining in detail. Also explain Data Mining vs Query Tools in detail.
- b) What do you mean by Predictive and Descriptive Data Mining? Also explain the major issues in data mining.
5. a) What do you mean by Data Preprocessing? Also explain the Concept of Data Integration and Transformation in detail.
- b) What is data mining models? Explain Kamber's Model of KDD in details.

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Unit – III

6. Explain the following in detail:

- a) Pattern Evaluation Methods and Pattern Mining in Multi-dimensional Space
- b) Constraint Based Frequent Pattern Mining and Compressed or Approximate Patterns

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7. What do you mean by Mining Association Rules? Explain the Types of Association Rules and methods for mining association rules in Transaction Databases in detail.

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Unit – IV

8. a) What do you mean by Model Evaluation and selection? Explain in detail.
- b) What do you mean by clustering Analysis? Explain the different clustering methods in detail.
9. Explain the Applications of Data Mining in Business Intelligence, Web Search Engines and Education in detail.

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MCA, Semester IV Examinations, May 2018
Programming with Java

Time: 3 Hours

Max. Marks: 80

Note: Attempt any five questions including question No. 1 which is compulsory. Select one question from each unit.

1. Explain the following:

8x3=24

- a) Abstract Class
- b) Uncaught Exceptions
- c) Final, Finally, Finalize
- d) Byte stream
- e) Adapter classes
- f) Constructors and destructors
- g) Multithread Communication
- h) Wrapper class

Unit – I

- 2. How abstraction and encapsulation are implemented in Java? Explain with examples. 14
- 3. Write Java Code using Arrays to find out the largest number inputted by a user out of 10 numbers? 14

Unit – II

- 4. Describe the Java throwable class hierarchy and type of exceptions. Can you claim multiple exceptions in a method declaration? Illustrate by means of example? 14
- 5. Explain the life cycle and synchronization of Thread with suitable example? 14

Unit – III

- 6. Explain the steps involved in developing and running a local applet? 14
- 7. What are strings? How they are handled in Java and also state various String operations in Java? 14

Unit – IV

- 8. Explain the various layout managers and menu? 14
- 9. Explain the following: 14
 - a) Event Sources
 - b) Event Classes
 - c) Event
 - d) Event Adapters

Time: 3 Hours

Max. Marks: 80

Note: Attempt any five questions including question No. 1 which is compulsory. Select one question from each unit.

2. Explain the following:

8x3=24

- a) Distinguish between the abstract architecture and concrete architecture.
- b) How flow and control dependency affect pipeline processing? Explain.
- c) What is the purpose of pre-decode unit in a superscalar processor?
- d) Write short notes on register renaming and shelving.
- e) What is the difference between NUMA and CC-NUMA models?
- f) How can you minimize the loss incurred due to misprediction in branch processing?
- g) Discuss snoopy bus protocol.
- h) What is Bus arbiter? Explain in brief the daisy chain based centralized arbiter.

Unit – I

2. a) With the help of block diagram, explain Flynn's classification of computer architecture. 8
- b) Explain loop unrolling technique of code scheduling. 6
3. a) What is meant by Instruction Level Parallelism (ILP)? Explain about the various dependencies caused in ILP. 7
- b) State and explain principles and general structure of Pipeline. Explain its (pipeline) performance measures. 7

Unit – II

4. a) What do you mean by branch penalties? Discuss the schemes to reduce them. 7
- b) What is role of the Reorder Buffer (ROB) in order to preserve the sequential consistency of instruction execution. Discuss in detail. 7
5. Explain the structure and operational requirements of the instruction pipelines used in CISC, scalar RISC, super scalar RISC and VLIW processors. Comment on the cycle per instruction expected from these processors architectures. 14

Unit – III

6. What are main differences and similarities between multicomputer and multiprocessor? Give the architecture for a typical MIMD processor. Explain the shared memory modes of MIMD. 14
7. Explain the following: 7x2=14
 - a) Linear array b) Ring and Choral Ring c) Barrel Shifter
 - d) Tree and Star e) Mesh and Torus f) Hypercubes
 - g) Fat Tree

Unit – IV

8. a) Describe the Cache Coherence problems in data sharing and in process migration. 7
- b) Explain the construction and working of 8x8 omega network. 7
9. a) Describe the important features of buses, multistage networks, and crossbar switches in building dynamic networks. 7
- b) Draw and explain 2 State transition graphs for a cache block using write invalidate snoopy protocols. 7

MCA, Fourth Semester Examination, May 2018
Design and Analysis of Algorithm

Time: 3 Hours

Max. Marks: 80

Note: Attempt any five questions including question No. 1 which is compulsory. Select one question from each unit.

