

## **Programme:- MCA-Semester-II**

### **Subject Code 201**

### **Data Structures**

#### **Assignment No.1**

What is ADT? Explain stack as an ADT with suitable example.

#### **Assignment No.2**

You know what a queue is .... Implement a queue class with Java. What is the cost of enqueue and dequeue? Can you improve this? What if the queue is full (I was using an looping array)? What kind of mechanism would you use to increase its size?

#### **Assignment No.3**

Write a short note on the following

- a) Tree traversal
- b) Threaded binary tree

#### **Assignment No.4**

Write a function and the node data structure to visit all of the nodes in a binary tree.

#### **Assignment No.5**

You know what a queue is .... Implement a queue class with Java. What is the cost of enqueue and dequeue? Can you improve this? What if the queue is full (I was using an looping array)? What kind of mechanism would you use to increase its size?

#### **Assignment No.6**

Give an algorithm that calculates the distance between two text strings (only operations you can have are: delete, add, and change, one by one).

#### **Assignment No.7**

Given the definition of a sequence (5 4 7 6 is, but 1 2 4 5 is not), write an algorithm to check if an arbitrary array is a sequence or not. Once I figured out a solution, I was asked to do a space and time complexity analysis.

#### **Assignment No.8**

Write a short note on the following

- a) Stack
- b) Quick sort

#### **Assignment No.9**

What is Data Structure? Differentiate between linear and non-linear data structures.

#### **Assignment No.10**

Explain selection sort with example.

**Subject code 202**  
**Operating Systems**

**Assignment No.1**

Define operating system. Explain various views of it.

**Assignment No.2**

Explain in brief the concept of memory management with and without swapping.

**Assignment No.3**

Write a short note on the following

- a) Device drivers
- b) Virtual Memory

**Assignment No.4**

Explain the mechanism of Inter process communications. What are the situations when two processes need to communicate with each other?

**Assignment No.5**

Explain in brief the concept of memory management with and without swapping.

**Assignment No.6**

What are the measure differences between processes and threads.what are their role in a distributed system.

**Assignment No.7**

Write a short note on the following

- a) Performance Monitoring
- b) Device drivers

**Assignment No.8**

Write a short note on the following

- a) Swapping
- b) Schedulers

**Assignment No.9**

Explain the DMA transfer in detail.

**Assignment No.10**

Differentiate between

- a) Implicit tasking and Explicit tasking
- b) Online operating system and Real time operating system.

**Subject code 203**  
**Data Base Management Theory**

**Assignment No.1**

Explain the multilayer architecture of DBMS. How this architecture helps to preserve the data independence.

**Assignment No.2**

Explain Relational Model. What are the significance of RDBMS over DBMS.

**Assignment No.3**

Explain the technique of concurrency control in Distributed database system

**Assignment No.4**

Explain the multilayer architecture of DBMS. How this architecture helps to preserve the data independence.

**Assignment No.5**

Explain Codd's Rules for RDBMS.

**Assignment No.6**

Write a short note on the following

- a) Object oriented database management systems
- b) Integrity constraints

**Assignment No.7**

Write a short note on the following

- a) Tuple b) Table c) Mapping cardinalities d) Primary Key e) MVT

**Assignment No.8**

What is data independence? Explain the different types of data independence.

**Assignment No.9**

Concurrency control plays an important role in maintaining a database explain.

**Assignment No.10**

What are the different categories of data models? Explain in brief.

**Subject code 204**

**Accounting and Management Control**

**Assignment No.1**

Discuss the conventional methods to prepare financial statements.

**Assignment No.2**

- a) Relevant costs.
- b) Pricing-joint costs
- c) Transfer Price
- d) Fixed Assets

**Assignment No.3**

Give a brief explanation on management control systems.

**Assignment No.4**

What are the parameters to be considered to prepare a balance sheet.

**Assignment No.5**

Write short notes on;

- a) Direct costing.
- b) Break-even Analysis.
- c) Relevant costs.
- d) Pricing-joint costs

**Assignment No.6**

Give examples of goals & strategies.

**Assignment No.7**

Write short notes on;

- a) Fixed costs
- b) Break-even Analysis
- c) Relevant fixed costs
- d) Sunk costs

**Assignment No.8**

What are the advantages and limitations of MBO?

**Assignment No.9**

What are the advantages of a budgetary control system?

**Assignment No.10**

Distinguish between Capital and Revenue Expenditure with suitable examples.

**Subject code 205**  
**Probability & Combinatorics**

**Assignment No.1**

- a) What do you mean by probability Model, Sample space and on event? Explain probability axioms with consequence.
- b) Define Baytes' Rule & Explain it using Example or applications.

**Assignment No.2**

- a) What is the concept of Random Variable & Distributions Functions?
- b) Find the value of constant K so that: -

$$f(x) = \begin{cases} kx^2(1-x^3), & 0 < x < 1 \\ 0, & \text{otherwise} \end{cases}$$

Is a proper density function of continuous Random variable?

**Assignment No.3**

- a) What do you mean by probability Model, Sample space and on event? Explain probability axioms with consequence.

**Assignment No.4**

- a) What is the concept of Random Variable & Distributions Functions?
- b) Find the value of constant K so that: -

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Is a proper density function of continuous Random variable?

**Assignment No.5**

- a) What is Sum & product Rule of combinatorics?
- b) Also explain Generalized Permutation & Combination with one application.

**Assignment No.7**

State and prove Bay's theorem.

**Assignment No.8**

In how many different ways can two adjacent square be selected from 8X8 chess board if

- i) Squares are of smallest size.
- ii) Squares are of any size.

**Assignment No.9**

What do you mean by de arrangements? Explain

**Assignment No.10**

Write a short note on any two of the following

- a) Beta distribution
- b) Pseudo Random number generation
- c) Subjective Probability with an example

**Assignment No.8**

Define Poisson distribution. Find its mean and variance.

Solve recurrence relation

$$a_n - 4a_{n-1} + 4a_{n-2} = 3^n$$

**Assignment No.9**

What is the probability that a number selected randomly from 1 to 100 is

- i) Divisible by 3
- ii) Divisible by 3,5,and 7

**Course No-206****Windows Programming Lab****Assignment No.1**

Write a program in VB to input the date of birth and display the age of the user on behalf of system date

**Assignment No.2**

Write a program in VB to input the details of a student and store it in a database

**Assignment No.3**

Write a program in VB print the mark sheets of the students. The records of the students and their marks will be stored in a database.