

Lesson Plan - 1

Computer Science

Database Management System

Topic- Database Management System

Class:		Period:		Mode:	Classroom/Lab
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Teacher: _____

Learning Support Assistant: _____

S.M.A.R.T. Learning Objectives

By the end of this session, students will be able to:

1. Understand what is database.
2. Understand what is a database management system (DBMS).
3. List the advantages of using DBMS.
4. Name at least 5 application areas of DBMS

Resources

- video <https://youtu.be/eXiCza050ug> (3.44)

Session Conduction

Engage: Ask students what is the use of the dictionary/ telephone directory. What information is stored in it? How do we access them?

How we can store such information on the computer. By now they must have worked with excel so they may answer it as excel. Otherwise, you can prompt them. Or they may have created a table in word so that is also fine.

Now tell them that earlier storing information, like student information in school, customers' information in the bank was done manually in files and papers. Since it was a tiring and time-consuming task, we replaced it with Computers. A large amount of data can be stored in a computer efficiently, accessed easily, and also updated quickly.

Concept introduction: Define a database as a systematic collection of data. Data can be facts related to any object in consideration. For example, your name, age, height, weight, etc. are some data related to you. A picture, image, file, pdf, etc. can also be considered data. An example of a database can be Facebook. It has data related to members, their friends, member activities, messages, advertisements, and a lot more.

Then explain what is DBMS. A database-management system (DBMS) is a collection of interrelated data and a set of programs to access those data. Explain what is the use of DBMS. The most crucial benefit of DBMS is the **centralization of data** which means a single database in the network used by multiple users. Not only this data can be easily viewed by the users but we can modify, delete it if we want to. Also, DBMS takes care of the security of the data and data integrity which assures that correct data is entered. Due to all these benefits DBMS is widely accepted in many areas like a bank, hospital data management, travel industry, e-commerce, etc.

Concept Demo/Explanation: Use the content of the book to explain the advantages of DBMS and where it is used in real life.

Concept Practice: You can quiz students to recap the topic covered. You can question what is a database, what is DBMS, why do we need DBMS, etc.

Optional Activity: You can watch the video <https://youtu.be/eXiCza050ug> (3.44) and discuss it with your teacher.

Home Assignments

Revise the topic covered.

Guided Assignments

Ask students to visit <https://www.geeksforgeeks.org/dbms/> and <https://en.wikipedia.org/wiki/Database> and gather more information related to DBMS.

Evaluation

After completing the lesson solve the exercises given in the book.

Lesson Plan - 2
Computer Science
Database Management System

Topic-Relational Database

Class:		Period:		Mode:	Classroom/Lab
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Teacher: _____

Learning Support Assistant: _____

S.M.A.R.T. Learning Objectives

By the end of this session, students will be able to:

1. Be able to describe the concept of relational databases
2. Know the basic structure of databases
3. Understand what is a query?

Resources

- https://youtu.be/bWKf6gT8_JI?list=PLpQQipWcxwt-IWBqprYV53qPo53ZxMw

Session Conduction

Engage: You can ask questions related to the previous topic for a quick recap.

Next, ask them if we can use excel on computers for storing data then what was the need for DBMS. Encourage them to answer and then declare that this will be the point of discussion for today's class.

Discuss about how the volume of data in this world has increased because of growing populations and businesses. Spreadsheets can neither store such an amount of data nor data access is easier. So fundamentally they may be the same but the way they do things is different.

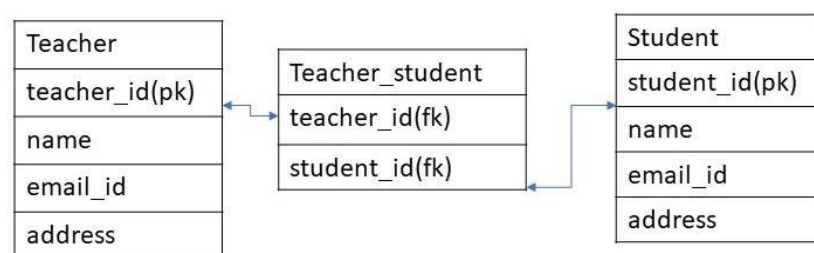
Concept introduction: Let's for example, we enter information related to students in school in our DBMS software. Now what information exactly we will be storing. You can ask students. Write it on Blackboard. Now all this student-related information (student name, class, address, etc.) will be organized in a table that will have rows and columns. Explain what is tuple, field, degree and cardinality.