1. Explain the following in detail: 8x3=24
- a) Bellman-Ford Algorithm
 - b) Approximation Algorithm
 - c) Huffman Codes
 - d) Optimal Binary Search Trees
 - e) Radix Sort
 - f) Masters Theorem
 - g) Reletion of shortest path
 - h) Red-black Trees

Unit – I

2. a) What is Algorithm? Explain the role of algorithms in computing in detail. 7
- b) What do you mean by Heap sort and Quick Sort? Also explain the concept of Lower Bounds for sorting with example. 7
3. Explain the following in detail:
- a) Analyzing Algorithms and Designing Algorithms 7
 - b) Complexity of Iterative Programs and Recursive Programs 7

Unit – II

4. What is Hash Tables? What is Hash Functions? Also explain the collision Handling in Hashing in detail. 14
5. What do you mean by Dynamic Programming (DP)? Explain the Elements of DP in detail. Also explain the Concept Longest Common Subsequence and Optimal Search Trees in detail. 14

Unit – III

6. a) What do you mean by Greedy Techniques (GT)? Explain the Elements of GT. Also explain Knapsack problem in detail. 7
- b) What do you mean by Maximum Flow? Explain Flow network and Ford Fulkerson method in detail. 7
7. Explain the following in detail:
- a) Analysis of Dijkstra's Algorithm and limitations of Dijkstra's Algorithm 7
 - b) Analysis of Floyd warshall algorithm 7

Unit – IV

8. a) What do you mean by Strings? Explain Rabin-Karp string matching algorithm in detail. 7
- b) What do you mean by Computational complexity? Explain notion of polynomial Time Algorithms in detail. 7
9. a) What do you mean by Complexity Classes? Explain P, NP, NP-Hard and NP-Complete in detail. 7
- b) What do you mean by NP-Hard Problems? Explain Travelling salesman Problem in detail. 7

MCA, Fourth Semester Examination, May 2018
System Programming and Compiler Construction

Time: 3 Hours

Max. Marks: 80

Note: Attempt any five questions including question No. 1 which is compulsory. Select one question from each unit.

1. 8x3=24
- Discuss the various elements of an assembly language.
 - Describe the input and output of the macro processor.
 - What is relocation?
 - Give any two uses of Linkage Editor.
 - What do you mean by Handle Pruning?
 - Discuss the Rules to determine the FIRST and FOLLOW in parser.
 - Define Dead Code elimination with example.
 - Represent the following in flow graphs
 $i=1;$
 $Sum=0;$
 $While (i \leq 10)$
 $\{Sum+=i; i++\}$

Unit – I

- Discuss the design of a two pass assembler. Give an account of important differences between one-pass and two-pass assembly schemes. 8
 - Explain the procedure for expansion of Nested and Recursive Macro calls in detail. 6
- Write the general syntax of assembly language program. Give examples. 7
 - Explain the various components of system software. 7

Unit – II

- What is Loader? Explain four basic functions of any Loader. Also differentiate absolute loader vs relocating loader stating who performs which function in the particular loading scheme. 10
 - Write short notes on Compiler Construction tools. 4
- Explain the phases of Compiler with a neat diagram. 8
 - Discuss how finite automates is used to represent tokens and perform lexical analysis. 6

Unit – III

- How does a predictive parser implement recursive descent parsing? 6
 - Define LR(I) grammar. Explain LR(I) closure and goto. Describe its construction also. 8
- Find the LALR for the given grammar and parse the sentence $(a+b)*c$. 14
 $E \rightarrow E+T \mid T$
 $T \rightarrow T*F \mid F$
 $F \rightarrow (E) \mid id$

Unit – IV

- Describe the kind of optimizations that can be performed in a loop. 7
 - Illustrate optimization of basic blocks with an example. 7
- What do you understand by Code generation? How it helps the programmer? What are the issues in Code generation techniques? Discuss it by taking some examples. 14