

Module 3:

Creating and Managing

Databases

Overview

- **Creating Databases**
- **Creating Filegroups**
- **Managing Databases**
- **Introduction to Data Structures**

◆ **Creating Databases**

- **Defining Databases**
- **How the Transaction Log Works**
- **Setting Database Options**
- **Retrieving Database Information**

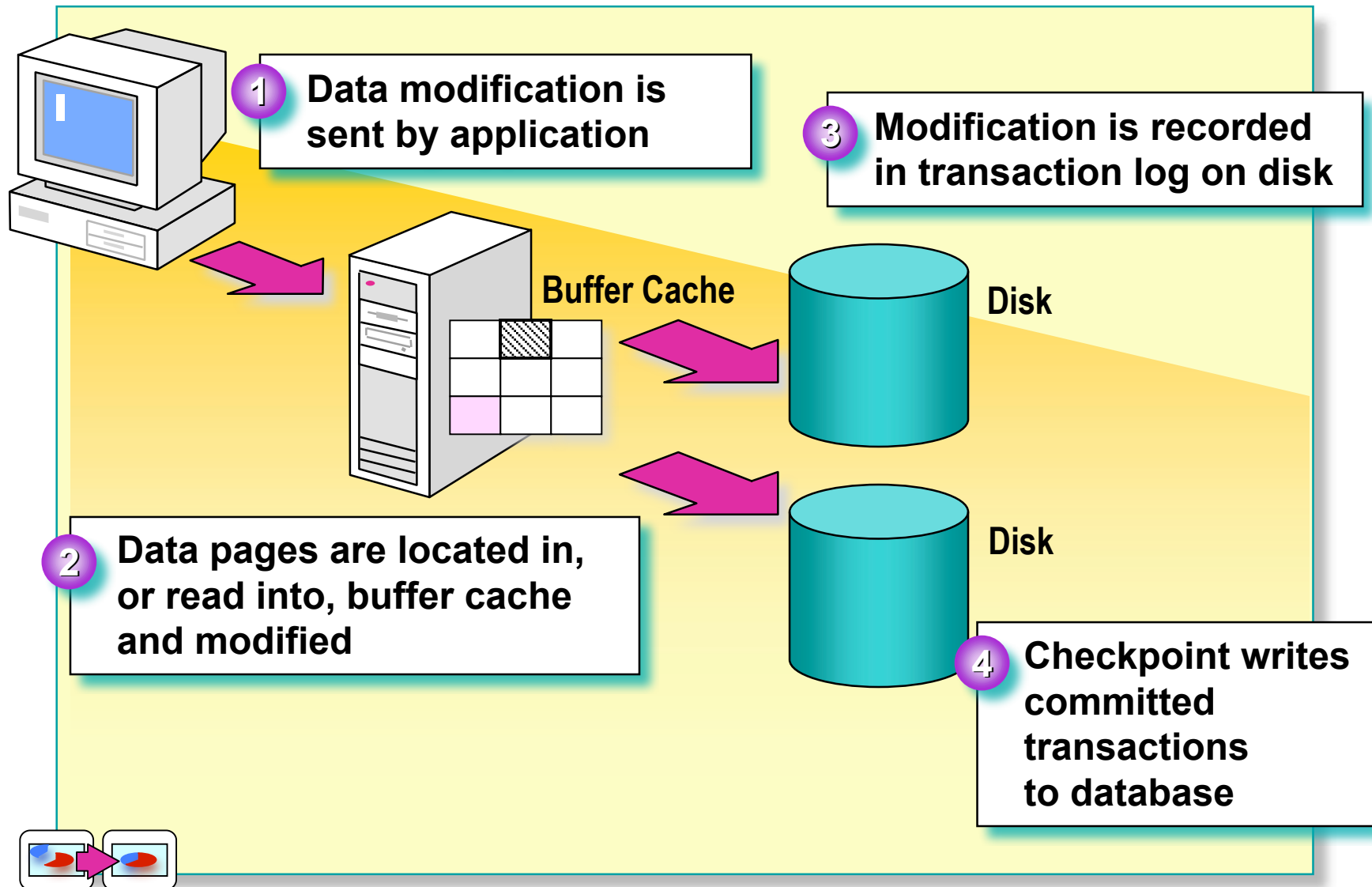
Defining Databases

■ Creating a Database Defines:

