

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

**Subject Name: Software Engineering & TQM**

**Subject Code-MCA401**

**Year: 2<sup>nd</sup> Year**

**Semester: Fourth**

<b>Module Number</b>	<b>Topics</b>	<b>Number of Lectures</b>
<b>1</b>	<b>Module I</b>	<b>8L</b>
	1. Overview of System Analysis & Design, Business System Concept, System Development Life Cycle, Waterfall Model , Spiral Model, Feasibility Analysis, Technical Feasibility, Cost-Benefit Analysis, COCOMO model.	8
<b>2</b>	<b>Module II</b>	<b>7L</b>
	1. System Requirement Specification – DFD, Data Dictionary, ER diagram, Process Organization & Interactions.	3
	2. System Design – Problem Partitioning, Top-Down and Bottom-Up design; Decision tree, decision table and structured English; Functional vs.	4
<b>3</b>	<b>Module III</b>	<b>8L</b>
	1. Coding & Documentation - Structured Programming, OO Programming, Information Hiding, Reuse, System	2
	1. Testing – Levels of Testing, Integration Testing, Test case Specification, Reliability Assessment. , Validation & Verification Metrics, Monitoring & Control.	6
<b>4</b>	<b>Module IV</b>	<b>12L</b>
	1. Software Project Management – Project Scheduling, Staffing, Software Configuration Management, Quality Assurance, Project Monitoring.	7
	2. CASE TOOLS: Concepts, use and application.	5
<b>5</b>	<b>Module V</b>	<b>6L</b>
	1. Characteristic of software maintenance , Types of software maintenance, Software reverse engineering, Basic issues in any reuse of program, CASE TOOLS: Concepts, use and application	6
<b>Total Number Of Hours = 41</b>		

Faculty In-Charge

HOD, CSE Dept.

# **UNIVERSITY OF ENGINEERING AND MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

### **Assignment:**

#### **Module-I:**

1. What are the difference between Waterfall Model and Spiral Model? What do you mean by Feasibility Analysis?
2. Explain Cost- Benefit Analysis, COCOMO model

#### **Module-II:**

1. What do you mean by System Requirement Specification?
2. Write short note on the followings:  
DFD  
Data Dictionary  
ER diagram  
Process Organization & Interactions

#### **Module-III:**

1. Explain the different levels of Testing. What is Integration Testing?
2. What do you mean by Reliability Assessment?

#### **Module-IV:**

1. How Software Project Management is done? What are the steps?
2. How the quality of any product should be assured?

#### **Module-V:**

1. What are the basic issues in any reuse of program?
2. Explain the differ types of software maintenance.

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

Subject Name: Computer Graphics & Multimedia  
Year: 2<sup>nd</sup> Year

Subject Code-MCA402  
Semester: Fourth

<b>Module Number</b>	<b>Course Details</b>	<b>Number of Lectures</b>
<b>UNIT 1</b>	<b>Introduction to computer graphics &amp; graphics systems:</b>	<b>4LH</b>
<b>1</b>	<ul style="list-style-type: none"><li>• Overview of computer graphics, representing pictures, preparing, presenting &amp; interacting with pictures for presentations</li><li>• Visualization &amp; image processing; RGB color model, direct coding, lookup table</li><li>• storage tube graphics display, Raster scan display, 3D viewing devices, Plotters, printers, digitizers, Light pens etc.</li><li>• Active &amp; Passive graphics devices</li></ul>	
<b>2</b>	<b>Scan conversion:</b>	<b>6LH</b>
	<ul style="list-style-type: none"><li>• Points &amp; lines, Line drawing algorithms</li><li>• DDA algorithm, Bresenham's line algorithm, Circle generation algorithm</li><li>• Ellipse generating algorithm; scan line polygon, fill algorithm</li><li>• boundary fill algorithm, flood fill algorithm.</li></ul>	
<b>UNIT 2</b>	<b>2D transformation &amp; viewing:</b>	<b>7LH</b>
<b>3</b>	<ul style="list-style-type: none"><li>• Basic transformations: translation, rotation, scaling;</li><li>• Matrix representations &amp; homogeneous coordinates, transformations between coordinate systems;</li><li>• Reflection shear; Transformation of points, lines, parallel lines, intersecting lines.</li><li>• Cohen and Sutherland line clipping, Sutherland-Hodgeman Polygon clipping, Cyrus-beck clipping method</li></ul>	
<b>4</b>	<b>3D transformation &amp; viewing:</b>	<b>7LH</b>
	<ul style="list-style-type: none"><li>• 3D transformations: translation, rotation, scaling &amp; other transformations</li><li>• Rotation about an arbitrary axis in space</li><li>• Clipping, view port clipping, 3D viewing.</li></ul>	
<b>UNIT 3</b>	<b>Curves and Hidden surfaces:</b>	

5	<ul style="list-style-type: none"> <li>• Curve representation, surfaces, designs, Bezier curves</li> <li>• B-spline curves, end conditions for periodic B-spline curves, rational B-spline curves.</li> <li>• Depth comparison, Z-buffer algorithm, Back face detection</li> <li>• BSP tree method, the Painter's algorithm, scan-line algorithm</li> <li>• Hidden line elimination, wire frame methods, fractal - geometry.</li> </ul>	7LH
6	<b>Introduction to Ray-tracing:</b> <ul style="list-style-type: none"> <li>• Human vision and color</li> <li>• Lighting, Reflection and transmission models.</li> </ul>	8LH
UNIT 4 7	<b>Multimedia:</b> <ul style="list-style-type: none"> <li>• Introduction to Multimedia: Concepts, uses of multimedia, hypertext and hypermedia</li> <li>• Image, video and audio standards. Audio: digital audio, MIDI, processing sound, sampling, compression</li> <li>• Video: MPEG compression standards, compression through spatial and temporal redundancy, inter-frame and intra-frame compression. Animation: types, techniques, key frame animation, utility, morphing</li> <li>• Virtual Reality concepts.</li> </ul>	7LH
	<b>Total Number Of Hours = 44</b>	

Faculty In-Charge

HOD, CSE Dept.

### Assignment:

#### Module-1(Introduction to computer graphics & graphics systems):

1. A monochromatic graphic display system has 525 scan lines with an aspect ratio 9:16. If each pixel is displaceable in 512 shades
  - (i) How many pixels are displayed on the screen?
  - (ii) What is the picture storage memory size?
2. What do you mean by window and viewport? Describe the relationship for window to viewport mapping.

