

Database Lanjut

wahyu c wibowo

Topik

- Kuliah ini akan mengupas teknologi database untuk tiga jenis data, yaitu data:
 - Structured
 - Un-Structured
 - Semi-Structured
- Bahasan akan ditekankan pada teknologi storage dan retrieval, modeling, serta terapannya.
- Pada akhir perkuliahan ini, mahasiswa diharapkan
 - dapat Memahami storage dan retrieval untuk data Structured, Un-Structured, dan Semi-structured
 - Dapat bekerja dan mengelola dengan efektif ketiga jenis data tersebut
 - Memahami konsep object database, parallel database, distributed database, spatial database, serta multimedia database

Topik

- Buku Referensi: Database System Concepts, Abraham Silberschatz, Henry F. Korth, S. Sudarshan, Fifth Edition
- Tujuan Kuliah:
 - Mempelajari Storage Concepts
 - Mempelajari Indexing Concepts
 - Mempelajari Object-based dan Complex-Object Databases
 - Mempelajari Database Paralel dan Terdistribusi
 - Mempelajari Database untuk Semistructured Data
 - Mempelajari Spatial Database
 - Mempelajari Multimedia Database

Penilaian

- Skema Penilaian:
 - Tugas Individu (2X) 20%
 - Tugas Karyatulis dan Presentasi (1X) 15%
 - UTS 30%
 - UAS 30%

Bahasan

- Databases and the Future
- Storage and File Structure
- Indexing and Hashing
- Index pada DBMS

- Object-Based Databases
- Object Database Standards, Languages, and Design
- Object-Oriented Modeling
- Object-Relational and Extended-Relational Systems

- Parallel Databases
- Distributed Databases
- Spatial Database
- Multi-Media Database

Sejarah

- Hierarchical Model 1968
- Network Model 1970
- Relational Model 1974
- Object-Oriented Database 1990

Purpose

- Record Database
- Text Database
- Spatial Database
- Multimedia Database
- Semi-structured Database

Evolution

- File System
 - Sequential File
 - Index Sequential File
- Access
 - Index Sequential Access Method (ISAM)
 - Virtual Storage Access Method (VSAM of IBM)

