

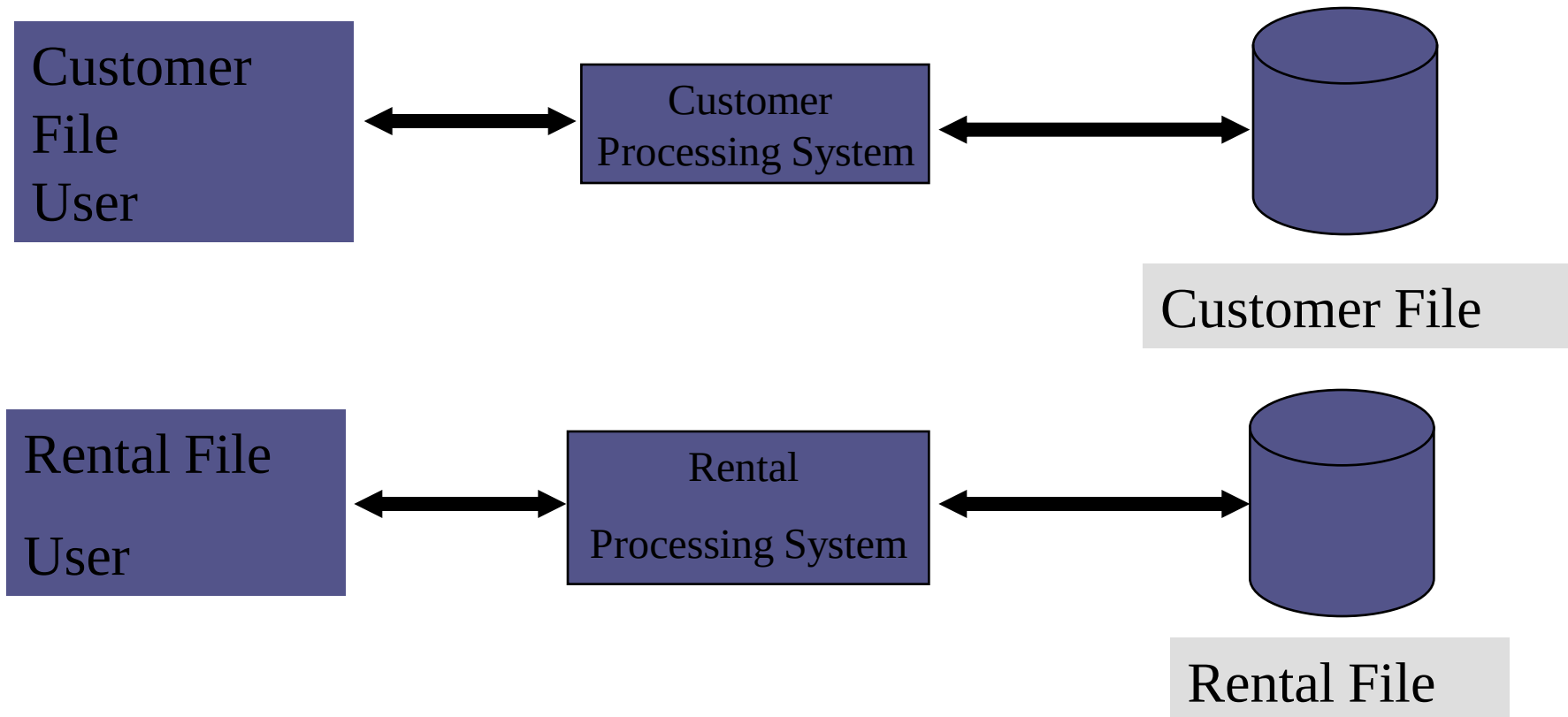
Databases and Database Management Systems