#### Module-3 (2D transformation & viewing):

1. Prove that successive scaling is multiplicative
2. Write down mid-point ellipse drawing algorithm

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Subject Code-MCA402

Year: 2<sup>nd</sup> Year

Semester: Fourth

3. a rectangular 2D clipping window has its lower left corner at (100,10) and upper right corner at (160,40). Find visible portion of lines A(50,0), B(120,30) and C(120,20), D(140,80) using mid point sub division algorithm.

### **Module-4 (Curves and Hidden surfaces)**

1. Write down the procedure for drawing B-spline curves and also write down its property
2. Derive the condition to be satisfied when joining two Bezier curves with second order continuity at the joints.

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

Subject Name: DBMS-II  
Year: 2<sup>ND</sup> Year

Subject Code-MCA403  
Semester: Fourth

<b>Module Number</b>	<b>Topics</b>	<b>Number of Lectures</b>
1	<b>OVERVIEW OF STORAGE AND INDEXING, DISKS AND FILES</b>	<b>6L</b>
	1. Data on external storage; File Organizations and indexing;	2
	2. Index data structures; Comparison of file organizations; Indexes and	2
	3. Performance tuning. Memory hierarchy; RAID; Disk space management;	1
	4. Buffer manager; Files of records; Page formats and record formats.	1
2	<b>TREE STRUCTURED INDEXING</b>	<b>4L</b>
	1. Intuition for tree indexes;	1
	2. Indexed sequential access method;	1
	3. B+ trees, Search, Insert, Delete, Duplicates,	1
	4. B+ trees in practice.	1
3	<b>HASH-BASED INDEXING</b>	<b>4L</b>
	1. Static hashing;	2
	2. Extendible hashing, linear hashing, comparisons.	2
4	<b>OVERVIEW OF QUERY EVALUATION, EXTERNAL SORTING:</b>	<b>8L</b>
	1. The system catalog; Introduction to operator evaluation; Algorithms for relational operations;	2
	2. Introduction to query optimization; Alternative plans: A motivating example;	2
	3. What a typical optimizer does. When does a DBMS sort data? A simple two-way merge sort;	2
	4. External merge sort	2
5	<b>EVALUATING RELATIONAL OPERATORS</b>	<b>6L</b>
	1. The Selection operation; General selection conditions; The Projection operation;	2
	2. The Join operation; The Set operations; Aggregate operations;	1
	3. The impact of buffering Concurrency control and recovery system: Lock based protocol, dead lock handling, time stamp based and validation based protocol, failure classification, storage, recovery algorithm,	2
	4. Recovery and atomicity, backup.	1

6	<b>A TYPICAL RELATIONAL QUERY OPTIMIZER:</b>	<b>4L</b>
	1. Translating SQL queries in to Relational Algebra;	1
	2. Estimating the cost of a plan; Relational algebra equivalences; Enumeration of alternative plans; Nested subqueries;	2
	3. Other approaches to query optimization.	1
7	<b>PHYSICAL DATABASE DESIGN AND TUNING</b>	<b>6L</b>
	1. Introduction; Guidelines for index selection, examples;	1
	2. Clustering and indexing; Indexes that enable index-only plans; Tools to assist in index selection;	2
	3. Overview of database tuning; Choices in tuning the conceptual schema;	2
	4. Choices in tuning queries and views; Impact of concurrency; DBMS benchmarking.	1
8	<b>MORE RECENT APPLICATIONS</b>	<b>3L</b>
	1. Mobile databases; Multimedia databases;	1
	2. Geographical Information Systems; Genome data management.	2
<b>Total Number Of Hours = 41</b>		

Faculty In-Charge

HOD, CSE Dept.

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

Subject Name: DBMS-II  
Year: 2<sup>ND</sup> Year

Subject Code-MCA403  
Semester: Fourth

### **Assignment:**

#### **Module-I:**

1. How do you organize file in a database?
2. What do you mean by RAID? What is indexing?

#### **Module-II:**

1. What do you mean by B+ trees
2. How do you Search, Insert, and Delete elements from B+ tree?

#### **Module-III:**

1. What do you mean by hashing? Explain Static hashing.
2. Differentiate Extendible hashing, linear hashing.

#### **Module-IV:**

1. How query optimization is done on database? Explain with proper example.
2. What a typical optimizer does in DBMS? When does a DBMS sort data? How two-way merge sort has done in DATABASE?

#### **Module-V:**

1. What is Lock based protocol? How dead lock is handled in DBMS?
2. Explain time stamp based and validation based protocol

#### **Module-V:**

1. How translation of SQL queries in to Relational Algebra is done? Explain with a example
2. What do you mean by Relational algebra equivalences?

#### **Module-V:**

1. Explain Clustering and indexing.
2. What do you mean by view and DBMS benchmarking.

#### **Module-V:**

1. What do you mean by mobile database?
2. Explain Geographical Information Systems and Genome data management.

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

**Subject Name: Operation Research & Optimization Techniques**  
**Year: 2<sup>nd</sup> Year**

**Subject Code-MM401**  
**Semester: Fourth**

<b>MODUL E NO.</b>	<b>TOPICS</b>	<b>NUMBER OF LECTURES (35)</b>
	<b>Introduction</b>	<b>1L</b>
<b>1</b>	<b>Linear Programming (LP):</b>	<b>5L</b>
	1. Formulation of LP Problems, Graphical solutions of two decision variable problems	2
	2. General form of LP model, Simplex method	3
<b>2</b>	<b>Transportation &amp; Assignment Problems:</b>	<b>6L</b>
	1. Nature of a transportation or distribution problem, North-West Corner initial solution	2
	2. Concept of dummy source or destination, Vogel's approximation method	2
	3. Nature of an Assignment problem:-Tabular representation Hungarian method	2
<b>3</b>	<b>Network Analysis:</b>	<b>8L</b>
	1. Network models and terminologies	2
	2. Shortest path problem,	2
	3. The minimum spanning tree problem,	2
	4. the maximal flow problem	2
<b>4</b>	<b>Waiting line problems:</b>	<b>7L</b>
	1. Structure of a waiting line System distribution of service times	1
	2. Queue discipline, steady state operation; Single channel model with Poisson arrivals and exponential service time	2
	3. Multiple channel model with Poisson arrival and exponential service times;	2
	4. Single channel model with Poisson arrivals and arbitrary service time (M/G/1); Economic analysis of waiting line	2
<b>5</b>	<b>Non Linear –Programming</b>	<b>8L</b>
	1. Graphical illustration of a non-linear programming problem; Unconstrained optimization by (i) direct search method, (ii) steepest decent method;	2

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	2. Constrained optimization by lagrange multipliers; Integer linear programming by branch & bound technique;	2
	3. Dynamic programming problems and their characteristics;	2
	4. Bellman's principle of optimality; solving (i) Stage coach problem,(ii) Knapsack problem.	2

Faculty In-Charge

HOD, Maths Dept.