Now in our school, we have teachers too so to store information related to teachers we will create a new table which will have information like teacher name, classes they teach, etc.

These tables (Students and teachers) can be linked or related using keys. Each row in a table is identified using a unique key, called a primary key. This primary key can be added to another table, becoming a foreign key. The primary/foreign key relationship forms the basis of the way relational databases work.

To create a primary in a table there are some criteria like no null values/duplicates are allowed for that field. Foreign key values should be matching with the parent's primary key. Stress on that we need these keys or constraints for maintaining data integrity.

Relate the student and teacher's table with the primary key(pk) and foreign key(fk).



Concept Demo/Explanation: Explain the primary and foreign keys further with the help of the book and the author's example given in the chapter. Also, tell them the difference between null and zero values. An example can be "how many books do Rahul own"? The answer may be "zero" (none) or "null" (we do not know how many he owns).

Next, tell them when we need to get some information from a database, we use query. Let's take the example of the book and the author's example of the book. We can create queries based on both the table to extract information as follows:

- "How many books John Grisham has written"?
- Which author has written "Innocent Man"?
- Do we have the same book title written by different authors?

Concept Practice: If possible, make use software like MS-ACCESS or MY-SQL, run a simple query to view the data in a database.

Optional Activity: You can ask students to watch the video

https://youtu.be/bWKf6gT8_JI?list=PLpQQipWcxwt-IWBqprYV53qPo53ZxMw.

Home Assignments

Revise the topic covered.

Guided Assignment

Visit <https://www.learncomputerscienceonline.com/database-keys/> and discuss their findings with the teacher.

Evaluation

After completing the lesson solve the exercises given in the book.

Lesson Plan - 3
Computer Science
Database Management System

Topic-MS-ACCESS

Class:		Period:		Mode:	Classroom/Lab
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Teacher: _____

Learning Support Assistant: _____

S.M.A.R.T. Learning Objectives

By the end of this session, students will be able to:

1. Use MS-ACCESS.
2. Create a table in MS-ACCESS.
3. Create different fields with data type and description.
4. Create a primary key in the table.

Resources

- <https://youtu.be/e06FnSV9INw?list=PLpQQipWcxwt-IWBqprYVYk53qPo53ZxMw>
- <https://youtu.be/uhSeVBZFspk?list=PLpQQipWcxwt-IWBqprYVYk53qPo53ZxMw>

Session Conduction

Engage: Revise the topic covered in the previous class with the following questions

- What is RDBMS?
- What are the primary key and foreign key?
- What are null values?

Now tell them that though there are a number of software for e.g. SQL SERVER, MY-SQL, Oracle, etc which can be used for creating databases we will be discussing the software provided by Microsoft and it's known as MS-ACCESS. Point out that Microsoft Access allows one to create relational databases in an efficient and expedient manner. Getting started in Access is very simple and quick.

Concept introduction: Tell students that it's very important to carefully consider your requirements and determine all the tables that you need before you create a database. The field that you want inside that table, which also we need to take into consideration to avoid data redundancy. Relate all this with the student and teacher example

Concept Practice: Use the steps given in the book to create a database in MS-ACCESS for the author and book example. Show them how to store information by creating a field and setting the primary key.

Optional Activity: Watch the video for practice

<https://youtu.be/e06FnSV9INw?list=PLpQQipWcxwt-IWBqprYVYk53qPo53ZxMw> and <https://youtu.be/uhSeVBZFspk?list=PLpQQipWcxwt-IWBqprYVYk53qPo53ZxMw>.

Practical Application: Complete the lab activities given at the end of the chapter.

Home Assignments

Revise the topic covered.

Guided Assignments

Visit <https://edu.gcfglobal.org/en/access2016/getting-started-in-access/1/> for more information on the MS-ACCESS interface.

Evaluation

After completing the lesson solve the exercises given in the book.