Course Code: CIS231

Module Title: Database Management System

Module Teacher: Nayeema Rahman

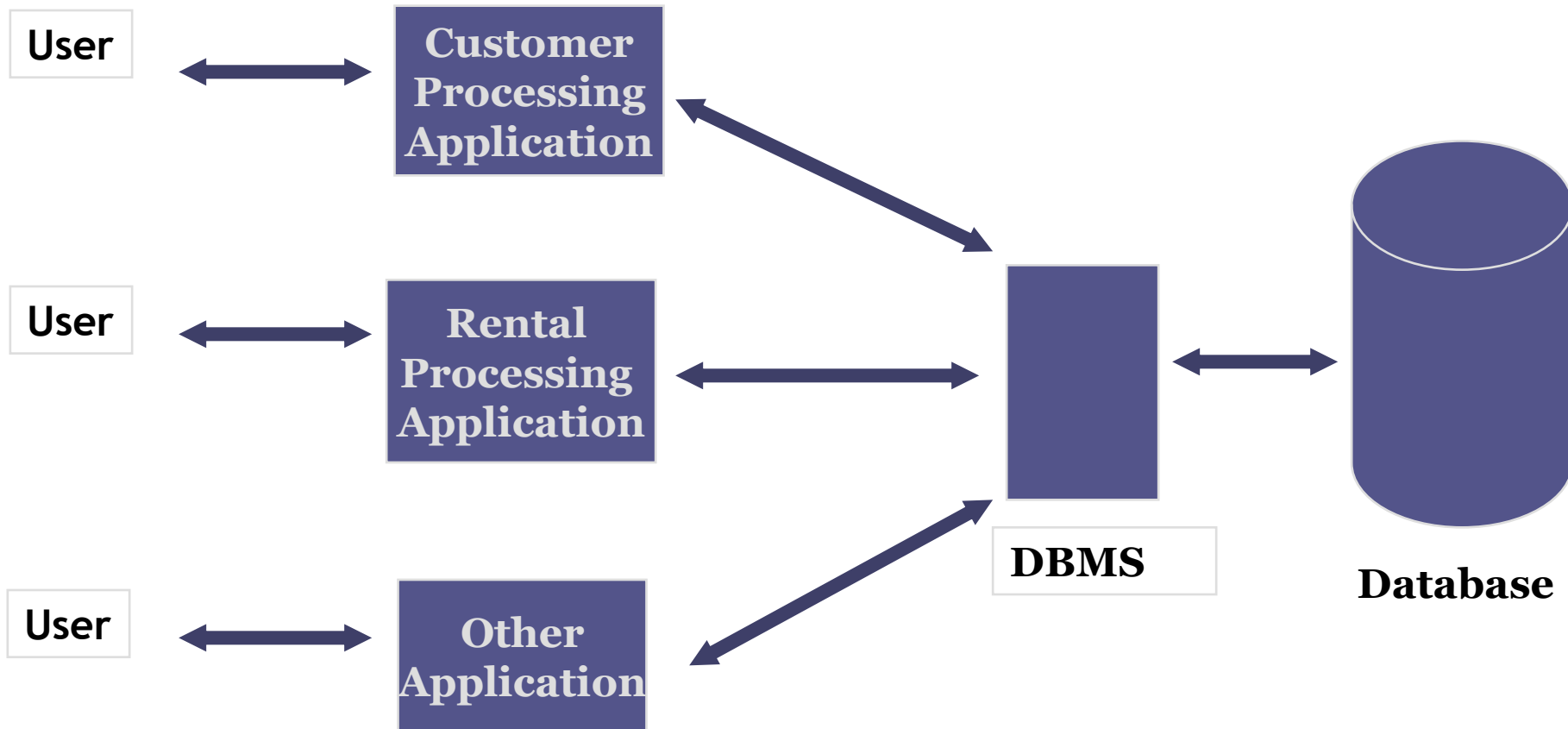
Two-File Processing System



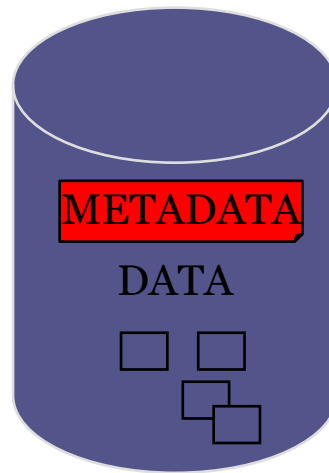
Drawbacks of File Processing Systems

- Data are separated and isolated.
- Data are often duplicated.
- Application programs are dependent on file formats.
- Files are often incompatible with one another.
- It is difficult to represent data in a user's perspective.

Basic Structure of a Database



What is Metadata?



Database

Explaining Metadata

- Metadata is data that is about data.
- It is the way in which the database keeps information about its own structure.
- It is important in understanding how data can be independent of applications in the database approach.
- Metadata is stored in the ***data dictionary***.