- The name of the database
- The size of the database
- The files where the database will reside

```
CREATE DATABASE Sample
ON
    PRIMARY ( NAME=SampleData,
    FILENAME='c:\Program Files\..\..\Data\Sample.mdf',
    SIZE=10MB,
    MAXSIZE=15MB,
    FILEGROWTH=20%)
LOG ON
    ( NAME=SampleLog,
    FILENAME= 'c:\Program Files\..\..\Data\Sample.ldf',
    SIZE=3MB,
    MAXSIZE=5MB,
    FILEGROWTH=1MB)
COLLATE SQL_Latin1_General_CP1_CI_AS
```

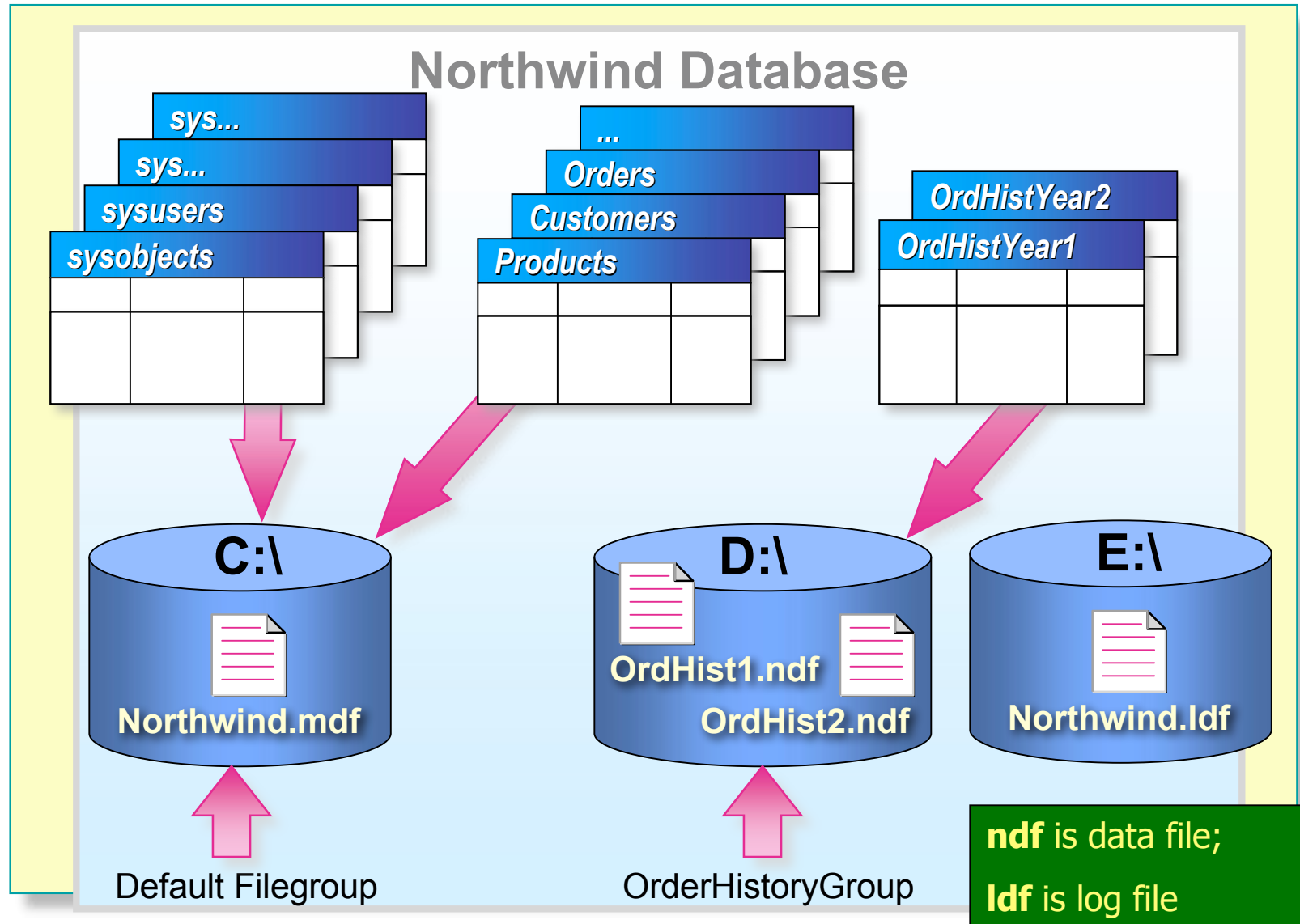
How the Transaction Log Works



Retrieving Database Information

- Determine Database Properties by Using the DATABASEPROPERTYEX Function
- Use System Stored Procedures to Display Information About Databases and Database Parameters
 - `sp_helpdb`
 - `sp_helpdb database_name`
 - `sp_spaceused [objname]`