### **Assignments:**

#### **Unit-1 (Linear Programming Problem):**

1. The manager of the milk dairy decides that each cow should get at least 15 units, 20 units and 24 units of nutrients A, B and C daily respectively. Two varieties of feed are available. In feed of variety 1 and variant 2 the contents of nutrient A, B and C are respectively 1 and 3; 2 and 2; 3 and 2 units per kg. The costs of varieties 1 and 2 are respectively Rs. 2 and Rs. 3 per kg. How much of feed of each variety should be purchased to feed a cow daily so that the expenditure is minimized. Formulate as an LPP.

2. Solve the LPP using graphical method

$$\text{Max } 2x_1 - 4x_2$$

$$3x_1 + 5x_2 \geq 15,$$

$$\text{Subject to } 4x_1 + 9x_2 \leq 36,$$

$$x_1, x_2 \geq 0$$

3. Solve the LPP using graphical method

$$\text{Min } 4x_1 + 6x_2$$

$$6x_1 + 5x_2 \geq 20,$$

$$5x_1 + x_2 \geq 10,$$

$$\text{Subject to } x_1 + 4x_2 \geq 8,$$

$$x_1, x_2 \geq 0$$

4. Solve the LPP using simplex method

$$\text{Min } -12x_1 - 15x_2$$

$$4x_1 + 3x_2 \leq 12,$$

$$\text{Subject to } 2x_1 + 5x_2 \leq 10,$$

$$x_1, x_2 \geq 0$$

5. Solve the LPP using Artificial variables technique

$$\text{Min } 3x_1 + 2x_2$$

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## **Lecture-wise Plan**

$$\begin{aligned} & x_1 + x_2 \geq 2, \\ \text{Subject to } & x_1 + 3x_2 \leq 3, \\ & x_1 - x_2 = 1, \\ & x_1, x_2 \geq 0 \end{aligned}$$

### **Unit -2 (Transportation & Assignment Problems):**

#### **Transportation Problems:-**

1. Find the starting solution in the following transportation problems by
  - (i) North-West Corner Method (ii) Least-Cost Method
  - i. Vogel's Approximation Method.

(A)

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Supply
S <sub>1</sub>	19	30	50	10	7
S <sub>2</sub>	70	30	40	60	9
S <sub>3</sub>	40	8	70	20	18
Demand	5	8	7	14	

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Supply
S <sub>1</sub>	3	7	6	4	5
S <sub>2</sub>	2	4	3	2	2
S <sub>3</sub>	4	3	8	5	3
Demand	3	3	2	2	

(B)

	D	E	F	G	Available
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Demand	200	225	275	250	

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## **Lecture-wise Plan**

source	Destination					
		D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Supply
	S <sub>1</sub>	20	25	28	31	200
	S <sub>2</sub>	32	28	32	41	180
	S <sub>3</sub>	18	35	24	32	110
	Demand	150	40	180	170	

### **Assignment Problems**

1. A departmental head has four subordinates, and four tasks to be performed. The subordinates differ in efficiency, and the tasks differ in their intrinsic difficulty. His estimate, of the time each man would take to perform each task, is given in the table below:

Tasks	Men			
	E	F	G	H
A	18	26	17	11
B	13	28	14	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 by using Hungarian assignment method?

2. A pharmaceutical company is producing a single product and is selling it through five agencies located in different cities. All of a sudden, there is a demand for the product in another five cities not having agency of the company. The company is faced with the problem of deciding on how to assign the existing agencies to dispatch the product to needy cities in such a way that the travelling distance is minimized. The distance between the surplus and deficit cities (in Km) is given in the following table:

Surplus cities	Deficit cities					
		a	b	c	d	e
	A	85	75	65	125	75
	B	90	78	66	132	78
	C	75	66	57	114	69
	D	80	72	60	120	72
	E	76	64	56	112	68

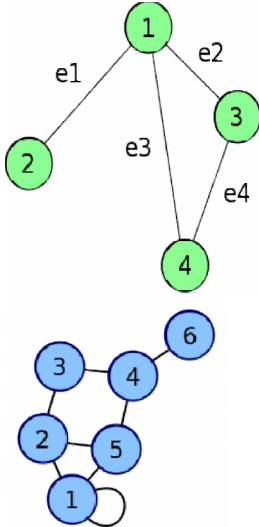
Determine the optimum assignment schedule.

### **Unit 3: Network Analysis:**

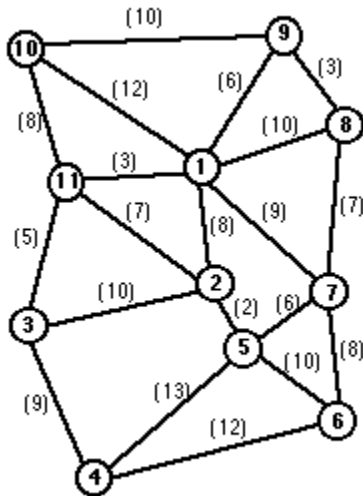
1. Draw a graph with 9 vertices having degree 1,5,2,7,10,8.
2. Determine the number of edges with 6 nodes, two of degree four and 4 of degree 2.
3. Find the maximum number of vertices in a connected graph having 17 edges.
4. Construct the graph corresponding to the following adjacency matrix:

$$\begin{bmatrix} 1 & 1 & 1 & 0 \\ 0 & 0 & 1 & 0 \\ 1 & 0 & 1 & 0 \\ 1 & 1 & 1 & 0 \end{bmatrix}$$

5. Write down the adjacency matrix of the following graphs:



6. Find by kruskal's Algorithm and prim's algorithm a minimal spanning tree of the following graph:



7. Show that the number of vertices of a binary tree can't be even.
8. Show that every connected graph has a spanning tree.
9. Show that every edge of a connected graph is a branch of some spanning tree of G.
10. Prove that the number of cut vertices in a binary tree is always even.
11. Construct a graph having edge connectivity 4, vertex connectivity 3 and degree of each vertex  $\geq 5$ .

