

A decorative graphic on the left side of the slide, consisting of a network of light blue lines and small circles, resembling a circuit board or a data network, extending from the top to the bottom.

INTRODUCTION TO DATABASE

CS3319 – WESTERN UNIVERSITY

A decorative graphic on the left side of the slide, consisting of a network of white lines and small circles on a blue gradient background, resembling a circuit board or a neural network.

WEEK 1

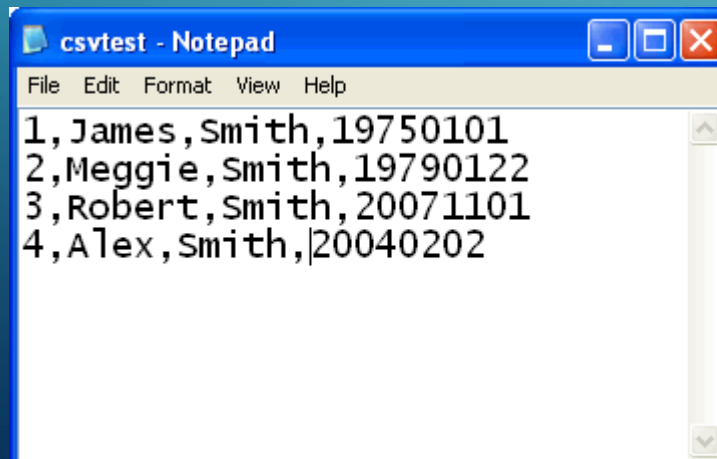
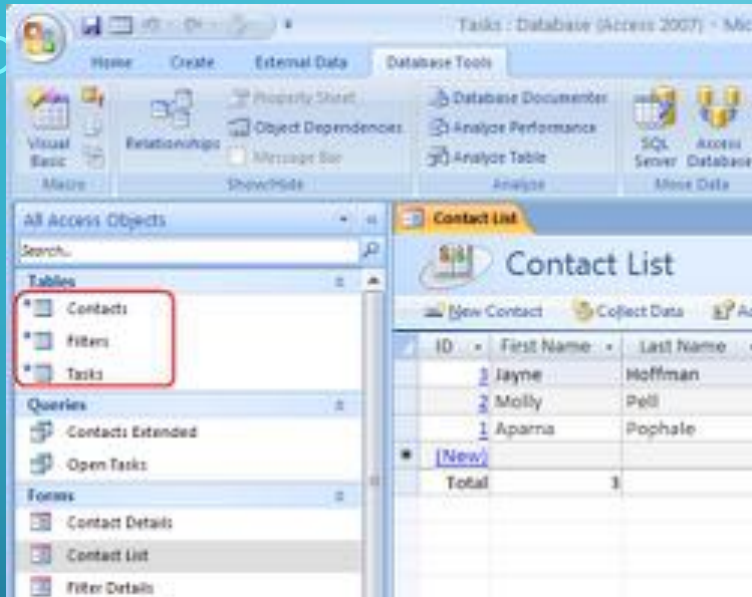
INTRODUCTION TO DATABASES

STUDENT OBJECTIVES

- Upon completion of this video, you should be able to:
 - Define the following terms: *Data, Database, Mini-World, DBSM*
 - Identify a flat file
 - Find a piece of data and a record within a flat file.
 - Give at least 3 reasons why a DBMS is better than a flat file for storing data

WHAT IS A DATABASE?

- Which of the following are databases?



COMPSCI4437B W2016 8 term .txt - Excel

Home Insert Page Layout Formulas Data Review View Developer Tell me... Laura K. Reid

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Cell Styles Format

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BASIC TERMINOLOGY

Data:

Known facts that can be recorded and have an implicit meaning.

Database:

A collection of related data.

Mini-world:

A database is a model of a mini world. Some part of the real world about which data is stored in a database. E.g. medical office, a retail business, a library are all mini worlds

Database Management System (DBMS):

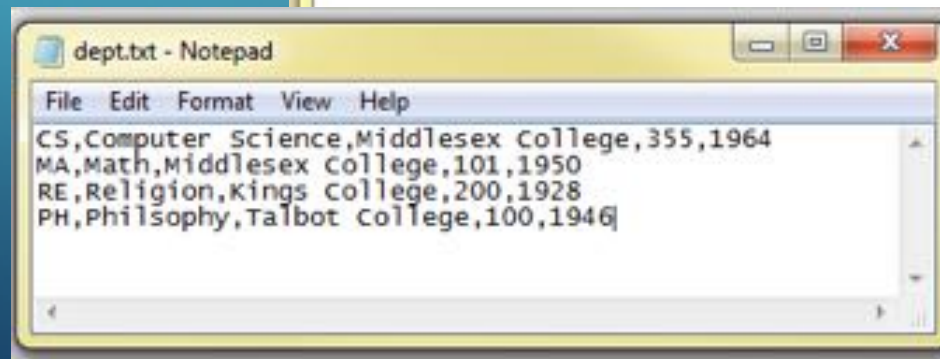
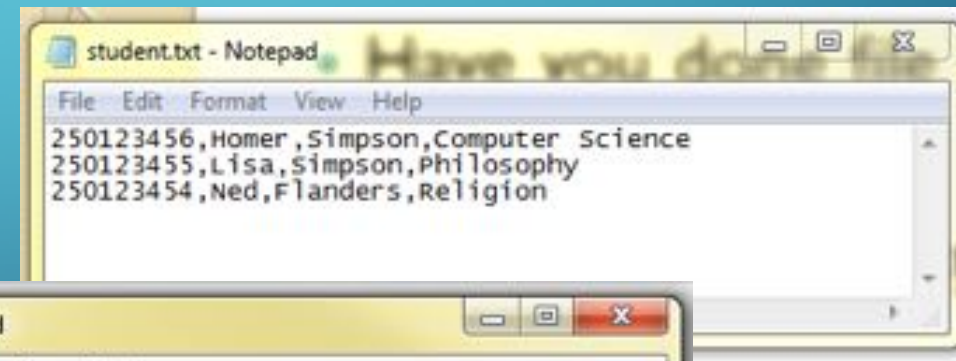
A software package/system to facilitate the creation and maintenance of a computerized database.

Database System:

The DBMS software together with the data itself. Sometimes, the applications are also included.

LIFE BEFORE DBMS... IN THE OLD DAYS!

- Have you done file I/O?
- What is a “flat file”?
- What is a “record”?
 - Or “instance”
- Identify the following:
 - Data
 - Flat File
 - Record
 - Database



WHAT WAS SO BAD ABOUT FLAT FILES?

- Any ideas? (Or...why are DBMS better than flat files?)

A screenshot of a Notepad window titled 'thebigorder.txt - Notepad'. The window displays a flat file containing four lines of order data. Each line represents an order with fields for order number, quantity, item name, price, quantity, item name, address, and location. The data is not structured in a way that allows for easy querying or filtering, illustrating the limitations of flat files.

```
thebigorder.txt - Notepad
File Edit Format View Help
Order7,50,Bikes,76,20,Puzzles,10,Malwart,20 Oxford Street West, London, Ontario
Order16,10,Bikes,76,4,Puzzles,10,Lostco,15 Richmond Street, London, Ontario
Order55,40,Bikes,76.99,20,Puzzles,10,Malwart,20 Oxford St W, London, On
Order67,20,Bikes,34,20,Puzzles,5.88,Malwart,20 Oxford Street West, London, Ontario
```

WHAT IS A DATABASE MANAGEMENT SYSTEM (DBMS)

- Program to help users create, maintain and use a database

Advantages of DBMS over flat file system:

- Data redundancy/inconsistency reduced
- Isolates the programs from the data
- Provides persistent storage of data between execution of programs/applications
- Multiple users can use and share the data
- More abstract conceptually (views)

- Security, integrity and backups provided
 - Generalized query tools
 - Provides multiple user interfaces
 - Possible to enforce standards since data is centralized
 - Reduced development time
 - Up to date information managed centrally
- Great site if you ever need to learn something →
Lynda.com, for example:
 - <https://www.lynda.com/Access-tutorials/Introducing-relational-database-advantages/145932/172960-4.html>

QUESTION: WHAT ARE SOME DISADVANTAGES OF USING A DBMS OVER A FLAT FILE SYSTEM?

- Flat Files are cheap (actually FREE!)
- DBMS require trained staff to manage them
- DBMS are initially complex