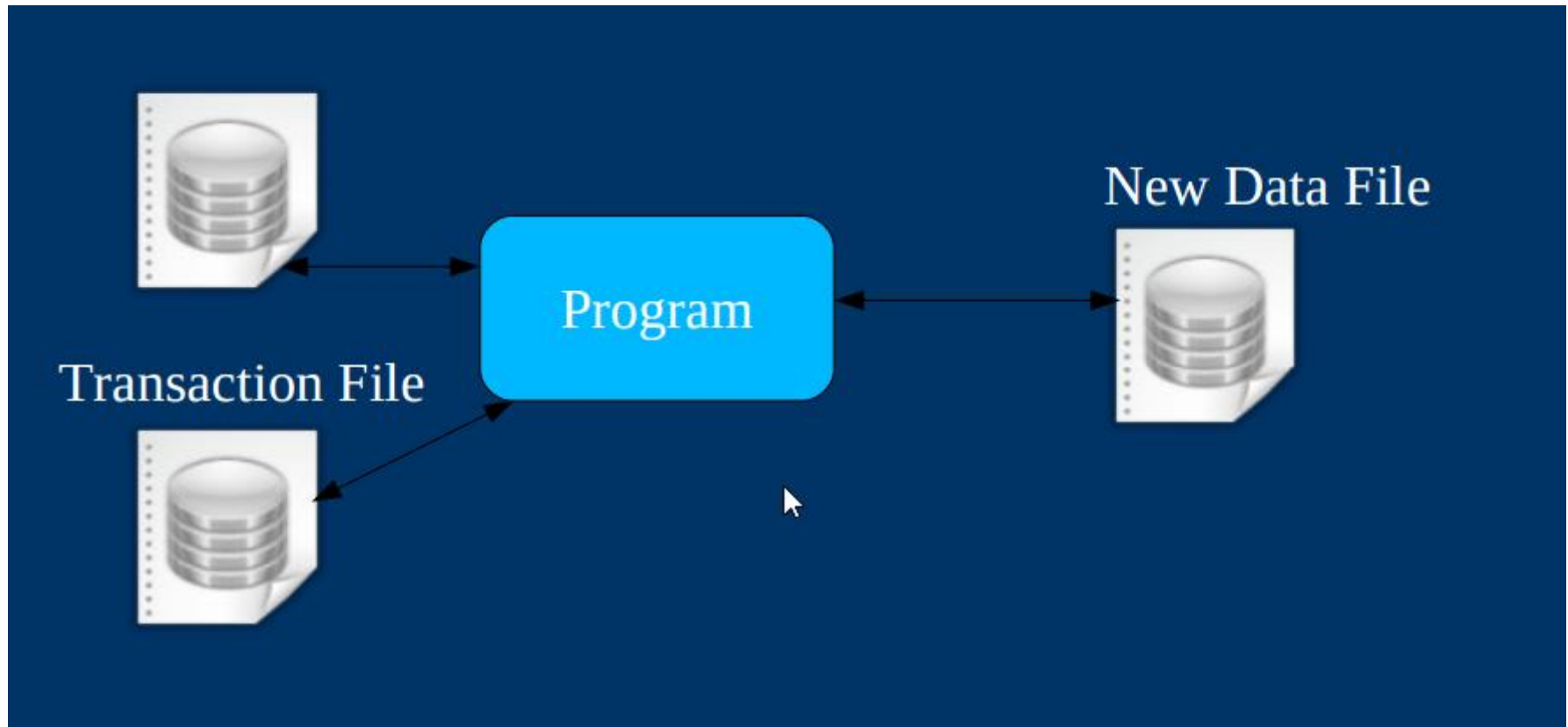
COBOL CODE

```
ZBNKPRT1.CBL
ZBNKPRT1.CBL
.....*A.1.B.....2.....3.....4.....5.....6.....7..I.....8
001600 IDENTIFICATION DIVISION.
001700 PROGRAM-ID.
001800     ZBNKPRT1.
001900 DATE-WRITTEN.
002000     September 2002.
002100 DATE-COMPILED.
002200     Today.
002300
002400 ENVIRONMENT DIVISION.
002500 INPUT-OUTPUT SECTION.
002600 FILE-CONTROL.
002700     SELECT EXTRACT-FILE
002800         ASSIGN TO EXTRACT
002900         ORGANIZATION IS SEQUENTIAL
003000         ACCESS MODE IS SEQUENTIAL
003100         FILE STATUS IS WS-EXTRACT-STATUS.
003200     SELECT PRINTOUT-FILE
003300         ASSIGN TO PRINTOUT
003400         ORGANIZATION IS SEQUENTIAL
003500         ACCESS MODE IS SEQUENTIAL
003600         FILE STATUS IS WS-PRINTOUT-STATUS.
003700
003800 DATA DIVISION.
003900 FILE SECTION.
004000
004100 FD EXTRACT-FILE
004200     RECORDING MODE IS V
```

COBOL CODE of a File Structure

```
01 DFHCOMMAREA.
  02 CUSTOMER.
    03 customerNumber      PIC X(10) .
*   YYYY/MM/DD
    03 customerSince      PIC X(10) .
    03 firstName          PIC A(20) .
    03 lastName           PIC A(20) .
    03 CUSTOMERADDRESS.
      04 streetAddress    PIC X(50) .
      04 city              PIC A(20) .
      04 state             PIC A(20) .
      04 country           PIC A(20) .
      04 zipCode           PIC X(20) .
    03 phoneNumber        PIC X(15) .
    03 sin                 PIC X(20) .
    03 cashBalance         PIC S9(9)V99 .
    03 maximumTransactionAmount
                          PIC S9(9)V99 .
    03 returnCode          PIC 9(5) .
    03 numberOfStockSymbols PIC 9 .
    03 quantityOfShares OCCURS 0 to 5 TIMES
    DEPENDING ON numberOfStockSymbols OF CUSTOMER PIC 9(5) .
    03 stockSymbols OCCURS 0 to 5 TIMES
    DEPENDING ON numberOfStockSymbols OF CUSTOMER PIC X(5) .
  02 OLDCUSTOMER.
    03 customerNumber      PIC X(10) .
```