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

1. The arrival rate of cars at GRAND jewelers is 20 cars per hour. The service rate at jeweler shop is 8 cars per hour. The only parking area at GRAND jewelers is restricted to 6 cars only. The arrival rate and service rate follows Poisson distribution. Identify the type of queue and then determine the performance measures of this queue. Analyze the result if service rate goes to 20 cars per hour
2. A supermarket has a single cashier. During the peak hours, customers arrive at a rate of 20 customers per hour. The average number of customers that can be processed by the cashier is 24 hour. Calculate:
  - (i) Probability that the cashier is idle
  - (ii) Average number of customer in the system
  - (iii) Average time a customer spends in the system
  - (iv) Average time a customer spends in the queue
3. Patients arrive at a clinic according to Poisson distribution at the rate of 30 patients per hour. The waiting room does not accommodate more than 14 patients. Examination time per patient is exponential with mean rate 20 per hour.
  - i. Find the effective arrival rate at the clinic.
  - ii. What is the probability that an arriving patient will not wait?
  - iii. What is the expected waiting time until a patient is discharged from the clinic?
4. In a railway marshaling yard, goods trains arrive at a rate of 30 trains per day. Assuming that the inter-arrival time follows an exponential distribution and the service time distribution is also exponential with an average of 36 minute. Calculate
  - (i) Average number of customers in the system
  - (ii) Probability that the queue size exceeds 10
  - (iii) Average time a customer spends in the queue
5. If for a period of 2 hours in the day (8 to 10) trains arrive at the yard every 20 minutes but the service time continues to remain 36 minutes, then calculate for this period
  - (i) The trains that the yard is empty
  - (ii) What is the probability that an arriving patient will wait?
  - (iii) The average number of trains in the system On the assumption that the line capacity of the yard is limited to 4 trains only.

### **Unit 4: Non Linear Programming Problems:**

1. Solve by using Univariate search method  $f(x) = x_1^2 - x_1x_2 + 3x_2^2$ .
2. Find the stationary points of  $x_1^2 + 4x_2^2 + 4x_3^2 + 4x_1x_3 + 16x_2x_3$ .
3. Solve by using Lagrange Multiplier  $f(x) = x_1^2 + x_2^2$ , Subject to  $g(x_1, x_2) = x_1x_2 - 1 = 0$ .
4. Solve by using steepest descent  $f(x) = x_1^2 - x_1x_2 + 3x_2^2$ .
5. Solve Quadratic Programming  $\min f(x) = 2x_1^2 + 2x_2^2 - 4x_1 - 4x_2$ ,  
Subject to  $2x_1 + 3x_2 \leq 6, x_1, x_2 \geq 0$ .
6. Solve Quadratic Programming  $\max f(x) = 2x_1 + x_2 - x_1^2$ ,  
Subject to  $2x_1 + 3x_2 \leq 6, 2x_1 + x_2 \leq 4, x_1, x_2 \geq 0$ .

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

Subject Name: **Basic Environment & Ecology**  
 Year: **2<sup>nd</sup> Year**

Subject Code: **HU401**  
 Semester: **Fourth**

<b>Module Number</b>	<b>Topics</b>	<b>Number of Lectures</b>
<b>1</b>	<b>Chapter 1: General</b>	<b>6L</b>
	1. Basic ideas of environment, basic concepts, man, society & environment, their interrelationship.	1L
	2. Mathematics of population growth and associated problems, Importance of population study in environmental engineering, definition of resource, types of resource, renewable, non-renewable, potentially renewable, effect of excessive use vis-à-vis	2L
	3. Materials balance: Steady state conservation system, steady state system with non conservative pollutants, step function.	1L
	4. Environmental degradation: Natural environmental Hazards like Flood, earthquake, Landslide-causes, effects and control/management; Anthropogenic degradation like Acid rain-cause, effects and control. Nature and scope of Environmental Science and Engineering.	2L
	<b>Chapter 2: Ecology</b>	<b>6L</b>
	1. Elements of ecology: System, open system, closed system, definition of ecology, species, population, community, definition of ecosystem-components types and function.	1L
	2. Structure and function of the following ecosystem: Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems, Mangrove ecosystem (special reference to Sundar ban); Food chain [definition and one example of each food chain], Food web.	2L
	3. Biogeochemical Cycle- definition, significance, flow chart of different cycles with only elementary reaction [Oxygen, carbon, Nitrogen, Phosphate, Sulphur].	1L
	4. Biodiversity- types, importance, Endemic species, Biodiversity Hot-spot, Threats to biodiversity, Conservation of biodiversity.	2L
	<b>Chapter 3: Air pollution and control</b>	<b>7L</b>
	1. Atmospheric Composition: Troposphere, Stratosphere, Mesosphere, Thermosphere, Tropopause and Mesopause	1L
	2. Energy balance: Conductive and Convective heat transfer, radiation heat transfer, simple global temperature model [Earth as a black body, earth as albedo], Problems.	1L
	3. Green house effects: Definition, impact of greenhouse gases on the global climate and consequently on sea water level, agriculture and marine food. Global warming and its consequence, Control of Global warming. Earth's heat budget.	1L
	4. Lapse rate: Ambient lapse rate Adiabatic lapse rate, atmospheric stability, temperature inversion (radiation inversion). Atmospheric dispersion: Maximum mixing depth, ventilation coefficient, effective stack height, smokestack plumes and Gaussian plume model.	1L