Creating Filegroups



◆ Managing Databases

- Managing Data and Log File Growth
- Monitoring and Expanding a Transaction Log
- Shrinking a Database or File
- Dropping a Database

Managing Data and Log File Growth

- Using Automatic File Growth
- Expanding Database Files
- Adding Secondary Database Files

```
ALTER DATABASE Sample
    MODIFY FILE ( NAME = 'SampleLog',
                  SIZE = 15MB)
GO

ALTER DATABASE Sample
ADD FILE
    (NAME = SampleData2,
     FILENAME='c:\Program Files\..\..\
             Data\Sample2.ndf',
     SIZE=15MB,
     MAXSIZE=20MB)
GO
```

Monitoring and Expanding a Transaction Log

- **Monitoring the Log**
- **Monitoring Situations That Produce Extensive Log Activity**
 - Mass loading of data into indexed table
 - Large transactions
 - Performing logged text or image operations
- **Expanding the Log When Necessary**

Shrinking a Database or File

- **Shrinking an Entire Database**

```
DBCC SHRINKDATABASE (Sample, 25)
```

- **Shrinking a Data File in the Database**

```
DBCC SHRINKFILE (Sample_Data, 10)
```

- **Shrinking a Database Automatically**

Set **autoshrink** database option to true

Dropping a Database

■ Methods of Dropping a Database

- SQL Server Enterprise Manager
- DROP DATABASE statement

```
DROP DATABASE Northwind, pubs
```