Example of Metadata

Name	Type	Length	Description
Student Name	Character	50	Student's name
Student ID	Number	8	Unique identification number for a student
Date of Birth	Date	8	Student's date of birth in the format '01.01.80'

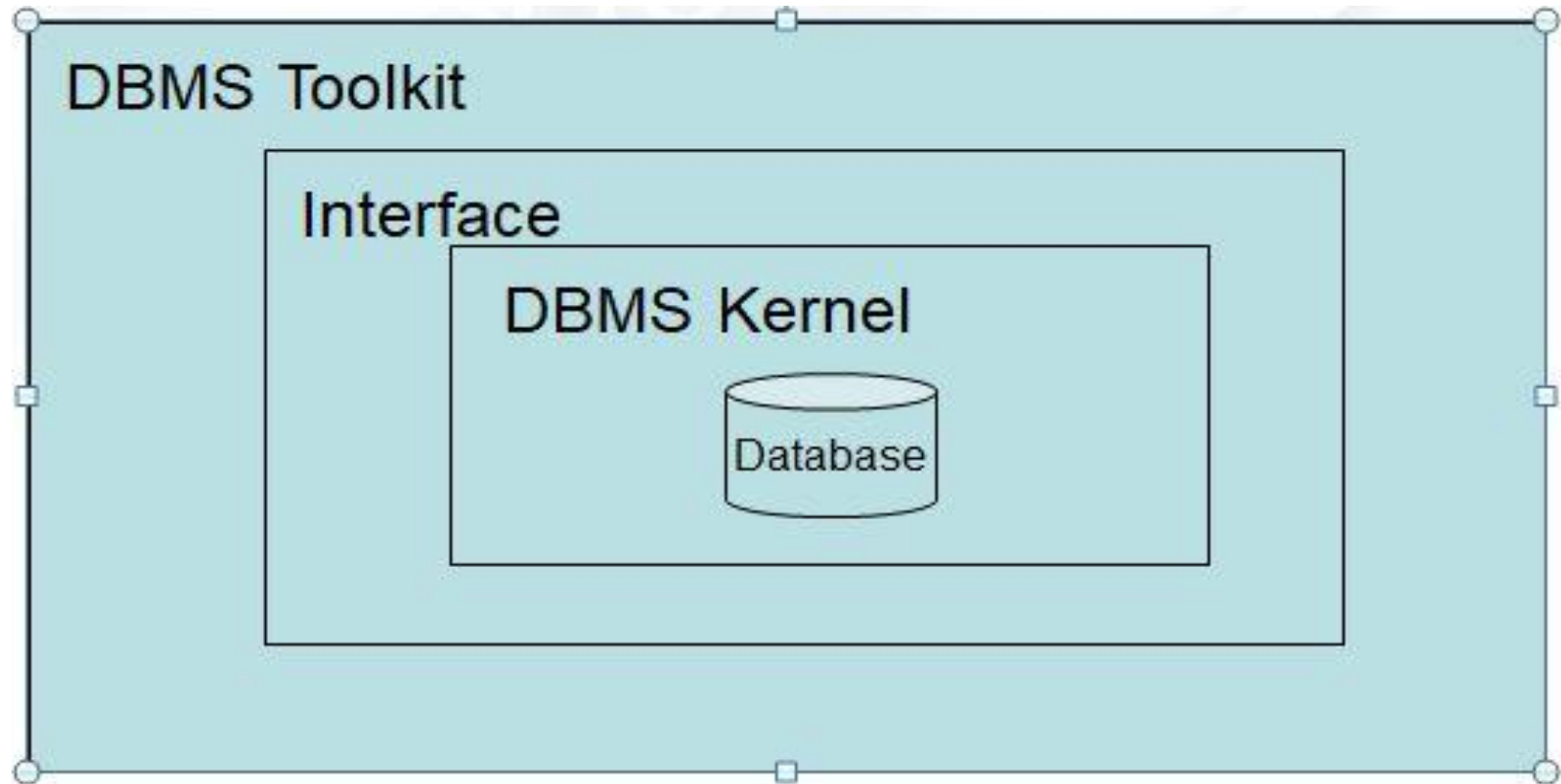
Features of the Database Approach

- Integrated data
- Reduced data duplication
- Program/data independence
- Easier representation of users' perspectives
- Database systems are self-describing
- Database systems maintain program-data independence.
- A database is a model of a model.

What is DBMS?

DBMS serves as intermediary between user and the database by translating user requests into the complex code required to fulfill those requests.

DBMS - Architecture



Database Management Systems

DBMS-Functions

- CRUD functions
- Data dictionary
- Transaction management
- Concurrency control
- Recovery
- Authorisation
- Data communication
- Data integrity
- Administration utilities

Advantages of DBMS-1

- Control of data redundancy
- Data consistency
- More information from the same amount of data
- Sharing of data
- Improved data integrity
- Improved security
- Enforcement of standards

Advantages of DBMS - 2

- Economy of scale
- Balance of conflicting requirements
- Improved data accessibility and responsiveness
- Increased productivity
- Improved maintenance through data independence
- Increased concurrency
- Improved backup and recovery services

Disadvantages of DBMS

- Complexity
- Size
- Cost of DBMSs
- Additional hardware costs
- Cost of conversion
- Performance
- Higher impact of a failure