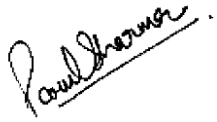
Department of CSE

Details of Lesson Plan

S.No.	Particulars	Details
1.	Course Name	Relational Database Management System (RDBMS)
2.	Course Code	COM-402
3.	Academic Year	2023-2024
4.	Semester	4th
5.	Number of Lesson plans	35
6.	Faculty Assigned	Ms. Parul Sharma



Faculty Signature

Lesson Plan No. 1	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to: a. Understand the concept of Database b. Understand the Need of Database c. Understand the Learning Path/Career Path in DB Jobs d. Imagine the Size of a Data center e. Identify softwares/web applications, where DB is used.
Teaching Aids (if any)	a. PowerPoint Presentation b. Short Video/Animated presentation \
Teaching Development	1. **Introduction** (10 minutes) Discussion starts with real-life examples of different systems (Facebook) | Introduction Video (8:20): https://www.youtube.com/watch?v=_r97qdyQtIk - Organizations are using which techniques for data storage and why? (MAANG companies) 2. **Development** (30 minutes) Career & Job Perspective (Database Administrator, Data Analyst, Market Research Analyst) - Discussion on Coursera Certification by IBM - Oracle Database 12c Administrator Certified Associate - Microsoft Certified: Azure Database Administrator Associate - For More Oracle Certification :(Oracle University) - Introduction of Course (RDBMS) 3. **Examples of DBMS** (10 minutes) - Real-world examples. (Banking Management System, Pi360) - IT Industry (Meta) - Online Bookings (E-Ticketing)
Closure	Summarize the Lesson correlation with Learning Outcomes

Lesson Plan No. 1.1	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to: a. Understand the concept of DBMS Engine b. Illustrate difference between types of Databases Applications c. Analyse different Database Architectures & their characteristics
Teaching Aids (if any)	a. PowerPoint Presentation b. Animated Video Resources
Teaching Development	1. **Introduction** (5 minutes) Have a discussion on the importance of data and storage in real-time. Introducing the concept of Languages. Show Figures on slide. Introduce the formal definition of DBMS Highlight the importance of characteristics of the DBMS 2. **Development** (30 minutes) a. Introduction to DBMS Engine - Introducing the concept of DBMS Applications & Architecture (University DB example). - Database Users and Administrators (Practical Demo: PI360) - Structures of a Data Models (Case based examples) b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have a discussion to summarize the lecture. - Ask Questions Related to Topic - Differentiate between concepts, advantage & different applications of DBMS and its modelling.
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. 2. Suggested Reading Database System Concepts, Korth, Silberchatz, Mcgraw Hill Edu. 7th Edition (Page-18-25) Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions. Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 1.2	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to: a. Historical Evolution of Database b. Identify different Database designs and Used techniques.
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (5 minutes) Review the previous concepts. Specify the advantages of using Database 2. **Development** (30 minutes) a. Historical Evolution of Database - Discussion on timeline and evolution of different database systems. - Features of Database Management System - Types of Database - Language required for DB b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have a discussion to summarize the lecture - Ask Questions Related to the Topic - Differentiate between concepts, advantages & different applications of DBMS
Closure	1. Summarise the Lesson, Learning Outcomes and get affirmation from students on these. 2. Suggested Reading Database System Concepts, Korth, Silberchatz, Mcgraw Hill Edu. 7th Edition (Page-1-17) Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	Reflective Questions. Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 1.3	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to: a. Draw the uses and advantages of DBMS b. Understand the Database Architecture c. Understand the concept of Data Modelling
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube Animated video
Teaching Development	1. **Introduction** (10 minutes) - Revision of Previous class - Specify real life example of RDBMS - Difference between flat file system and RDBMS 2. **Development** (30 minutes) a. Introducing the concept of DBMS Applications & architecture. - Database Users and Administrators - Structures of a Data Models b. Examples of DBMS - Real world examples (University Database Management System) 3. **Exercise** (10 minutes) – - Have a discussion to summarize the lecture - Ask Questions Related to the Topic - Think-Pair-Share (One real life example of RDBMS and its modelling)
Closure	1. Summarise the Lesson, Learning Outcomes and get affirmation from students on these. 2. Suggested Reading Database System Concepts, Korth, Silberchatz, Mcgraw Hill Edu. 7th Edition (Page 18-25) Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Outcome based on discussion, Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 1.4	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to: a. Understand the concept of Records and Files b. Apply the role of Records and file systems c. Design the concept of data Abstraction and data Integration