	5. Definition of pollutants and contaminants, Primary and secondary	1L
	pollutants: emission standard, criteria pollutant. Sources and effect of different air pollutants- Suspended particulate matter, oxides of carbon, oxides of nitrogen, oxides of sulphur, particulate, PAN.	
	6. Smog, Photochemical smog and London smog. Depletion Ozone layer: CFC, destruction of ozone layer by CFC, impact of other green house gases, effect of ozone modification.	1L
2	7. Standards and control measures: Industrial, commercial and residential air quality standard, control measure (ESP. Cyclone separator, bag house, catalytic converter, scrubber (ventury), Statement with brief reference).	1L
	<b>Chapter 4: Water Pollution and Control</b>	<b>8L</b>
	1. Hydrosphere, Hydrological cycle and Natural water.	1L
	2. Pollutants of water, their origin and effects: Oxygen demanding wastes, pathogens, nutrients, Salts, thermal application, heavy metals, pesticides, volatile organic compounds.	2L
	3. River/Lake/ground water pollution: River: DO, 5 day BOD test, Seeded BOD test, BOD reaction rate constants, Effect of oxygen demanding wastes on river[deoxygenation, reaeration], COD, Oil, Greases, pH.	1L
	4. Lake: Eutrophication [Definition, source and effect]. Ground water: Aquifers, hydraulic gradient, ground water flow (Definition only)	1L
	5. Standard and control: Waste water standard [BOD, COD, Oil, Grease], Water Treatment system [coagulation and flocculation, sedimentation and filtration, disinfection, hardness and alkalinity,softening] Waste water treatment system, primary and secondary treatments [Trickling filters, rotating biological contractor, Activated sludge, sludge treatment, oxidation ponds] tertiary treatment definition.	2L
	6. Water pollution due to the toxic elements and their biochemical effects: Lead, Mercury, Cadmium, and Arsenic	1L
3	<b>Chapter 5: Land Pollution</b>	<b>3L</b>
	1. Lithosphere; Internal structure of earth, rock and soil	1L
	2. Solid Waste: Municipal, industrial, commercial, agricultural, domestic, pathological and hazardous solid wastes; Recovery and disposal method- Open dumping, Land filling, incineration, composting, recycling. Solid waste management and control (hazardous and biomedical waste).	2L
	<b>Chapter 5: Noise Pollution</b>	<b>2L</b>
	1. Definition of noise, effect of noise pollution, noise classification [Transport noise, occupational noise, neighbourhood noise]	1L
	2. Definition of noise frequency, noise pressure, noise intensity, noise threshold limit value, equivalent noise level, $L_{10}$ (18 hr Index) , $n L_d$ , Noise pollution control.	1L
	<b>Chapter 6: Environmental Management</b>	<b>2L</b>
	1. Environmental impact assessment, Environmental Audit, Environmental laws and protection act of India, Different international environmental treaty/ agreement/ protocol.	2L
<b>Total Number Of Hours = 34L</b>		

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

Subject Name: **Basic Environment & Ecology**  
Year: **2<sup>nd</sup> Year**

Subject Code: **HU401**  
Semester: **Fourth**

Faculty In-Charge

HOD, ME Dept.

### **Assignment:**

#### **Module-1.**

1. Write short notes for the following:

(a) Flood (b) Landslides (b) Earthquake (c) Acid Rain

2. Suppose an anemometer at a height of 40 m above ground measure wind velocity = 5.5 m/s. Estimate the wind speed at an elevation of 500 m in rough terrain if atmosphere is unstable (i.e.,  $k = 0.2$ ).

#### **Module-2.**

1. A BOD test is run using 50 ml of wastewater mixed with 100 ml of pure water. The initial DO of the mixture is 6 mg/l and after 5 days it becomes 2 mg/l. After a long time, the DO remains fixed at 1 mg/l.

(i) What is the 5 days BOD ( $BOD_5$ )?

(ii) What is the ultimate BOD ( $BOD_u$ )?

(iii) What is the remaining BOD after 5 days?

(iv) What is the reaction rate constant measured at 20°C?

(v) What would be the reaction rate if measured at 35°C?

2. Draw the flow diagram for the following (a) Surface water treatment (b) Waste water Treatment.

3. Draw the Oxygen sag curve.

#### **Module-3.**

1. a) If two machines produces sounds of 80 dB and 120 dB simultaneously, what will be the total sound level.

b) Calculate the intensity of 100 dB sounds.

2. Write a report on the environmental problems related to an abandoned airport. Mention various measures by which it can be used again for other purposes.

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

**Title of Course: Software Project Management Lab**

**Course Code: MCA491**

**L-T-P scheme: 0-0-3**

**Course Credit: 2**

### **Objectives:**

1. To learn and understand system calls related to files, processes, signals, semaphores and implement system programs based on that.
2. To provide an understanding of the design aspects of operating system.
3. To provide an efficient understanding of the language translation peculiarities by designing a complete translator for a mini language.

**Learning Outcomes:** The students will have a detailed knowledge of the concepts of process and shared memory, aware of a variety of approaches to process management and main-memory management, including interference, deadlock, scheduling, fragmentation, thrashing, learn the basics behind file systems and input output systems and understand the fundamentals of network and distributed operating systems. Upon the completion of Operating Systems practical course, the student will be able to:

- **Understand** and implement basic services and functionalities of the operating system using system calls.
- **Use** modern operating system calls and synchronization libraries in software/ hardware interfaces.
- **Understand** the benefits of thread over process and implement synchronized programs using multithreading concepts.
- **Analyze** and simulate CPU Scheduling Algorithms like FCFS, Round Robin, SJF, and Priority.
- **Implement** memory management schemes and page replacement schemes.
- **Simulate** file allocation and organization techniques.
- **Understand** the concepts of deadlock in operating systems and implement them in multiprogramming system.

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

**Title of Course: Computer Graphics Lab**

**Course Code: MCA402**

**L-T Scheme: 0-0-3**

**Course Credits:2**

### **Introduction:**

This course presents an introduction to computer graphics designed to give the student an overview of fundamental principles. It covers the fundamental concepts in creating graphical images on the computer. Computer graphics uses ideas from Art, Mathematics, and Computer Science to create images. Course work stresses the reduction of concepts to practice in the form of numerous programming assignments. The course will include an overview of common graphics hardware, 2D and 3D transformations and viewing, and basic raster graphics concepts such as scan-conversion and clipping. Methods for modeling objects as polygonal meshes or smooth surfaces, and as rendering such as hidden-surface removal, shading, illumination, and shadows will be investigated.

### **Objectives:**

This course is designed to provide a comprehensive introduction to computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends. A thorough introduction to computer graphics techniques, focusing on 3D modelling, image synthesis, and rendering. We will look at raster scan graphics including line and circle drawing, polygon filling, anti-aliasing algorithms, clipping, hidden-line and hidden surface algorithms including ray tracing and, of course, rendering - the art of making photo realistic pictures with local and global illumination models. The interdisciplinary nature of computer graphics is emphasized in the wide variety of examples and applications.

### **Learning Outcomes:**

#### **Knowledge:**

1. To know and be able to understand the core concepts of computer graphics.
2. To know and be capable of using OpenGL to create interactive computer graphics.
3. To know and be able to understand a typical graphics pipeline.
4. To know and be able to make interactive graphics applications in C++ using one or more graphics application programming interfaces.
5. To know and be able to demonstrate an understanding of the use of object hierarchy in graphics applications.
6. To know and be able to write program functions to implement visibility detection.
7. To know and be able to make pictures with their computer.
8. To know and be able to describe the general software architecture of programs that use 3D computer graphics

#### **Experiments:**

1. Study of basic graphics functions defined in “graphics.h”
2. Write a program to draw a any geometrical figure.
3. Write a program to draw a line using Bresenham’s algorithm
4. Write a program to draw a line using DDA algorithm
5. Write a program to draw a line using Mid point algorithm

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

6. Write a program to draw a circle using Midpoint algorithm
7. Write a program to draw a Ellipse using Midpoint algorithm

### **Recommended Systems/Software Requirements:**

1. Intel based desktop PC with minimum of 166 MHZ or faster processor with at least 64 MB RAM and 100 MB free disk space.
2. Turbo C or TC3 compiler in Windows XP or Linux Operating System.

### **Text Books**

1. Hearn, Baker – “Computer Graphics (C version 2nd Ed.)” – Pearson education
2. Z. Xiang, R. Plastock – “Schaum’s outlines Computer Graphics (2nd Ed.)” – TMH
3. D. F. Rogers, J. A. Adams – “Mathematical Elements for Computer Graphics (2nd Ed.)” –TMH

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## **Lecture-wise Plan**

**Title of Course: Multimedia Lab**

**Course Code: MCA492**

**L-T-P scheme: 0-0-3**

**Course Credit: 2**

### **Objectives:**

1. This course is designed to maximize learning through the use of strategies such as outcome based instruction, collaborative learning,
2. Contextual application and performance based assessment. Lecture material will consist of discussion, diagrams, multimedia, and other
3. Educationally sound practices. Other activities will include hands-on utilization of multimedia software. Demonstration and handout materials will be provided.
4. Students will be required to interact in class discussions, perform effective internet searches, and prepare a simple interactive multimedia project.

**Learning Outcomes:** The students will have a detailed knowledge of the concepts of image editing by adobe Photoshop, Creation of Animation by Macromedia Flash, Sound Editing by Sound Forge, Video Editing by Premier and Web designing by HTML, DHTML etc.

Upon the completion of Operating Systems practical course, the student will be able to:

- **Define** multimedia to potential clients.
- **Identify** and describe the function of the general skill sets in the multimedia industry.
- **Identify** the basic components of a multimedia project
- **Identify** the basic hardware and software requirements for multimedia development and playback

### **Course Contents:**

**Exercises that must be done in this course are listed below:**

Exercise No.1: ImageeditingusingtoolslikeAdobePhotoshop

Exercise No. 2: Soundcapturing&editingusingtoolslikeSOUNDFORGE

Exercise No. 3: Creating/editinganimation usingtoolslike FLASH

Exercise No. 4: Creating/editingmotionvideo usingtoolslike PREMIER

Exercise No. 6: Creation of Content using HTML (basic tags, table form, frame, link to other Image)

Exercise No. 7: Creating Style Sheet using DHTML

Exercise No. 8: Home page creation using DHTML and HTML

### **Text Book:**

1. Adobe, AdobePhotoshop6.0: Classroominabook PearsonEd.
2. Anushka Wirasinha, Flash inaFlash-WebDevelopment, PHI
3. MacromediaFlash5fastandeasyWebDevelopment, Design, PHI
4. Castro, HTML4fortheWorldWideWeb, PearsonEd.
5. Schurman&Purdi, DynamicHTMLinAction, SecondEdition, PHI
6. Lozano,Multimedia- Sound&Video, PHI

### **Recommended Systems/Software Requirements:**

1. Intel based desktop PC with minimum of 166 MHZ or faster processor with at least 64 MB RAM and 100 MB free disk space.
2. Adobe Photoshop 6.0
3. Adobe Macromedia Flash.
4. Premier CS5.
5. Sound Forge 7.0
6. Web Browser (Internet Explorer / Mozilla/ Google Chrome)

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

**Title of Course: Advanced DBMS LAB**

**Course Code: MCA493**

**L-T-P Scheme: 0-0-3**

**Course Credits: 2**

### **Objective:**

- To get familiar with basic EER concepts (generalization and specialization)
- Study of ODL schema.
- Implement Abstract data type.
- To study varying array.
- Implement object Table.
- To study implementation of nested tables.
- To understand use of objects in member procedure.
- To study horizontal Partitioning
- To study horizontal Partitioning.
- To study semistructured data.

### **Learning Outcomes:**

- Ability to build normalized databases.
- Knowledge of Entity Relationship Modelling.
- Familiarity with SQL, embedded SQL and PLSQL, ODL schema.
- Familiarity with query processing and query optimization techniques.
- Understanding of Member procedure., Partitioning on the tables.
- Ability to handle recovery and concurrency issues.
- Familiarity with XML commands.

### **Course Contents:**

**Exercises that must be done in this course are listed below:**

**Exercise No.1:** Study of EER diagram.

**Exercise No. 2:** Study of ODL schema.

**Exercise No. 3:** Implement Abstract data type.

**Exercise No. 4:** Implement Varrays.

**Exercise No. 5:** Implement object Table.

**Exercise No. 6:** Implement Nested table.

**Exercise No. 7:** Implement Member procedure.

**Exercise No. 8:** Implement Member Function.

**Exercise No. 9:** Implement Partitioning on the tables.

**Exercise No. 10:** Study of XML commands.

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

Lab Assignment 1	
Title	Study of EER diagram.
Objective	To get familiar with basic EER concepts (generalization and specialization)
References	Fundamentals of Database Systems Elmasri and Navathe Addison-Wesley Fourth edition Database management Systems Raghu Ramakrishnan and Johannes Gehrke TMH Database System concepts Korth,Silberchatz,sudarshanMc-Graw-HillFourth edition Database Systems, design, Implementation and management Peter Rob and Carlos Coronel Thomson learning. Fifth edition Introduction to database systems C.J Date Addison Wesley Longman
Pre-requisite	Knowledge of →basic ER model. →Specialization and generalization.
Theory	A case study is being considered for studying EER concepts. The EER model includes all modeling concepts of ER model, in addition to that it includes concepts of subclass, superclass, specialization and generalization. Another concept included is that of a category or union type which is used to represent a collection of objects.
Sample Output	A detailed EER diagram and information related to all the entity sets.
Post Lab Assignment	Explain Generalization and specialization? Constraints on Generalization and specialization?

**UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## Lecture-wise Plan

## Lab Assignment 2

Lab Assignment 2	
Title	Study of ODL schema.
Objective	To get familiar object structure, naming mechanism and ODL.
References	Fundamentals of Database Systems Elmasri and Navathe Addison-Wesley Fourth edition Database management Systems Raghu Ramakrishnan and Johannes Gehrke TMH Database System concepts Korth, Abraham Silberschatz, Sudarshan McGraw-Hill Fourth edition Database Systems, design, Implementation and management Peter Rob and Carlos Coronel Thomson Learning. Fifth edition Introduction to database systems C.J Date Addison-Wesley Longman
Pre-requisite	Knowledge of → EER model. DDL. Rules for converting EER to ODL.
Theory	Object is a triple (i,c,v) where i is unique identifier, c is type constructor and v is object state. A type constructor may be an atom, tuple, set, list, bag and array. There are 2 types of objects-transient and persistent objects. Persistent objects are stored in database and persist after program termination. The typical mechanism for making an object persistent are naming and reachability. The naming mechanism involves giving an object a unique persistent name through which it can be retrieved in this and future programs.
Sample Output	A ODL schema is written with reference to the case study.
Post Lab Assignment	Explain object identity and structure? explain naming mechanism?

**UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## Lecture-wise Plan

## Lab Assignment 3

Lab Assignment 3	
Title	Implement Abstract data type.
Objective	To get familiar User defined data types.
References	<ol style="list-style-type: none"> <li>1. Fundamentals of Database Systems Elmasri and Navathe Addison-Wesley Fourth edition</li> <li>2. Database management Systems Raghu Ramakrishnan and Johannes Gehrke TMH</li> <li>3. Database System concepts Korth,Silberchatz,sudarshanMc-Graw-HillFourth edition</li> <li>4. Database Systems,design,Implementation and management Peter Rob and Carlos Coronel Thomson learning. Fifth edition</li> <li>5. Introduction to database systems C.J Date Addison-Wesley Longman</li> </ol>
Pre-requisite	Knowledge of →basic data types. →basic DDL commands.
Theory	ADT are the data types created by the programmer having sub-types. An ADT of address may contain may attributes such as street_no, street_name, city, State. Syntax for creating ADT is create or replace type as object (attr1 datatype, attr2 datatype ...) Steps to implement ADT <ol style="list-style-type: none"> <li>1. Create ADT for address.</li> <li>2. Create table employee using ADT.</li> <li>3. Describe structure of table and ADT.</li> <li>4. Display all employees staying in mumbai.</li> <li>5. Display address of all employees whose age is greater than 40.</li> <li>6. Display cities of all employees.</li> </ol>
Sample Output	create or replace type addr as object(street_no number(3), street_name varchar2(20),city varchar2(10), state varchar2(10)); Type created
Post Lab Assignment	1. write short note on ADT?

**UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## Lecture-wise Plan

## Lab Assignment 4

Lab Assignment 4	
Title	Implement Varrays.
Objective	To study varying array.
References	<ol style="list-style-type: none"> <li>1. Fundamentals of Database Systems Elmasri and Navathe Addison-Wesley Fourth edition</li> <li>2. Database management Systems Raghu Ramakrishnan and Johannes Gehrke TMH</li> <li>3. Database System concepts Korth,Siberchatz,sudarshanMc-Graw-HillFourth edition</li> <li>4. Database Systems,database design,Implementation and management Peter Rob and Carlos Coronel Thomson learning. Fifth edition</li> <li>5. Introduction to database systems C.J Date Addison-Wesley Longman</li> </ol>
Pre-requisite	Knowledge of →ADT.
Theory	<p>V arrays help in storing repeating attributes of a record in a single row. V arrays have a defined lower value 0 and maximum could be any valid number. collector such as varying array allows repetition of only those column values that change potentially storage values. collectors are used to accurately represent relationship between data type in the database object.</p> <p>syntax is create type type_name as varray(5) of datatype</p> <p>Steps to implement Varray</p> <ol style="list-style-type: none"> <li>1. Create varray for the item_code.</li> <li>2. Create a table with attributes order_no and item.</li> <li>3. Describe varray structure.</li> <li>4. Display item code for order_no=1 .</li> </ol>
Sample Output	<pre>create type item_code as varray(5) of varchar2(20); Type created. create table order1(order_no number(5), item item_code); table created.</pre>
Post Lab Assignment	<ol style="list-style-type: none"> <li>1. Short note on collector andvarray.</li> <li>2. Short note on in-built interfaces.</li> </ol>

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

Lab Assignment 5	
Title	Implement object Table.
Objective	To study object creation and object structure.
References	1. Fundamentals of Database Systems Elmasri and Navathe Addison-Wesley Fourth edition 2. Database management Systems Raghu Ramakrishnan and Johannes Gehrke TMH 3. Database System concepts Korth, Abraham, Abraham, Abraham Mc-Graw-Hill Fourth edition 4. Database Systems, design, Implementation and management Peter Rob and Carlos Coronel Thomson learning. Fifth edition 5. Introduction to database systems C.J Date Addison-Wesley Longman
Pre-requisite	Knowledge of → object identity → object structure
Theory	Each row within the object table has OID-an object identifier value. This is system generated identifier which is being assigned at the time of a new row insertion.  create type type_name as object(list of attributes) create table table_name of type_name To view OID of each row select ref(a) from table_name a
Sample Output	select ref(a) from emp a; ref(a) 00002802093B090D8F236BB39 CE 04000
Post Lab Assignment	1. Explain object structure and object identity? 2. Different object structures?

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

Lab Assignment 6	
Title	Implement Nested tables.
Objective	To study implementation of nested tables.
References	1. Fundamentals of Database Systems Elmasri and Navathe Addison-Wesley Fourth edition 2. Database management Systems Raghu Ramakrishnan and Johannes Gehrke TMH 3. Database System concepts Korth, Abraham, Abraham, Abraham Mc-Graw-Hill Fourth edition 4. Database Systems, design, Implementation and management Peter Rob and Carlos Coronel Thomson learning. Fifth edition 5. Introduction to database systems C.J Date Addison-Wesley Longman
Pre-requisite	Knowledge of → Object table. → Varray.
Theory	Varying array have a limited no. of entries, whereas nested tables have no limit on the no. of entries per row. A nested table is a table within a table. create type type_name as object (attribute1, attribute2, ... ) create type tablename as table of type_name create table table_name (attribute data type, attribute1 tablename) nested table attribute1 store as project
Sample Output	Create type proj as object(proj_code varchar2(20), proj_name varchar2(20), remarks varchar2(20)); Type created.  Create type pront as table of proj; type created  create table dept(dept_no number(5), dept_name varchar2(20), dept_loc varchar2(20), projects pront) nested table projects as project1; Table created.
Post Lab Assignment	1. Short note on concept of nested tables? 2. Compare nested table and varrays?