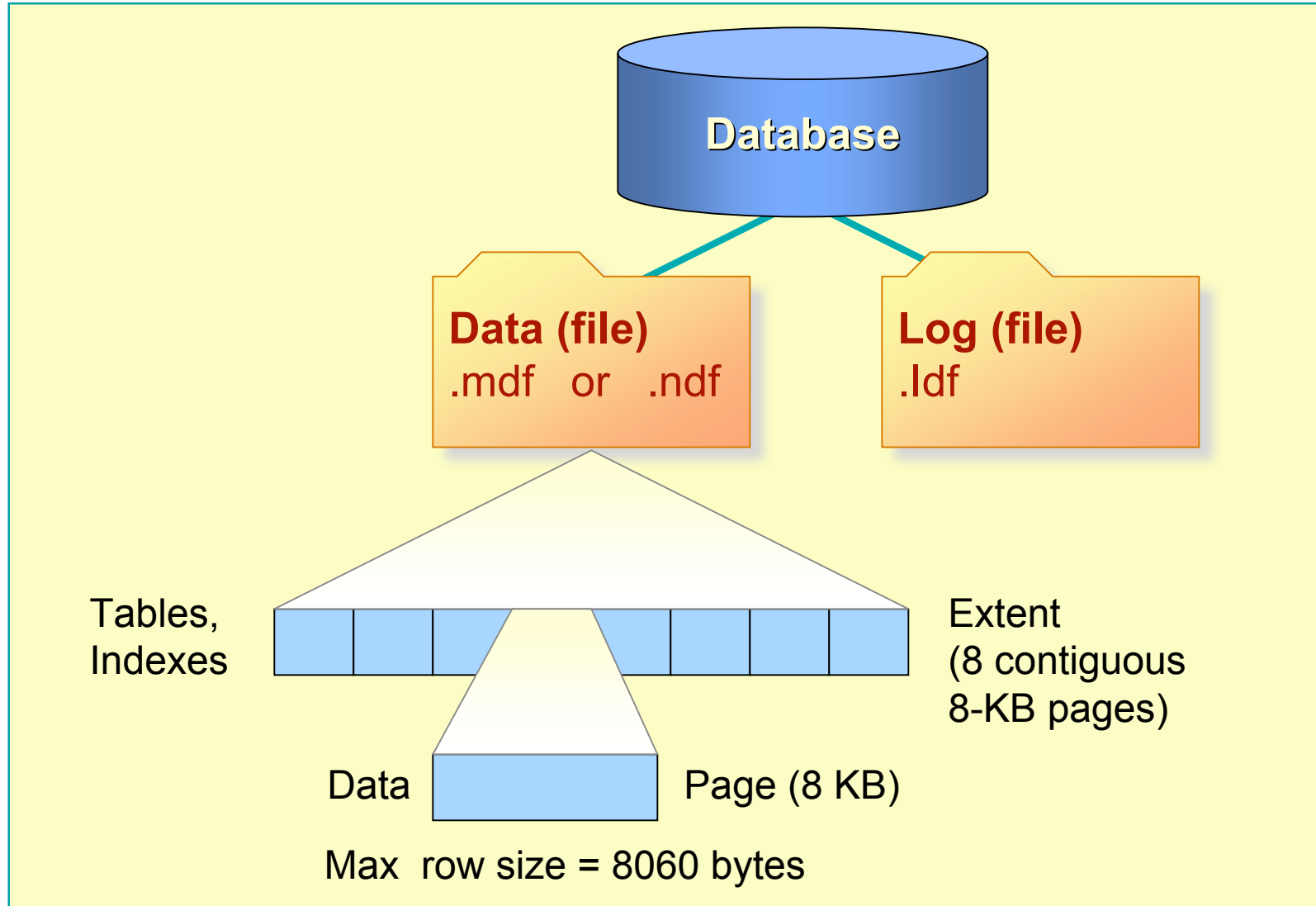
■ Restrictions on Dropping a Database

- While it is being restored
- When a user is connected to it
- When publishing as part of replication
- If it is a system database

◆ Introduction to Data Structures

- How Data Is Stored
- Types of Pages and Extents
- Pages That Manage File Space
- Pages That Track Tables and Indexes

How Data Is Stored

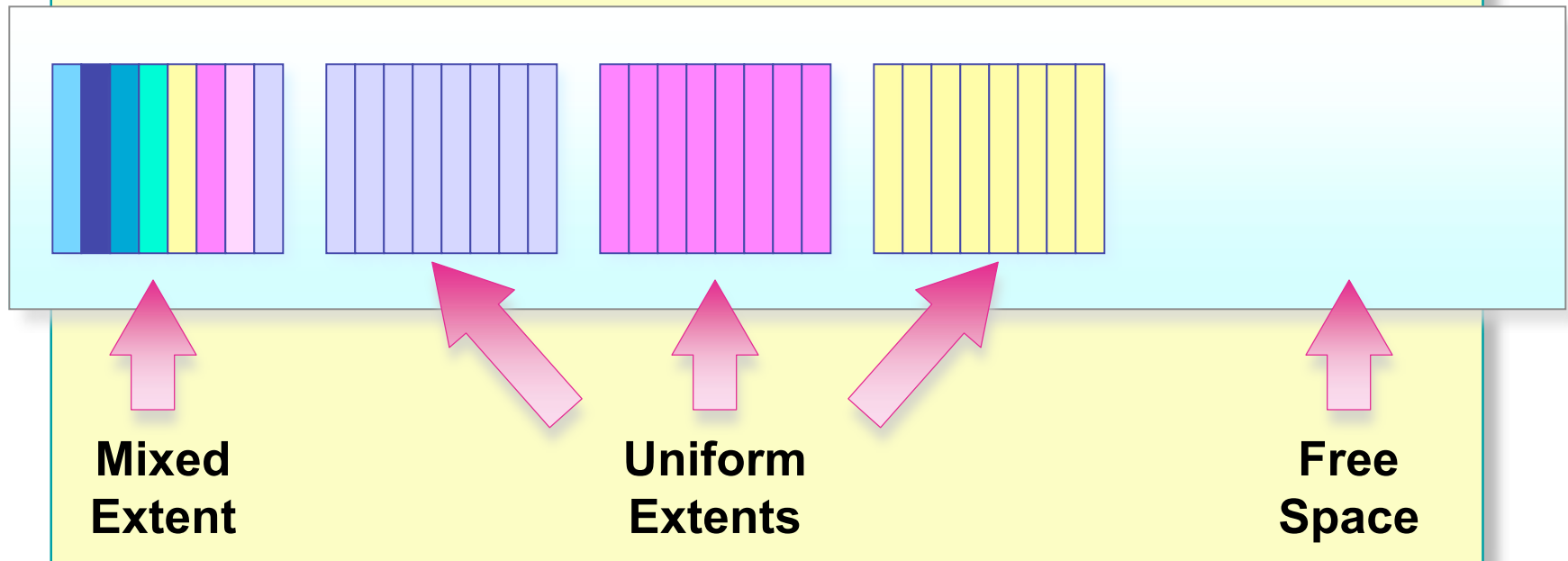


Types of Pages and Extents

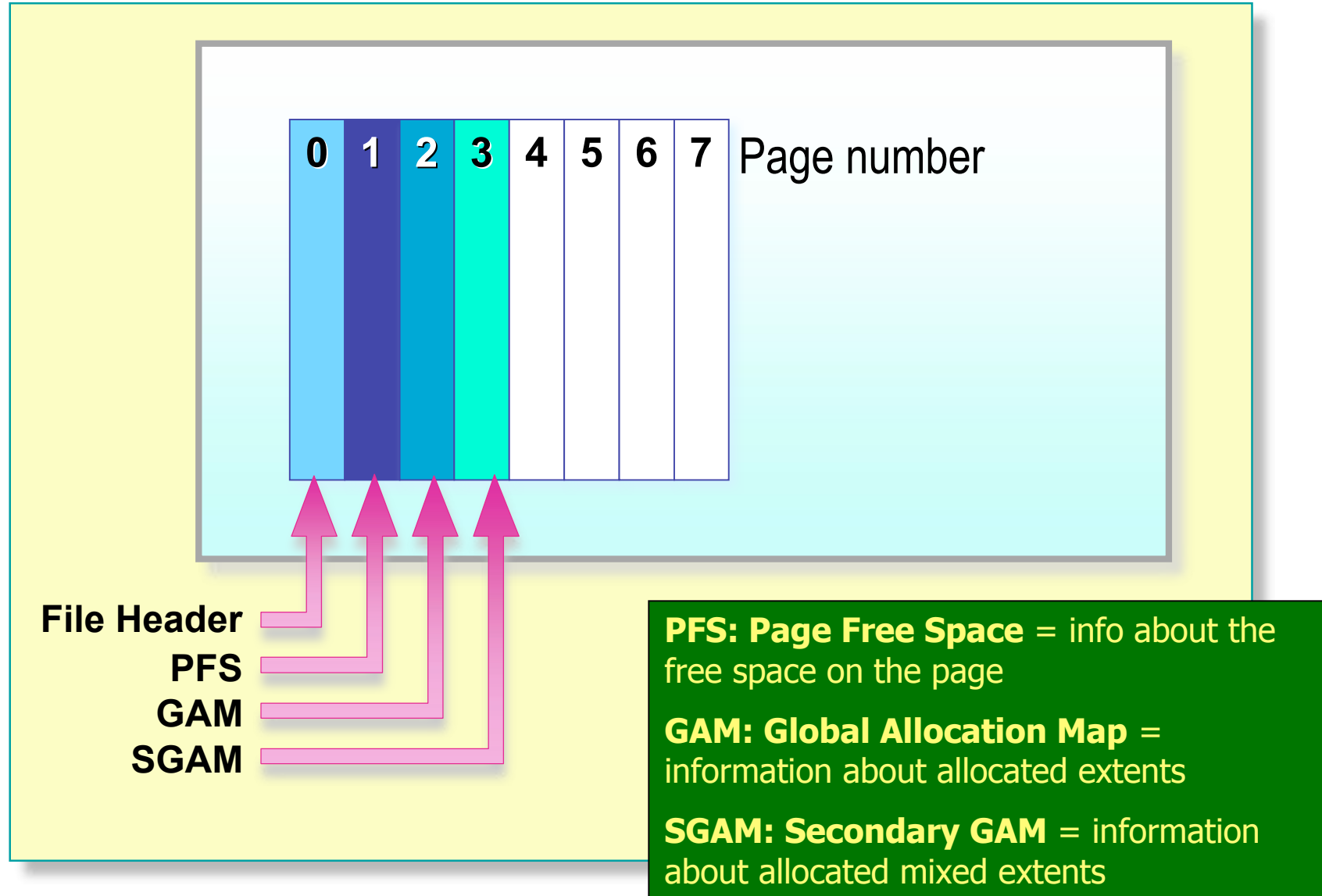
- **Types of Pages**

- Pages that track space allocation
- Pages that contain user and index data