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) - Revision of the previous lecture. - Ask questions 2. **Development** (30 minutes) a. Introduction to Records and file systems. -Records with examples -File system and its architecture -How they are useful to DBMS concepts. -the difference between data abstraction and data integration b. Examples of DBMS - University Database Management System 3. **Exercise** (10 minutes) – - Have a discussion to summarize the lecture - Ask Questions Related to the Topic - Group Discussion
Closure	1. Summarise the Lesson, Learning Outcomes and get affirmation from students on these. 2. Suggested Reading Database System Concepts, Korth, Silberchatz, Mcgraw Hill Edu. 7th Edition **(Page 1-17)** Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions . Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 1.5	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to: a. Articulate the concept of Data Views and Data Independence b. Levels of Data Independence
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) - Revision of the previous lecture. - Ask questions 2. **Development** (30 minutes) a. Introduction to Data views - Introducing the concept of DBMS Architectures. - Different levels of views Database - Physical Data Independence - Logical Data Independence - Animated Video b. Examples of DBMS - Real world examples Data Independence with Student Database Management System 3. **Exercise** (10 minutes) – - 5 minute paper Activity with Bank Management System - Share their views with the class.
Closure	1. Summarise the Lesson, Learning Outcomes and get affirmation from students on these. 2. Suggested Reading Database System Concepts, Korth, Silberchatz, Mcgraw Hill Edu. 7th Edition **(Page 18-25)** Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	Discussion based on Activity Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 1.6	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to: a. Articulate the concept of Data Associations b. Define the concept of Data models and its classification.
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) - Revision of the previous lecture. - Ask questions 2. **Development** (30 minutes) a. Introduction to Data Associations - Introducing the concept of association. - Show live examples of data association. - Introduction of Data models - Importance of Data models - Classification of Data models b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Ask Questions Related to Topic - Differentiate between concepts , advantage & different applications of DBMS
Closure	1. Summarise the Lesson, Learning Outcomes and get affirmation from students on these. 2. Suggested Reading Database System Concepts, Korth, Silberchatz, Mcgraw Hill Edu. 7th Edition **(Page 1-17)** Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 1.7	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to: a. Conclude the Database concepts, its architectures, types and characteristics. b. Theorize the difference between types of Databases Applications, its advantages and disadvantages, records, and files. c. Discover the concept of Database modelling, classification.
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube animated video
Teaching Development	1. **Introduction** (7 minutes) - Summary Video -Ask Students to summarise all the topics mentioned in the syllabus and discovered in the classroom. 2. **Development** (30 minutes) - Student will define the concepts one by one - Use a roll number to call them. 3. **Exercise** (5 minutes) – - Quiz final Unit-1
Closure	1. Summarise the Lesson, Learning Outcomes and get affirmation from students on these. 2. Suggested Reading Database System Concepts, Korth, Silberchatz, Mcgraw Hill Edu. 7th Edition **(Page 18-25)** Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 1.8	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to: a. Understand the fundamentals of DBMS & RDBMS b. Explain the difference between DBMS & RDBMS c. Identify the real-life application of Database System
Teaching Aids (if any)	a. PowerPoint Presentation b. Short Video/Animated presentation
Teaching Development	1. **Introduction** (10 minutes) - What is data? - What is Information? - What is the difference between data & Information? 2. **Development** (30 minutes) a. Introduction to DBMS & RDBMS - Starting with a case study (Student Management System) - Introducing the concept of DBMS & RDBMS. - Characteristics of DBMS & RDBMS - Other storing techniques b. Animated Video of DBMS - https://www.youtube.com/watch?v=d11viALaCvA 3. **Exercise** (10 minutes) – - Activity: Identification of some more real- life examples of Database System by students from surroundings. -Quiz-1
Closure	Summarize the Lesson (through students/self), correlation with Learning Outcomes Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 2.1	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to: a. Produce the ER diagram of real-world database problems. b. Interpret the basic concepts and constraints of ER models
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) - Ask questions. What is the Database modelling? - How can we represent in the form of pictorial representation? 2. **Development** (30 minutes) a. Introduction to ER models - Introducing the basic concept of ER model and its representation - Introduction to different relationship constraints - design issues ER models b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture. - Ask Questions Related to Topic - Differentiate between concepts, advantage & different applications of DBMS and its modelling.