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

Lab Assignment 7	
Title	Implement Member procedure.
Objective	<b>To understand use of objects in member procedure.</b>
References	1. Fundamentals of Database Systems Elmasri and Navathe Addison-Wesley Fourth edition 2. Database management Systems Raghu Ramakrishnan and Johannes Gehrke TMH 3. Database System concepts Korth, Abraham, Abraham, Abraham Mc-Graw-Hill Fourth edition 4. Database Systems, design, Implementation and management Peter Rob and Carlos Coronel Thomson learning. Fifth edition 5. Introduction to database systems C.J Date Addison-Wesley Longman
Pre-requisite	Knowledge of <b>→PL/SQL</b>
Theory	Creating a member procedure create or replace type as object (attribute datatype member procedure procedure_name (attribute in datatype) ...); Defining a member procedure create or replace type body type as member procedure procedure_name(attribute in datatype) is begin Definition partitioning end; end;
Sample Output	step 1: create or replace type T1 as object(ssn number(5), name varchar2(20), member procedure change_name(name1 in varchar2)); Type created step 2: Create table tab of T1; Type created step 3: create or replace type body T1 as member procedure change_name(name1 in varchar2) is begin name:=name1; end; end;
Post Lab Assignment	<b>1. Write short on member procedure.</b>

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

Lab Assignment 8	
Title	Implement Member Function.
Objective	<b>To study horizontal Partitioning</b>
References	1. Fundamentals of Database Systems Elmasri and Navathe Addison-Wesley Fourth edition 2. Database management Systems Raghu Ramakrishnan and Johannes Gehrke TMH 3. Database System concepts Korth, Abraham, Abraham, Abraham Mc-Graw-Hill Fourth edition 4. Database Systems, design, Implementation and management Peter Rob and Carlos Coronel Thomson learning. Fifth edition 5. Introduction to database systems C.J Date Addison-Wesley Longman
Pre-requisite	Knowledge of <b>→features of functions</b>
Theory	Syntax for creating function create or replace objectname as object ( attribute1,attribute 2... member function functionname (parameter list) return datatype);  CREATE OR REPLACE FUNCTION[SCHEMA.]FUNCTIONNAME (ARGUMENT IN DATATYPE,...)RETURN DATATYPE {IS,AS} VARIABLE DECLARATIONS; CONSTANT DECLARATIONS; BEGIN PL/SQL SUBPROGRAM BODY; EXCEPTION EXCEPTION PL/SQL BLOCK; END;
Sample Output	Create or replace type animal_by as object (breed varchar2(25),name varchar2(25),birthdate date member function AGE(birthdate in date) return number); type created.  Create or replace AGE(birthdate date) return number is begin return round(sgs_date_birthday); end; end; function created
Post Lab Assignment	<b>1 .short note on functions</b>

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

Lab Assignment 9	
Title	Implement Partitioning on the tables.
Objective	<b>To study horizontal Partitioning .</b>
References	<ol style="list-style-type: none"><li>1. Fundamentals of Database Systems Elmasri and Navathe Addison-Wesley Fourth edition</li><li>2. Database management Systems Raghu Ramakrishnan and Johannes Gehrke TMH</li><li>3. Database System concepts Korth,Siberchatz,sudarshanMc-Graw-HillFourth edition</li><li>4. Database Systems,design,Implementation and management Peter Rob and Carlos Coronel Thomson learning. Fifth edition</li><li>5. Introduction to database systems C.J Date Addison-Wesley Longman</li></ol>
Pre-requisite	Knowledge of <b>→distributed databases</b> <b>→horizontal and vertical partitioning</b>
Theory	Partition improves overall performance but increases overhead on database to search in each partition. Tables are easier to manage. Backup and recovery operations may perform better.  Create table table_name(attribute1,attribute2 ...) partition by range(attribute) (partition partitionname values less than(maxvalue),partition partition values less than(maxvalue));
Sample Output	Create table emp(emp_id varchar2(10),name varchar2(20)) partition by range(emp_id) (partition part_id1 values less than(5),partition part_id2 values less than(10)); table created
Post Lab Assignment	<b>1 .write short note on distributed databases.</b>

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Lecture-wise Plan**

### Lab Assignment 10

Title	Implement XML command.
Objective	<b>To study semi-structured data.</b>
References	<ol style="list-style-type: none"><li>1. Fundamentals of Database Systems Elmasri and Navathe Addison-Wesley Fourth edition</li><li>2. Database management Systems Raghu Ramakrishnan and Johannes Gehrke TMH</li><li>3. Database System concepts Korth, Abraham, Abraham, Abraham Mc-Graw-Hill Fourth edition</li><li>4. Database Systems, design, Implementation and management Peter Rob and Carlos Coronel Thomson learning. Fifth edition</li><li>5. Introduction to database systems C.J Date Addison-Wesley Longman</li></ol>
Pre-requisite	Knowledge of →database →applets →html
Theory	<p>DTD(document type definition) Any valid document conforming to DTD should follow the specified structure:</p> <ol style="list-style-type: none"><li>1. name is given to the root tag and then to the elements and their nested structure are specified.</li><li>2. a * means element can be repeated 0 or more times</li><li>3. A + element can be repeated one or more times</li><li>4. Any element appearing without any of the preceding symbols must appear exactly once in the document.</li></ol> <p>eg</p> <pre>&lt;!DOCTYPE projects [ &lt;!ELEMENT projects(project+)&gt; &lt;ELEMENT project(pname,number,dept_no,workers)&gt; &lt;ELEMENT pname(#PCDATA)&gt; &lt;ELEMENT number(#PCDATA)&gt; &lt;ELEMENT dept_no(#PCDATA)&gt; &lt;ELEMENT workers(worker *)&gt; &lt;ELEMENT eno(#PCDATA)&gt; &lt;ELEMENT ename(#PCDATA)&gt; &gt;]</pre> <p>XSD(XML schema definition) W3 specifies how to formally describe the element in XML document. It helps to verify that each item of content in a document adheres to the description of the element in which the content is to be placed.</p> <pre>&lt;xsd:schema xmlns:xsd="http://www.w3c.org/2001/XMLSchema"&gt; &lt;xsd:element name="country" type="country"&gt; &lt;xsd:complexType name="country"&gt; &lt;xsd:sequence&gt; &lt;xsd:element name="name" type="xsd:string"&gt; &lt;/xsd:sequence&gt; &lt;/xsd:complexType&gt; &lt;/xsd:element&gt; &lt;/xsd:schema&gt;</pre>
Sample Output	DTD and XSD studied

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Lecture-wise Plan

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Lecture-wise Plan