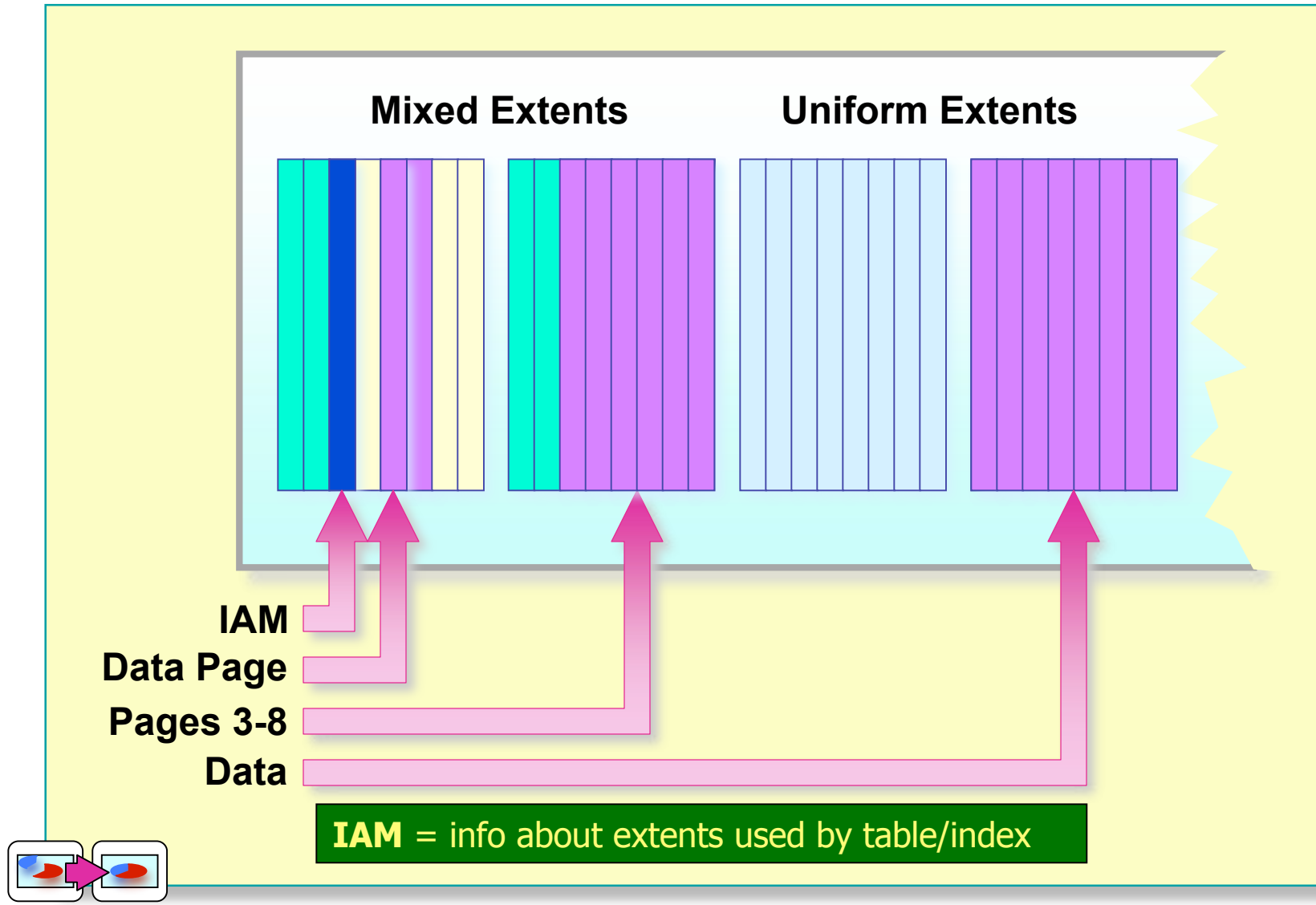
- **Types of Extents**



Pages That Manage File Space



Pages That Track Tables and Indexes



Review

- **Creating Databases**
- **Creating Filegroups**
- **Managing Databases**
- **Introduction to Data Structures**