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. 2. Suggested Reading Database System Concepts, Korth, Silberchatz, Mcgraw Hill Edu. 7th Edition **(Page-259-262)** Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 2.2	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to: a. Determine the ER designing issues. b. Design the ER diagram and identify the weak entity sets.
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) - Revision of previous lecture - Ask questions 2. **Development** (30 minutes) a. Introduction to ER models - ER model designing issues - Introduction to different relationship constraints - Weak entity sets b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture. - Ask Questions Related to Topic - Differentiate between concepts, advantage & different applications of DBMS and its modelling.
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. 2. Suggested Reading Database System Concepts, Korth, Silberchatz, Mcgraw Hill Edu. 7th Edition **(Page-283-290)** Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 2.3	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. What are the various types of entities, entity sets, attributes and keys? b. Describe the various types of relationships sets, roles and structural constraints.
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video c. Use of Mentimeter
Teaching Development	1. **Introduction** (10 minutes) - Ask questions - Explain the various types of data models. 2. **Development** (30 minutes) a. Introduction to ER Diagram - Explanation of entity types, entity sets, attributes and keys (Example Student Database) - Explain various relationship types, relationship sets, roles and structural constraints. - Illustrate weak entity types b. Summarize ER Diagrams 3. **Exercise** (10 minutes) – - Activity - Mentimeter Activity
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. 2. Suggested Reading Fundamentals of Database Systems by R. Elmasri, Navathe, 6th Edition, Pearson. ✓ Pages: Page No. 202-217 **Homework:** **Activity:** Describe the importance of ER diagram. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Quiz on ER Diagram. 3. MCQ / Sessional Test / Assignments Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 2.4	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. What are Integrity Constraints? b. Describe the various types of Integrity Constraints.
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video c. Use of Mentimeter
Teaching Development	1. **Introduction** (5 minutes) **Ask questions:** a. What are the various types of entities, entity sets, attributes and keys? b. Describe the various types of relationships sets, roles and structural constraints. 2. **Development** (30 minutes) a. Introduction to ER Diagram - Introduction to Integrity Constraints - After introduction of the topic, various types of integrity constraints will be discussed with the help of suitable example. b. Summarize Integrity Constraints. 3. **Exercise** (10 minutes) – - Activity - Mentimeter Activity
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. 2. Suggested Reading Database System Concepts Korth, Silberchatz, Mcgraw Hill Education, 6th Edition Pages: Page No. 128-136 **Homework:** 1. Activity: Describe the importance of Integrity Constraints. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. MCQ / Sessional Test / Assignments Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 2.5	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. What is the role of Keys in DBMS? b. What are Keys? Illustrate different types of Keys with examples.