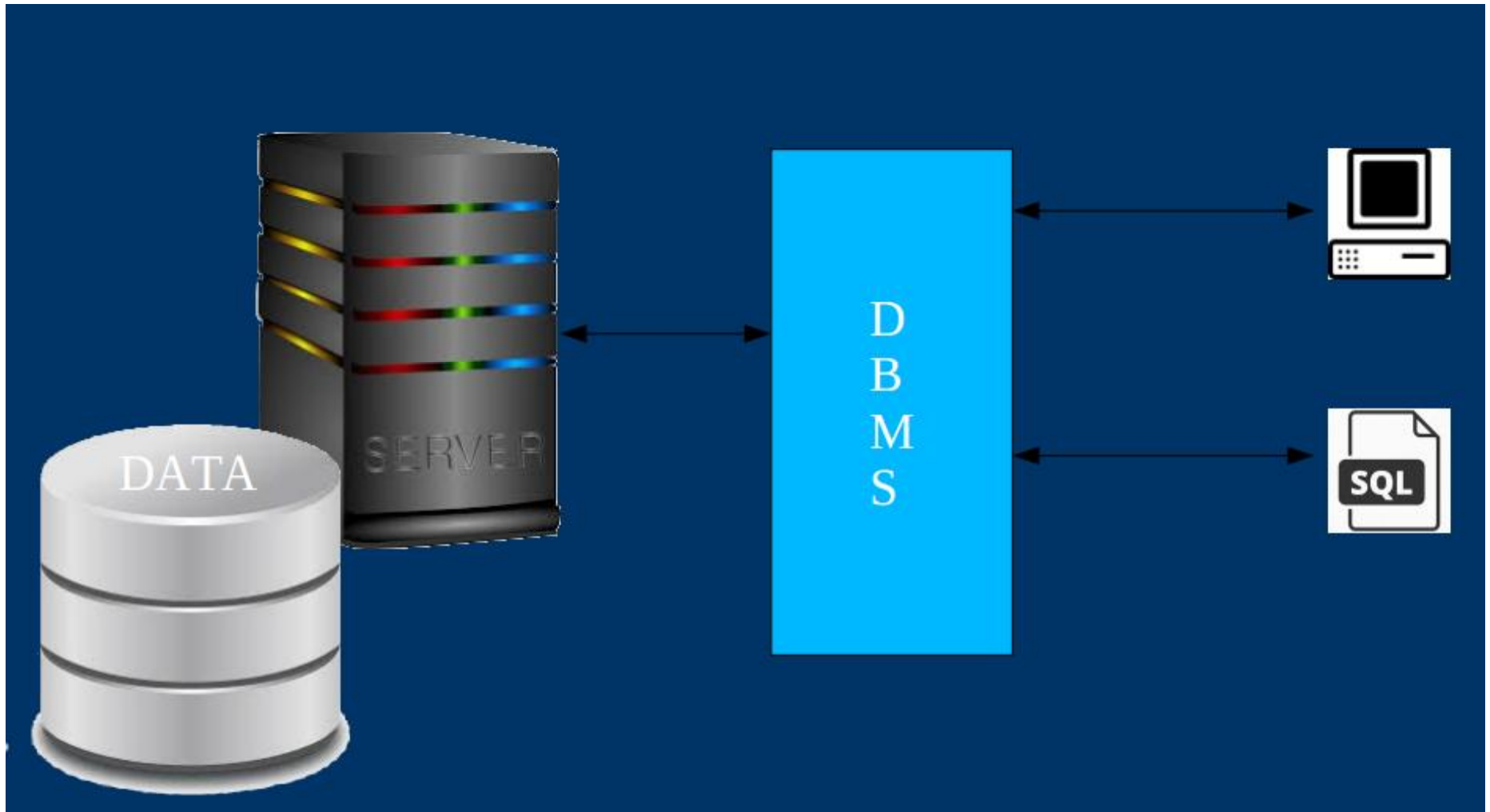
Cobol Program



Problems

- Data Redundancy
- Multi-user Access
- Security of Access
- Batch Transaction vs Realtime Transaction
- Data-Program Dependent

Database Management System



Benefits

- Access Management
- Multi-user Access Control
- Security Control
- Real-time Transaction
- Program-Data Independent

Unstructured Data



Semi-structured Data



Multimedia Data

