

2017

DATA MINING AND WAREHOUSING

Paper : 6.1.2

Full Marks : 80

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Write true/false of the following : $1 \times 7 = 7$

- i) A popular conceptual model that influences data warehouse architecture is a multi-dimensional view of data.
- ii) Drilling operation is meant for moving up and down along classification hierarchies.
- iii) OLAP servers can perform data warehousing functions,

- iv) KDD is the process of identifying a valid, potentially useful and ultimately understandable structure in data.
- v) An itemset is a border set if it is a frequent set, but all its proper subsets are frequent sets.
- vi) Divisive clustering techniques take the same approach from agglomerative techniques.
- vii) Entropy provides an Information-Theoretic approach to measure the goodness of a split.

2. Answer the following questions : $3 \times 7 = 21$

- i) Discuss the usefulness of data mining in e-commerce.
- ii) How do you relate data mining in KDD ?
- iii) What do you mean by data extraction and data cleaning ?
- iv) What are entropy gain and gain ratio ?

v) What is gini index ?

vi) Distinguish between hierarchical and partitioning clustering.

vii) What do you mean by bit map indexing ?

3. Define an Association Rule. Define the following terms in context of Association Rules — $2+8=10$

- i) Support
- ii) Frequent set
- iii) Maximal Frequent set
- iv) Border set.

4. Write down the Apriori Algorithm with an example. $5+5=10$

5. Illustrate BIRCH with suitable examples. 10

6. Write down the advantages and weaknesses of decision tree. Also explain tree construction principle. $4+6=10$

7. Write short notes on : **(any four)** $3 \times 4 = 12$

- i) Web mining
- ii) Star schema
- iii) Stages of KDD
- iv) CLARA
- v) ID3
- vi) CURE.

PROGRAMMING IN JAVA

Paper : 4-3

(New & Old Course)

Full Marks : 80

Time : Three hours

The figures in the margin indicate full marks for the questions.

All questions are Compulsory.

1. Select the correct answer from the options given below : 1×5=5

(i) Which of the following commands convert the corresponding Java file into class file ?

- (a) java
- (b) javac
- (c) javah
- (d) javadoc.

(ii) The operator used to change the sign of a variable is :

- (a) Unary
- (b) Relational
- (c) Binary
- (d) Negation.

(iii) Which of the following keywords is used to refer to the current object on which the method was invoked ?

- (a) this
- (b) final
- (c) static
- (d) instanceof.

(iv) Which of the following package is used to determine the flow of bytes from a source to destination ?

- (a) java.util
- (b) java.awt
- (c) java.io
- (d) java.swing.

(v) A set of statements that may throw an exception is enclosed within the

- (a) catch block
- (b) error block
- (c) final block
- (d) try block.

2. Answer the following briefly :

2×10=20

- (i) What is the role of Java compiler in the execution of the program ?
- (ii) Write about declaration and initialization of variable in Java.
- (iii) What is operator precedence in Java ?
- (iv) What are the different jump statements supported by Java ?
- (v) How is a class related to objects ?
- (vi) What is the use of nested classes ?
- (vii) How the method overriding is useful in Java ?
- (viii) What are the steps to create a user defined package in Java ?
- (ix) What are character stream classes ?
- (x) What is an Applet ?

3. Answer the following questions :

5×5=25

- (i) Explain the different data types used in Java.
- (ii) Write a program to compute the sum of the digits of a given integer number.

(iii) What is a constructor ? What are its special properties ?

(iv) Describe different forms of inheritance in Java.

(v) Write a program to demonstrate the use of InputStreamReader class.

4. (i) What is type casting ? Explain it with a suitable example. 5

(ii) What are the various iteration statements ? Explain with examples. 5

5. (i) Design a class to represent a bank account with some suitable data members and methods. 4

(ii) Write down the syntaxes of three methods of String class. 6

6. (i) Explain the creation of threads with examples. 5

(ii) What is a finally block ? When and how is it used ? Give a suitable example. 5

2017
OPERATING SYSTEM

Paper : 3-1

(Old Course)

Full Marks : 80

Time : Three hours

**The figures in the margin indicate
full marks for the questions.**

1. (a) Define operating system. What are the main objective of operating system ? 2+3=5
- (b) Explain multiprogrammed operating system. 5
- Or**
- What are the main functions of operating system ? Explain. 5
2. (a) What do you mean by process ? Explain it's various state. 1+5=6

Contd.

- (b) What is Thread ? What are the main differences between user level thread and kernel level thread ? 2+4=6

Or

Explain implementation of process. 6

3. (a) Explain reader and writer problem. 7
- (b) Define the terms → race condition, critical section, semaphore. 3

Or

Explain test and set_lock for mutual exclusion. 3

4. (a) What do you mean by scheduling ? Define the types of scheduling. 2+3=5
- (b) Explain any one of following scheduling algorithm → 5
- SJF, Priority, three-level scheduling.
5. (a) What is Deadlock ? What are the main conditions to occur deadlock ? 2+4=6

- (b) Explain safe state and unsafe state for deadlock avoidance. 2

6. (a) What is page table. Explain how logical address can be mapped to physical address. 2+5=7

Or

Explain NRU page replacement algorithm. 7

- (b) Explain Segmentation. 2

7. (a) Define file. Explain file type. 1+3=4
- (b) Explain FAT. 3

Or

Explain file system security.

8. Explain device Independent I/O software. 4

9. Write short notes on : **(any two)** 2×5=10

- (a) User space I/O software
- (b) Device controllers
- (c) i_nodes
- (d) Swapping.