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video c. Nearpod Activity
Teaching Development	1. **Introduction** (5 minutes) **Ask questions:** a. What are Integrity Constraints? b. Describe the various types of Integrity Constraints. 2. **Development** (30 minutes) a. Introduction to Keys - Discussion starts with example and introducing the concept of Keys . - Role of Keys in DBMS. - Explaining different types of keys with examples. b. Summarize Keys. 3. **Exercise** (10 minutes) – - Activity - Nearpod Activity
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. 2. Suggested Reading Database System Concepts Korth, Silberchatz, Mcgraw Hill Education, 6th Edition Pages: Page No. 45-46 **Homework:** 1. Activity: Describe the importance of Keys with examples. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. MCQ / Sessional Test / Assignments Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 2.6	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Gain knowledge on the Integrity Rules in DBMS b. Understand the different types of Integrity Rules
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (5 minutes) **Ask questions:** - Define entity? - What do you mean by Integrity? - What are integrity rules in DBMS? - What do you mean by foreign key? 2. **Development** (30 minutes) a. Introduction on the concept of integrity rules/constraints - Importance of integrity constraints b. Demonstrate the different categories of integrity constraints with the help of suitable examples. c. Explain the difference between entity integrity and referential integrity constraints 3. **Exercise** (10 minutes) – - Activity: (Reading activity) on Integrity Rules/Constraints in DBMS https://www.geeksforgeeks.org/constraints-on-relational-database model/ Suggested reading the article on types of Integrity Constraints https://www.scaler.com/topics/dbms/integrity-constraints-in-dbms/
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. 2. Suggested Reading Database System Concepts Korth, Silberchatz, Mcgraw Hill Education, 6th Edition Pages: Page No. 45-46 Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	Assess lesson learning outcomes by revisiting the questions asked after discussion. Minute paper activity different types of Integrity Rules

Lesson Plan No. 2.7	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Understand the Concept of Relational Algebra b. Demonstrate how Relation Algebra operations works with tables
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (5 minutes) **Ask questions:** - What is Horizontal partition of table? - What is Vertical partition of table? 2. **Development** (30 minutes) Introduction on the concept of Relational algebra - Unary operation in Relational Algebra (Select, Project, Rename) - Binary Operation in Relational Algebra (Union, Intersection) 3. **Exercise** (10 minutes) – Activity: (Reading activity) on Levels of abstraction https://www.tutorialspoint.com/dbms/relational_algebra.htm Suggested reading the article on types of data integration https://www.javatpoint.com/dbms-relational-algebra https://nptel.ac.in/courses/106106095
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. 2. Suggested Reading Database System Concepts Korth, Silberchatz, Mcgraw Hill Education, 6th Edition Pages: Page No. 47-48 Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	Assess lesson learning outcomes by revisiting the questions asked after discussion. Minute paper activity different levels of abstraction.

Lesson Plan No. 3.1	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Understand the concept of Functional Dependency b. Gain knowledge on the different types of Functional Dependency
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube video
Teaching Development	1. **Introduction** (5 minutes) **Ask questions:** - How to ensure data integrity? - What is Primary Key? - What is Foreign Key? 2. **Development** (30 minutes) - Introduction to the concept of keys in DBMS - Discuss the Trivial Functional Dependency - Illustrate Non- Trivial Functional Dependency Demonstrate all the functional dependencies with the help of tables. 3. **Exercise** (10 minutes) – Activity: case study to understand the concept of Functional Dependency https://www.javatpoint.com/dbms-functional-dependency Suggested video https://nptel.ac.in/courses/106106093
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	Assess lesson learning outcomes by revisiting the questions asked after discussion. Ask a student to recapitulate the covered concept Conduct MCQ based

Lesson Plan No. 3.2	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Understand the concept of Normalization in DBMS b. Gain knowledge on the different types of Normal Forms
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube video
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** - What do you mean by Data redundancy? - What are the ways to ensure data integrity? - What do you mean by Normalization? - What is dependency in DBMS? 2. **Development** (30 minutes) a. Introduction on the concept of Normalization - Importance of Normal Forms b. Demonstrate the different types of Normal Forms with the help of suitable examples. 3. **Exercise** (10 minutes) – Activity: (Reading activity) on Normalization in DBMS https://www.tutorialspoint.com/dbms/database_normalization.htm Suggested reading the article on types of Normal Forms https://www.geeksforgeeks.org/normal-forms-in-dbms/
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	Assess lesson learning outcomes by revisiting the questions asked after discussion. Ask a student to recapitulate the covered concept Conduct MCQ based

Lesson Plan No. 3.3	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to: a. Define Third Normal Form (3NF) and Boyce-Codd Normal Form (BCNF). b. Identify violations of 3NF and BCNF in a given set of relations. c. Normalize relations into 3NF and BCNF.
