

Introduction to Geographic Information Systems

PART A

NPS Introduction to GIS: Lecture 1

Based on NIMC and Other Sources

Lesson Objectives

- Understand what a GIS is
- Understand how a GIS functions
- Understand how spatial data is represented in a GIS
- Look at some GIS applications

Data vs. Information

- Data, by itself, generally differs from information.
- Data is of little use unless it is transformed into information.
- Information is an answer to a question based on raw data.
- We transform data into information through the use of an Information System.

INFORMATION SYSTEM OVERVIEW

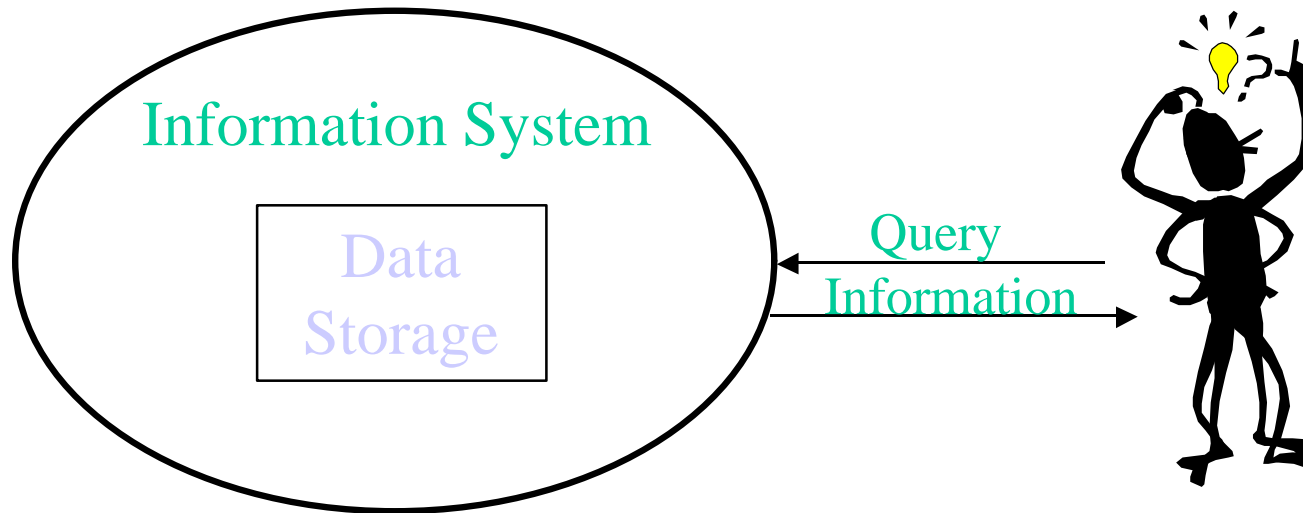
What is an Information System?

SYSTEM USED FOR:

**capturing
storing
updating
manipulating
analyzing**

DATA

What is an Information System?



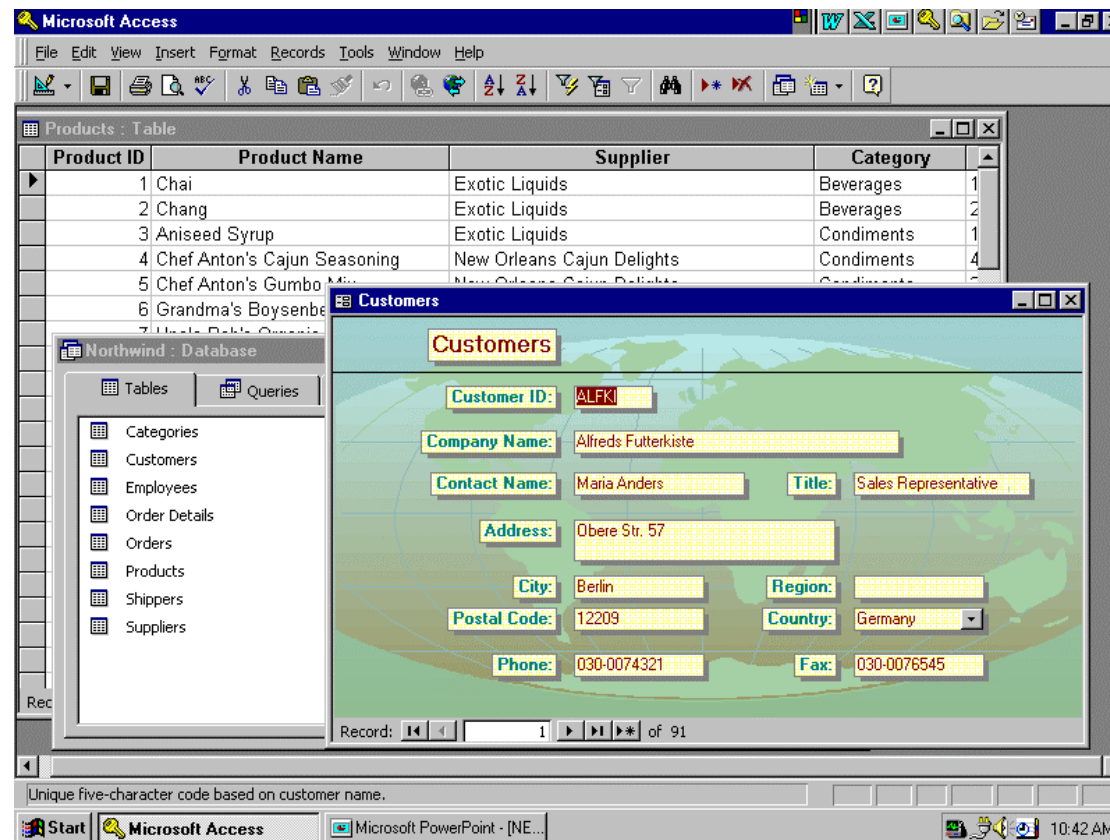
Information systems can be very simple, such as a telephone directory.



What is an Information System?

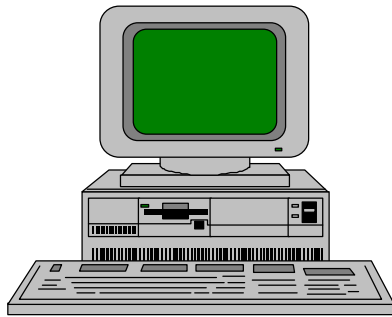
In the digital environment we use software to create complex information systems.

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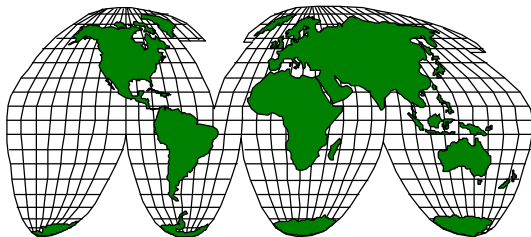
What is a GIS?

Information System



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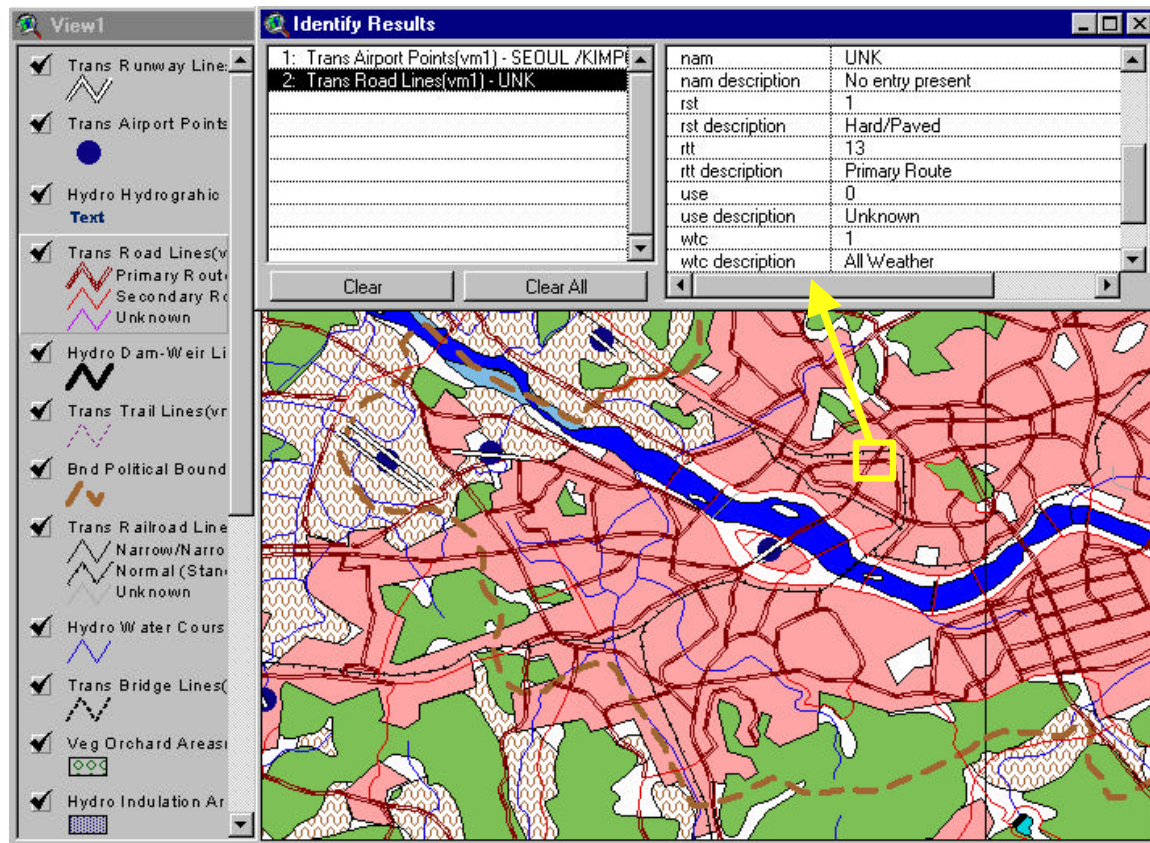
Geographic Position



**A means of storing,
retrieving, sorting,
and comparing
spatial data
to support some
analytic process.**

What is a GIS?

GEOGRAPHIC Information System



GIS links graphical features (**entities**) to tabular data (**attributes**)

GIS Definition

- A GIS is a system (hardware + database engine) that is designed to efficiently, assemble, store, update, analyze, manipulate, and display **geographically referenced information** (data identified by their locations).
- A GIS also includes the **people** operating the system and the **data** that go into the system.

Key Functions of a GIS

Data can be:

- Positioned by its known spatial coordinates.
- Input and organized (generally in **layers**).
- Stored and retrieved.
- Analyzed (usually via a Relational DBMS).
- Modified and displayed

Geographic Information Systems

