DATABASE SYSTEMS REVIEWER

A database system is an organized collection of related data that can be easily accessed, managed, and updated.

The most common model is the Relational Database, where information is stored in tables made up of rows (records) and columns (attributes).

KEY CONCEPTS:

- Primary Key: A unique identifier for each record in a table.
- Foreign Key: Attribute linking one table to another.
- Constraints: Rules enforcing integrity (NOT NULL, UNIQUE, CHECK).

DATA MODELS:

- Hierarchical Model – data in tree structures.
- Network Model – uses records and sets.
- Relational Model – most widely used, uses tables with keys.

SQL BASICS:

SELECT – retrieve data

INSERT – add records

UPDATE – modify records

DELETE – remove records

Example:

```
SELECT name, course FROM students WHERE course = 'BSIS';
```

NORMALIZATION:

1NF – remove repeating groups

2NF – remove partial dependencies

3NF – remove transitive dependencies

TRANSACTIONS & ACID:

- Atomicity: All or nothing
- Consistency: Must follow rules
- Isolation: No interference
- Durability: Results permanent

ER DIAGRAMS:

- Entities: objects (e.g., Student)
- Attributes: properties (e.g., Name)
- Relationships: associations (e.g., Enrolls In)