Teaching Aids (if any)	a. Use of Nearpod tool for online quiz
Teaching Development	1. **Introduction** (5 minutes) • Start by briefly reviewing the concepts of normalization and the objectives of normalization (to minimize redundancy and dependency). • Introduce the need for higher normal forms beyond 1NF and 2NF, focusing on 3NF and BCNF. 2. **Development** (30 minutes) a) Define Third Normal Form (3NF) as a further refinement of 2NF. b) Explain the requirements for a relation to be in 3NF: • It must be in 2NF. • It must not have any transitive dependencies. c) Provide examples of relations and illustrate how to identify and eliminate transitive dependencies to achieve 3NF. d) Walk through examples step by step, highlighting the process of decomposition. 3. Exercise (5 minutes) – Encourage students to work individually or in pairs to solve the exercises.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these.\ 2. Encourage students to continue practicing normalization techniques outside of class. 3. Suggested Reading https://www.geeksforgeeks.org/third-normal-form-3nf/ https://www.javatpoint.com/dbms-third-normal-form Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Questions on Normal forms. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 4.1	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Articulate the concept of transaction and system concept. b. Illustrate difference between types of transaction and system concept. c. Gain knowledge on different transaction and system concept techniques.
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube video
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** - What is the basic understanding of transaction and system concept? - Have a discussion on the importance of transaction and system concept. - Introducing the concept of transaction and system concept. Show Figures on slide. - Introduce the formal definition of transaction and system concept. - Highlight the importance of characteristics of the transaction and system concept. 2. **Development** (30 minutes) a. Introduction to transaction and system concept - Introducing the concept of transaction and system concept. - Language required for transaction and system concept. - Structures of a database. b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Ask Questions Related to Topic
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 4.2	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Articulate the concept of transaction state, desirable properties of transactions (ACID). b. Illustrate difference between types of desirable properties of transactions (ACID).
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube video
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** - What is the basic understanding of transaction state, desirable properties of transactions (ACID)? - Have a discussion on the importance of transaction state, desirable properties of transactions (ACID), Introducing the concept of Languages. Show Figures on slide. - Introduce the formal definition of transaction state, desirable properties of transactions (ACID) 2. **Development** (30 minutes) a. Introduction to transaction state, desirable properties of transactions (ACID) - Introducing the concept of transaction state, desirable properties of transactions (ACID), - Database Users and Administrators - Structures of a Data Models b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Ask Questions Related to Topic
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 4.3	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Articulate the concept of Concurrent executions, Serializability, Recoverability. b. Illustrate difference between Concurrent executions, Serializability, Recoverability. c. Gain knowledge on different Concurrent executions, Serializability, Recoverability techniques.
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** - What is the basic understanding of Concurrent executions, Serializability, Recoverability - Have a discussion on the importance of Concurrent executions, Serializability, Recoverability - Introducing the concept of Concurrent executions, Serializability, Recoverability, 2. **Development** (30 minutes) a. Introduction to Concurrent executions, Serializability, Recoverability - Introducing the concept of Concurrent executions,Serializability, Recoverability - Recoverable and Irrecoverable Schedules - Different types of Serializability - Questions for practice on Serializability b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Questions for practice on the concept of Concurrent Executions and Serializability
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.

Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Tutorial Sheets on the questions. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 4.4	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Articulate the concept of Implementation of isolation, b. Transaction definition in SQL c. Illustrate difference between types of Implementation of isolation, Transaction definition in SQL d. Gain knowledge on different Implementation of isolation, Transaction definition in SQL characteristics
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video c. Nearpod Activity
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** - What is the basic understanding of Implementation of isolation, - Transaction definition in SQL - Have a discussion on the importance of Implementation of isolation, - Introducing the concept of Implementation of isolation, - Transaction definition in SQL. Show Figures on slide. - Introduce the formal definition of Implementation of isolation, - Transaction definition in SQL - Highlight the importance of characteristics of the Implementation of isolation, - Transaction definition in SQL 2. **Development** (30 minutes) a. Introduction to Implementation of isolation b. Transaction definition in SQL - Introducing the concept of Implementation of isolation, - Transaction definition in SQL c. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Nearpod Activity
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.

Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Nearpod Activity Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 4.5	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Articulate the concept of Lock based protocols, b. Illustrate difference between types of Lock based protocols, c. Gain knowledge on different Lock based protocols, characteristics
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** - What is the basic understanding Lock based protocols? - Have a discussion on the importance of Lock based protocols, Introducing the concept of Lock based protocols. Show Figures on slide. - Introduce the formal definition of Lock based protocols, Highlight the importance of characteristics of the Lock based protocols, 2. **Development** (30 minutes) a. Introduction to Lock based protocols, - Introducing the concept of Lock based protocols, - Database Users and Administrators - Structures of a Lock based protocols. b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Ask Questions Related to Topic
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Nearpod Activity Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 4.6	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Articulate the concept of Timestamp-based protocols, b. Illustrate difference between types of Timestamp-based protocols, c. Gain knowledge on different Timestamp-based protocols, techniques
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** What is the basic understanding Timestamp-based protocols, - Have a discussion on the importance of Timestamp-based protocols, Introducing the concept of Languages. Show Figures on slide. - Introduce the formal definition of Timestamp-based protocols, Highlight the importance of characteristics of the Timestamp based protocols, 2. **Development** (30 minutes) a. Introduction to Timestamp-based protocols - Introducing the concept of Timestamp-based protocols, Language required for Timestamp-based protocols, b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Ask Questions Related to Topic
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 4.7	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Articulate the concept of Validation based protocols. b. Illustrate difference between types of Validation based protocols. c. Gain knowledge on different Validation based protocols.
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** What is the basic understanding of Validation based protocols? - Have a discussion on the importance of Validation based protocols. - Introducing the concept of Validation based protocols. Show Figures on slide. - Introduce the formal definition of Validation based protocols, - Highlight the importance of characteristics of the Validation based protocols, 2. **Development** (30 minutes) a. Introduction to Timestamp-based protocols Introduce concept of Validation based protocols,. - Language required for Validation based protocols, - Structures of a Database b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Ask Questions Related to Topic
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 4.8	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Articulate the concept of Multiple Granularity, Multi-version Schemes. b. Illustrate difference between types of Multiple Granularity, Multiversion Schemes. c. Gain knowledge on different Multiple Granularity, Multi-version Schemes.
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video c. Mentimeter Quiz
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** What is the basic understanding of Multiple Granularity, Multi version Schemes,? - Have a discussion on the importance of data and is storage in real-time. - Introducing the concept of Languages. Show Figures on slide. - Introduce the formal definition of Multiple Granularity, Multi version Schemes, - Highlight the importance of characteristics of the Multiple Granularity, Multi-version Schemes, 2. **Development** (30 minutes) a. Introduction to Multiple Granularity, Multi-version Schemes, Introducing the concept of Multiple Granularity, Multi-version Schemes. b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Ask Questions Related to Topic - Activity- Mentimeter Quiz
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Mentimeter Quiz Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 4.9	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Articulate the concept of Deadlock Handling, b. Illustrate difference between types of Deadlock Handling. c. Gain knowledge on different Deadlock Handling techniques.
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** What is the basic understanding of Deadlock Handling? - Have a discussion on the importance of Deadlock Handling. - Introducing the concept of Languages. Show Figures on slide. - Introduce the formal definition of Deadlock Handling. Highlight the importance of characteristics of the Deadlock Handling. 2. **Development** (30 minutes) a. Introduction to Deadlock Handling - Introducing the concept of Deadlock Handling,. - Language required for Deadlock Handling. - Structures of a Deadlock Handling. b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Ask Questions Related to Topic
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 4.10	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Articulate the concept of Insert and Delete operations. b. Illustrate difference between types of Insert and Delete operations. c. Gain knowledge on different Database Architecture & Insert and Delete operations.
