School of Distance Education, University of Kerala
M.Sc. Computer Science (2022 Admission)
IInd Semester Assignment

DCS 21 Modern Operating Systems

1. Discuss
   A) Overview of threads
   B) Multithreading Models
   C) Multi-threading issues
   D) P threads

2. How can we evaluate a process scheduling algorithm? Explain.

3. Differentiate Bits algorithm & Second chance Algorithm.

4. What are the criteria for allocation of frames?

5. Explain in detail about File system structure.

DCS22 Advances in Database Management

1. Write a note on multimedia database.

2. Discuss in detail about integrity rules in relational database.

3. What is Gnome database? Explain

4. Write a note on knowledge database.

5. What are the things to consider while reducing ER Schema to table?

DCS 23 Object Oriented Analysis and Design

1. Discuss the Boochs methodology in detail.
2. Write a short note on the followings
   a) Code generation
   b) Multiplicity
   c) Generalization
   d) Specialization
   e) CRC Cards

3. Explain the Object Oriented SDLC.

4. Explain the class Operations and visibility of classes.

5. Explain FLOOT in detail.

DCS 24 Graphics and Multimedia Systems

1. Explain about 3D display techniques

2. Briefly explain any two video file formats.

3. Describe Huffman coding and give some applications of Huffman coding.

4. Illustrate the broadcast standards such as ATSC, NTSC, PAL, and SECAM.

5. Explain about Lz77 approach.

DCS 25 Optimization Techniques

1) Consider a chocolate manufacturing company that produces only two types of chocolate – A and B. Both the chocolates require Milk and Choco only. To manufacture each unit of A and B, the following quantities are required:
   - Each unit of A requires 1 unit of Milk and 3 units of Choco
   - Each unit of B requires 1 unit of Milk and 2 units of Choco

The company kitchen has a total of 5 units of Milk and 12 units of Choco. On each sale, the company makes a profit of
   - Rs 6 per unit A sold
   - Rs 5 per unit B sold.

Now, the company wishes to maximize its profit. How many units of A and B should it produce respectively?

2) Use Simplex method to solve
$$Minimize : -z = -8x_1 - 10x_2 - 7x_3$$
$$s.t. : x_1 + 3x_2 + 2x_3 \leq 10$$
$$-x_1 - 5x_2 - x_3 \geq -8$$
$$x_1, x_2, x_3 \geq 0$$

3) A plant manager has four subordinates, and four tasks to be performed. The subordinates differ in efficiency and the tasks differ in their intrinsic difficulty. This estimate of the times each man would take to perform each task is given in the effectiveness matrix below.

	I	II	III	IV
A	8	26	17	11
B	13	28	4	26
C	38	19	18	15
D	19	26	24	10

How should the tasks be allocated, one to a man, so as to minimize the total man hours?

4) The following details are available regarding a project:

Activity	Predecessor Activity	Duration (Weeks)
A	-	3
B	A	5
C	A	7
D	B	10
E	C	5
F	D,E	4

Determine the critical path, the critical activities and the project completion time.

5.Explain the formulation of dual LPP.

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