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** What is the basic understanding of Insert and Delete operations.? - Have a discussion on the importance of data, Insert and Delete operations. Introducing the concept of Languages. Show Figures on slide. - Introduce the formal definition of Insert and Delete operations. - Highlight the importance of characteristics of the Insert and Delete operations. 2. **Development** (30 minutes) a. Introduction to Insert and Delete operations - Introducing the concept of Insert and Delete operations. Database Users and Administrators - Structures of a Insert and Delete operations. b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Ask Questions Related to Topic
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 5.1	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Articulate the concept of Failure classification, b. Illustrate difference between types of Failure classification, c. Gain knowledge on different Failure classification, techniques
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** What is the basic understanding of Failure classification? - Have a discussion on the importance of Failure classification, Introducing the concept of Languages. Show Figures on slide. - Introduce the formal definition of Failure classification, - Highlight the importance of characteristics of the Failure Classification. 2. **Development** (30 minutes) a. Introduction to Failure classification, b. Introducing the concept of DBMS & RDBMS. c. Language required for Failure classification, Structures of a Database d. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Ask Questions Related to Topic
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 5.2	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Articulate the concept of Storage Structure, b. Illustrate difference between types of Storage Structure, c. Gain knowledge on different Database Architecture of Storage Structure
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** What is the basic understanding Storage Structure? - Have a discussion on the importance of Storage Structure, - Introducing the concept of Languages. Show Figures on slide. - Introduce the formal definition of Storage Structure, - Highlight the importance of characteristics of the Storage Structure. 2. **Development** (30 minutes) a. Introduction to Failure classification, -Introducing the concept of Storage Structure, Database Users and Administrators - Structures of a Storage Structure. b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Ask Questions Related to Topic
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 5.3	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Articulate the concept of Recovery and Atomicity. b. Illustrate difference between types of Recovery and Atomicity. c. Gain knowledge on different Recovery and Atomicity.
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** What is the basic understanding Recovery and Atomicity? - Have a discussion on the importance of Recovery and Atomicity. - Introducing the concept of Languages. Show Figures on slide. - Introduce the formal definition of Recovery and Atomicity, - Highlight the importance of characteristics of Recovery and Atomicity. 2. **Development** (30 minutes) a. Introduction to Failure classification, - Introducing the concept of Recovery and Atomicity. - Language required for Recovery and Atomicity, - Structures of a Recovery and Atomicity, b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Ask Questions Related to Topic
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 5.4	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Articulate the concept of Log based recovery, Shadow Paging, b. Illustrate difference between types of Log based recovery & Shadow Paging, c. Gain knowledge on different Database Architecture & characteristics
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** What is the basic understanding of Log based recovery, Shadow Paging? - Have a discussion on the importance of data recovery and paging. - Introducing the concept of Languages. Show Figures on slide. - Introduce the formal definition of paging 2. **Development** (30 minutes) a. Introduction to Recovery Techniques - Introducing the concept of Log Based Recovery and its types. -Shadow Paging Recovery Technique. - Difference between Shadow Paging and Log Based recovery. b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Ask Questions Related to Topic
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 5.5	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Articulate the concept of DBMS Engine b. Illustrate difference between types of Recovery with Concurrent Transitions.
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** What is the basic understanding of Recovery with Concurrent Transitions,? - Have a discussion on the importance of data and is storage in real-time. - Introducing the concept of Languages. Show Figures on slide. - Introduce the formal definition of Recovery with Concurrent Transitions. 2. **Development** (30 minutes) a. Introduction to Recovery with Concurrent Transitions - Introducing the concept of Recovery with Concurrent Transitions with examples. b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Ask Questions Related to Topic
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 5.6	Course Name: Relational Database Management System	Course No.: COM-402

Objectives	At the end of the lesson the student shall be able to answer the following questions: a. Articulate the concept of Buffer Management b. Illustrate difference between types of Buffer Management
Teaching Aids (if any)	a. PowerPoint Presentation b. YouTube NPTEL video
Teaching Development	1. **Introduction** (10 minutes) **Ask questions:** What is the basic understanding of Buffer Management? - Have a discussion on the importance of data and is storage in real-time. - Introducing the concept of Languages. Show Figures on slide. - Introduce the formal definition of Buffer Management 2. **Development** (30 minutes) a. Introduction to Buffer Management - Introducing the concept of Buffer Management with examples b. Examples of DBMS - Real world examples - Home/local examples 3. **Exercise** (10 minutes) – - Have discussion to summarize the lecture - Ask Questions Related to Topic
Closure	1. Summarize the Lesson, Learning Outcomes and get affirmation from students on these. Spend 5 minutes to wrap up and consolidate the leanings.
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents