

IT2605

Applications of Web Services

L04 Three-Tier Architecture

Objectives

- ▶ What is 3 tier architecture design?
 - Presentation Layer
 - Business Layer
 - Data Layer
- ▶ Advantage of 3 tier architecture



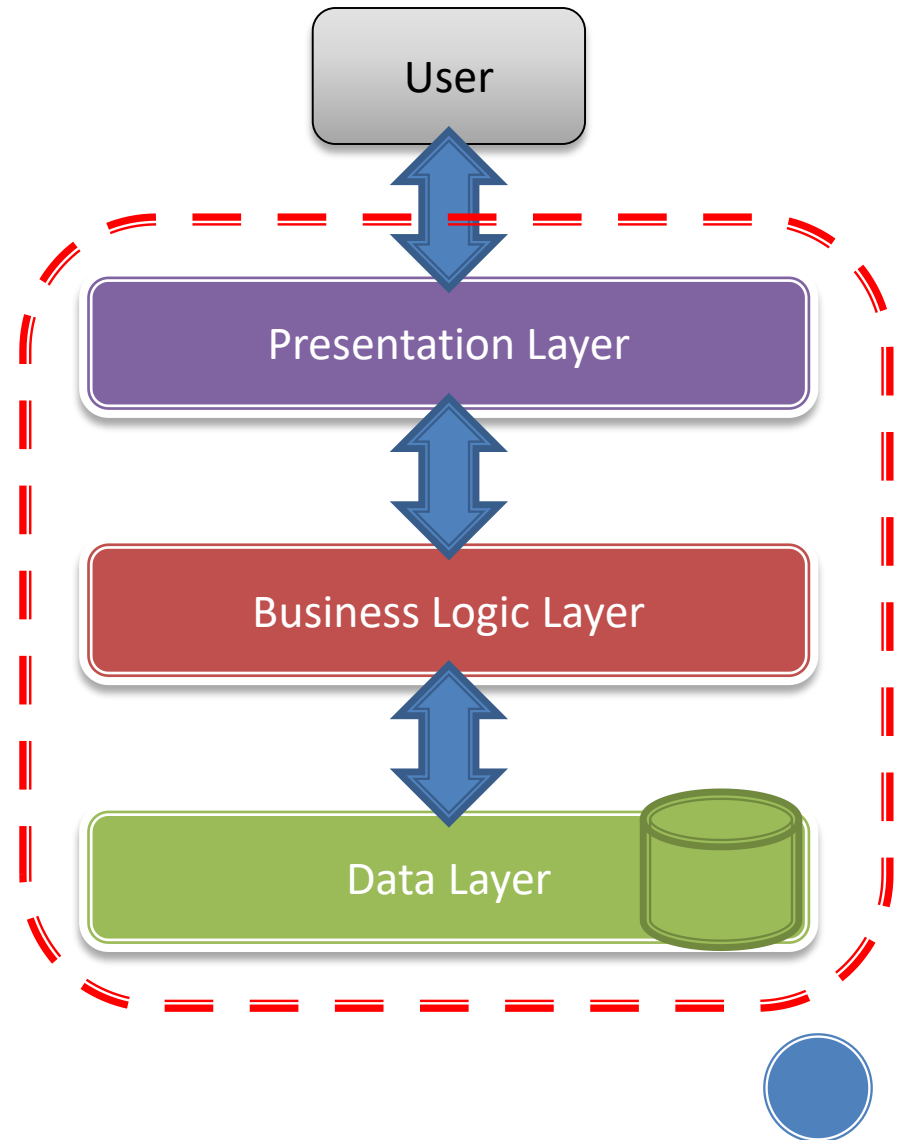
N-Tier Architecture

- ▶ AKA Multi-tier Architecture
- ▶ Client-Server architecture
- ▶ Presentation, application processing and data management are split into logically separate processes
- ▶ Provides a model to create flexible and re-usable applications
- ▶ 3-Tier Architecture is a widely used N-Tier Architecture model



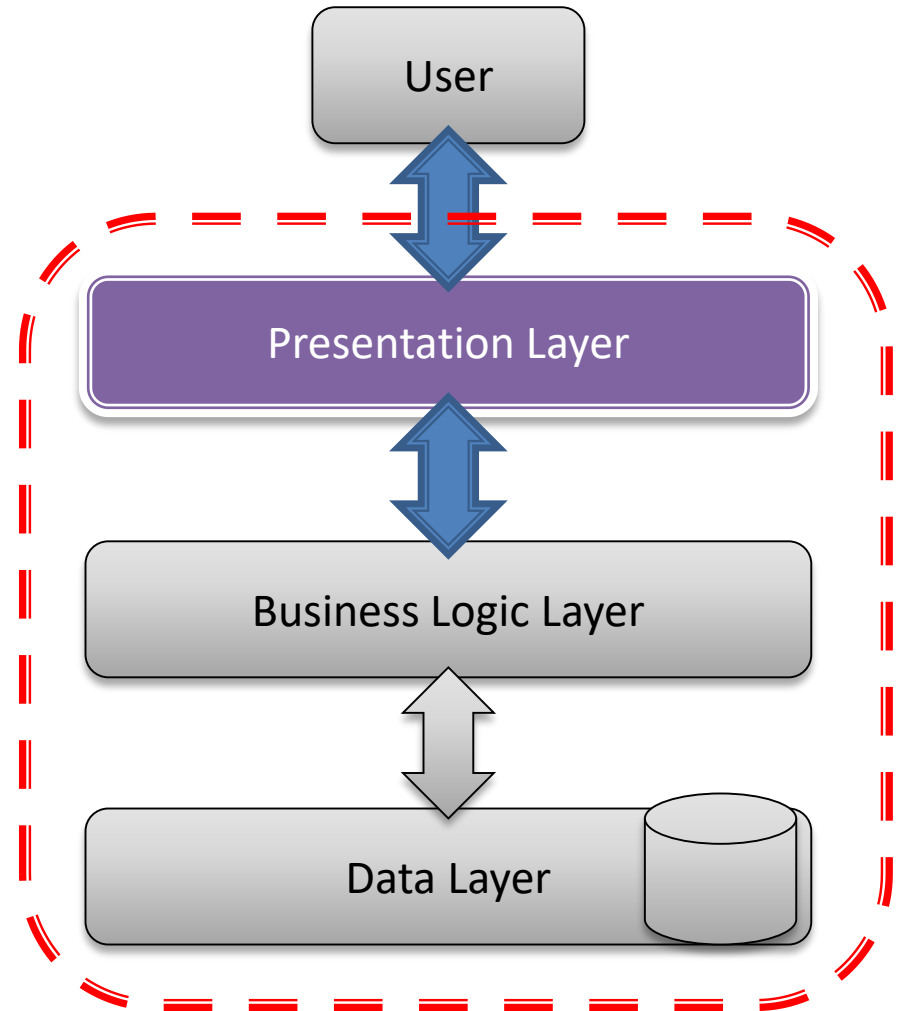
3-Tier Architecture

- ▶ Application is split into 3 distinct layers(tiers)



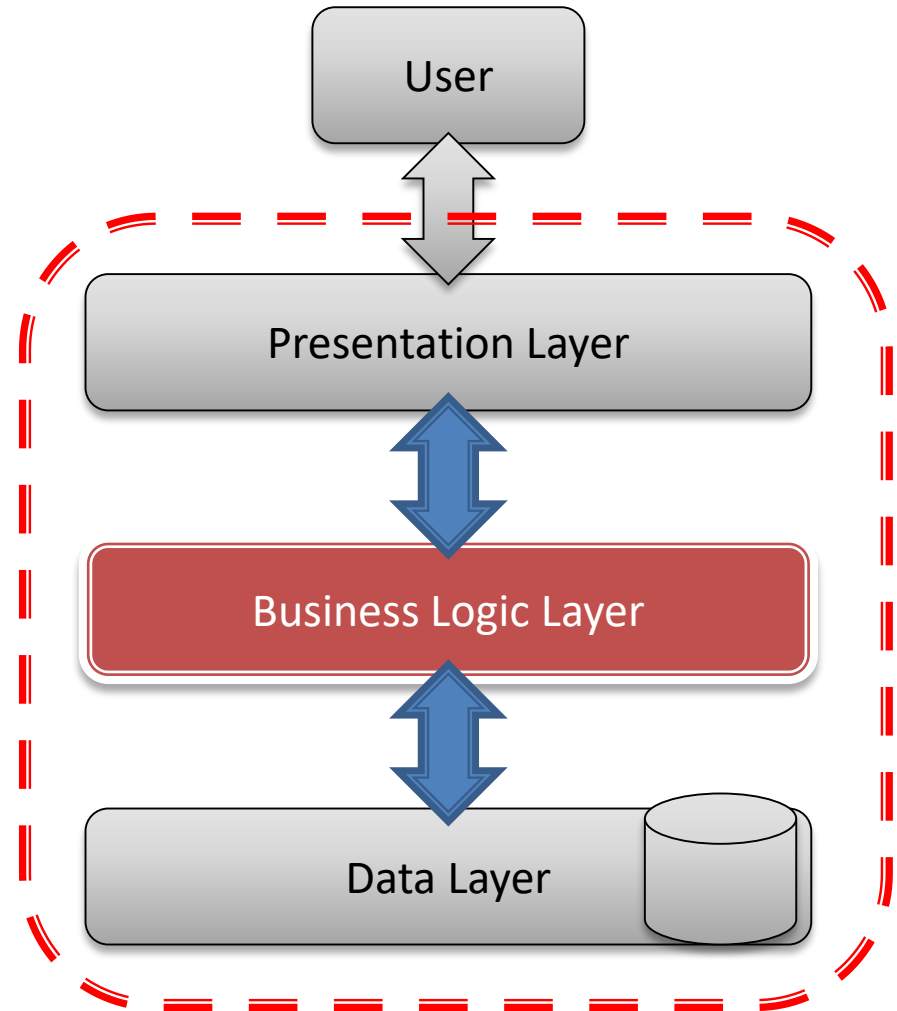
3-Tier Architecture: Presentation Layer

- ▶ Outermost tier
- ▶ Outputs information to the user in a User Friendly format. E.g.:
 - Web page
 - Mobile application
 - Flash
 - Silverlight
- ▶ Captures input from the user and sends the input to the Business layer



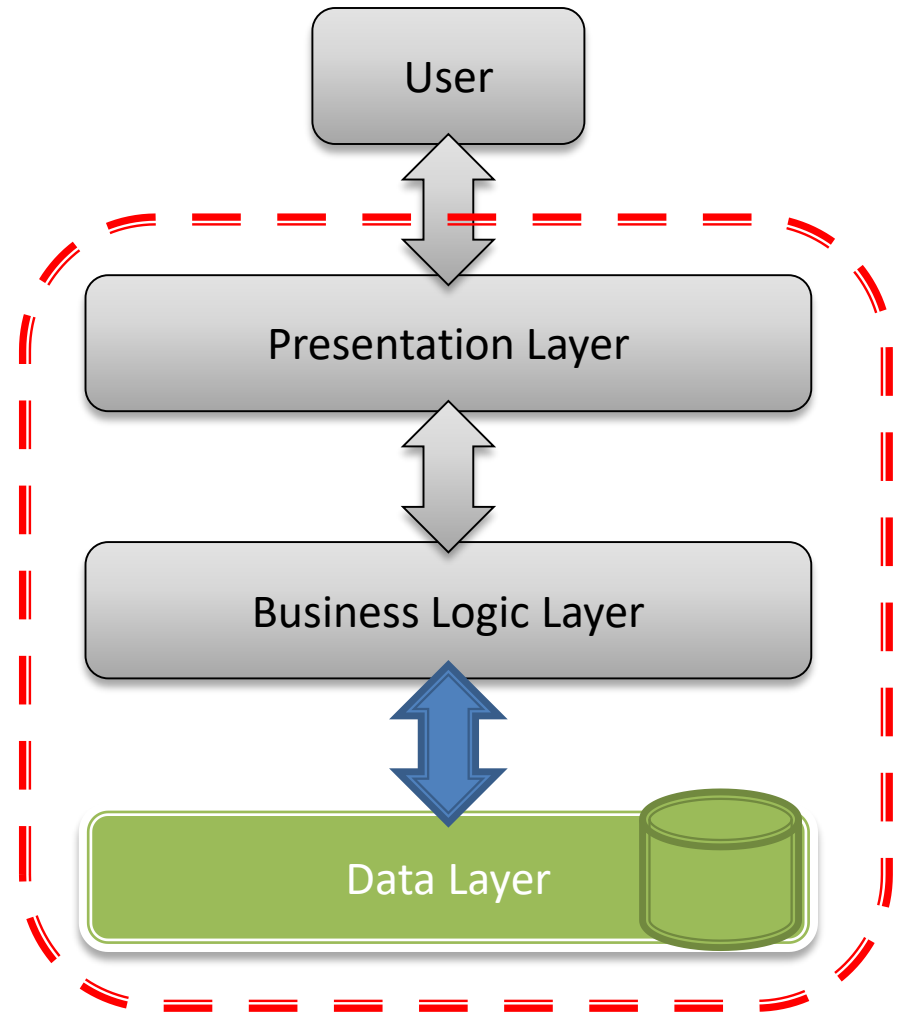
3-Tier Architecture: Business Layer

- ▶ The middle layer
- ▶ Performs detailed processing
 - Co-ordinates the application
 - Process commands
 - Performs calculations
 - Makes logical decisions and evaluations
 - Moves data between the Presentation Layer and Data Layer

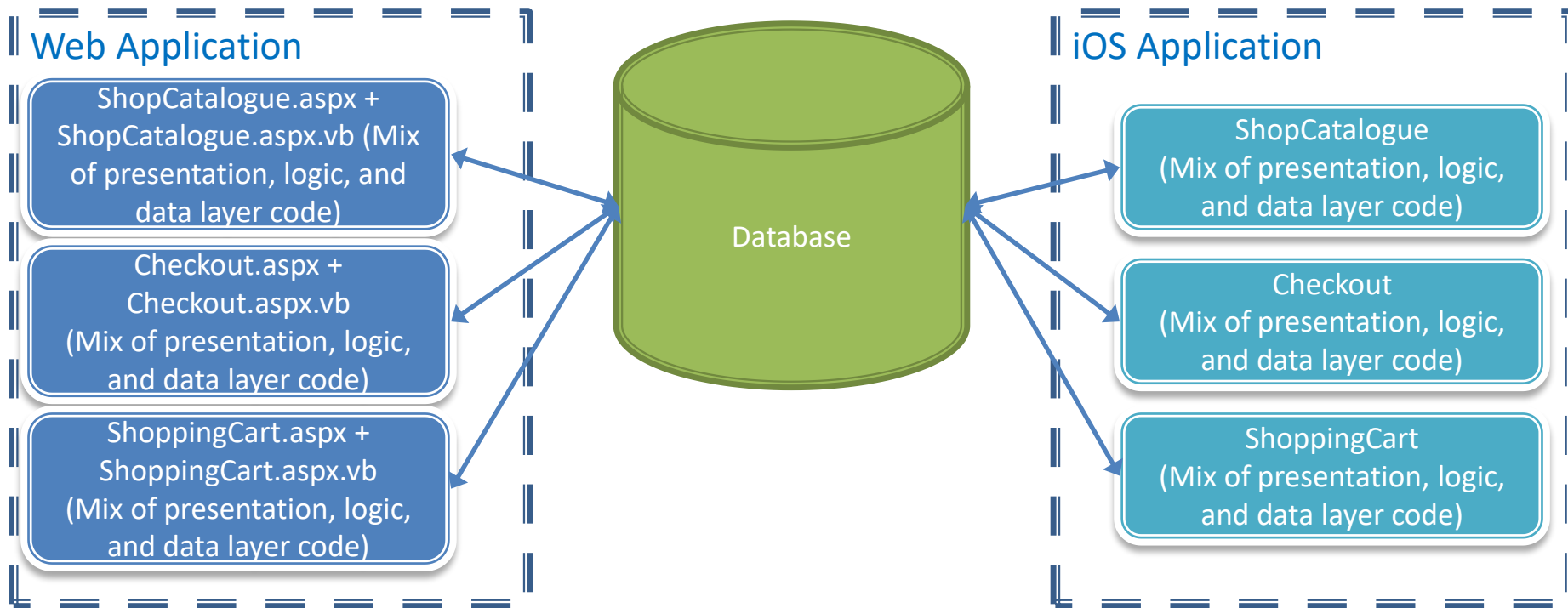


3-Tier Architecture: Data Layer

- Innermost layer
- Stores and retrieves data into/from data sources (Database, web services, files)
- Includes the data sources



No Architecture



What happens when the database is changed?

What happens when business logic is changed?

What happens when a new interface is added?



No Architecture

What happens when the database is changed?

Affected (often repeated) data layer code in many files needs to be changed.

What happens when business logic is changed?

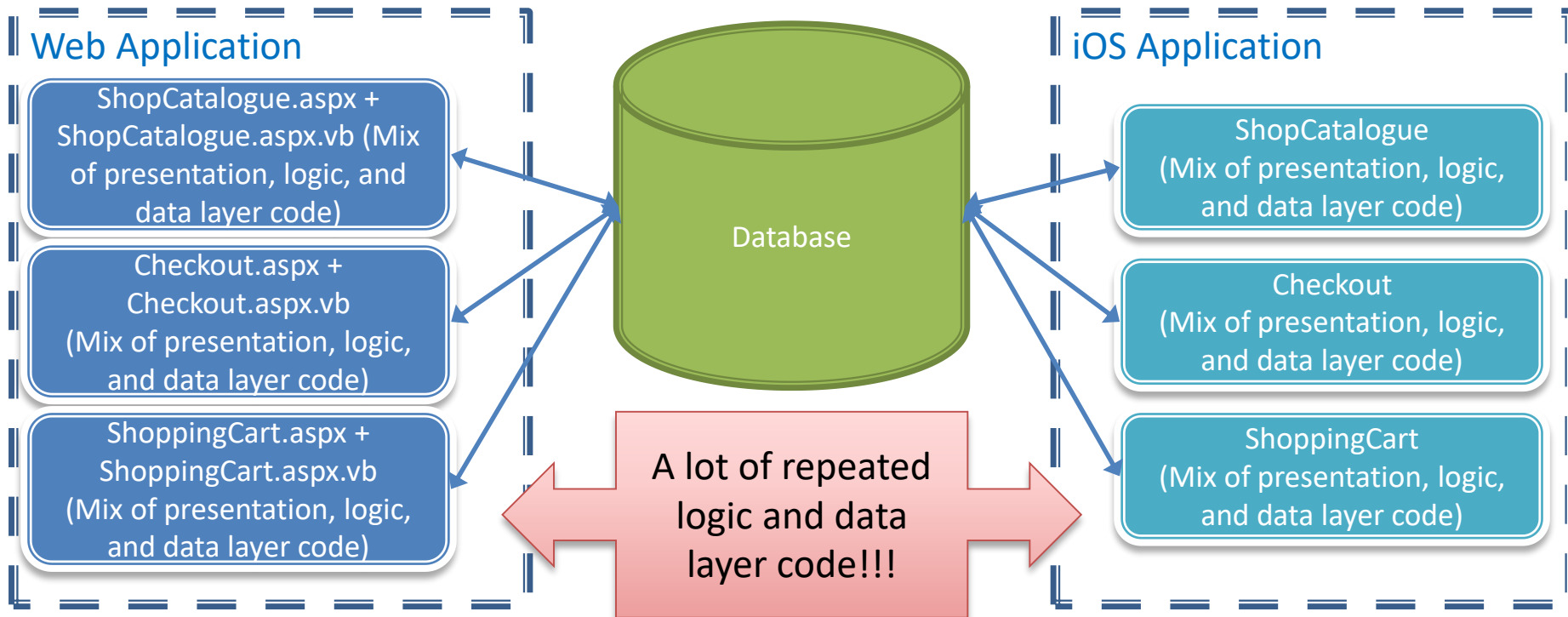
Affected (often repeated) business logic code in many files needs to be changed.

What happens when a new interface is added?

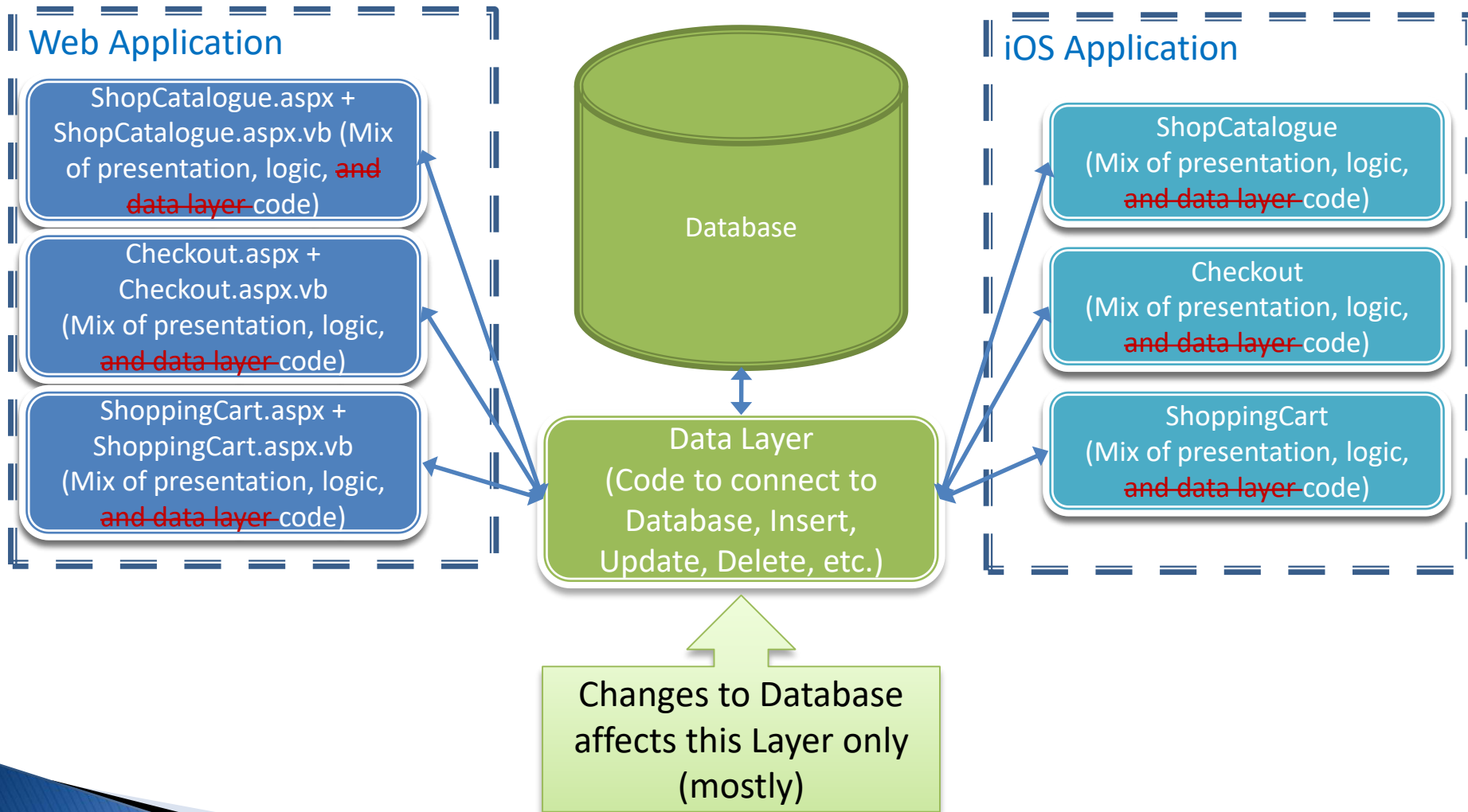
A lot of business logic and database code are repeated yet again, thus adding additional duplication.



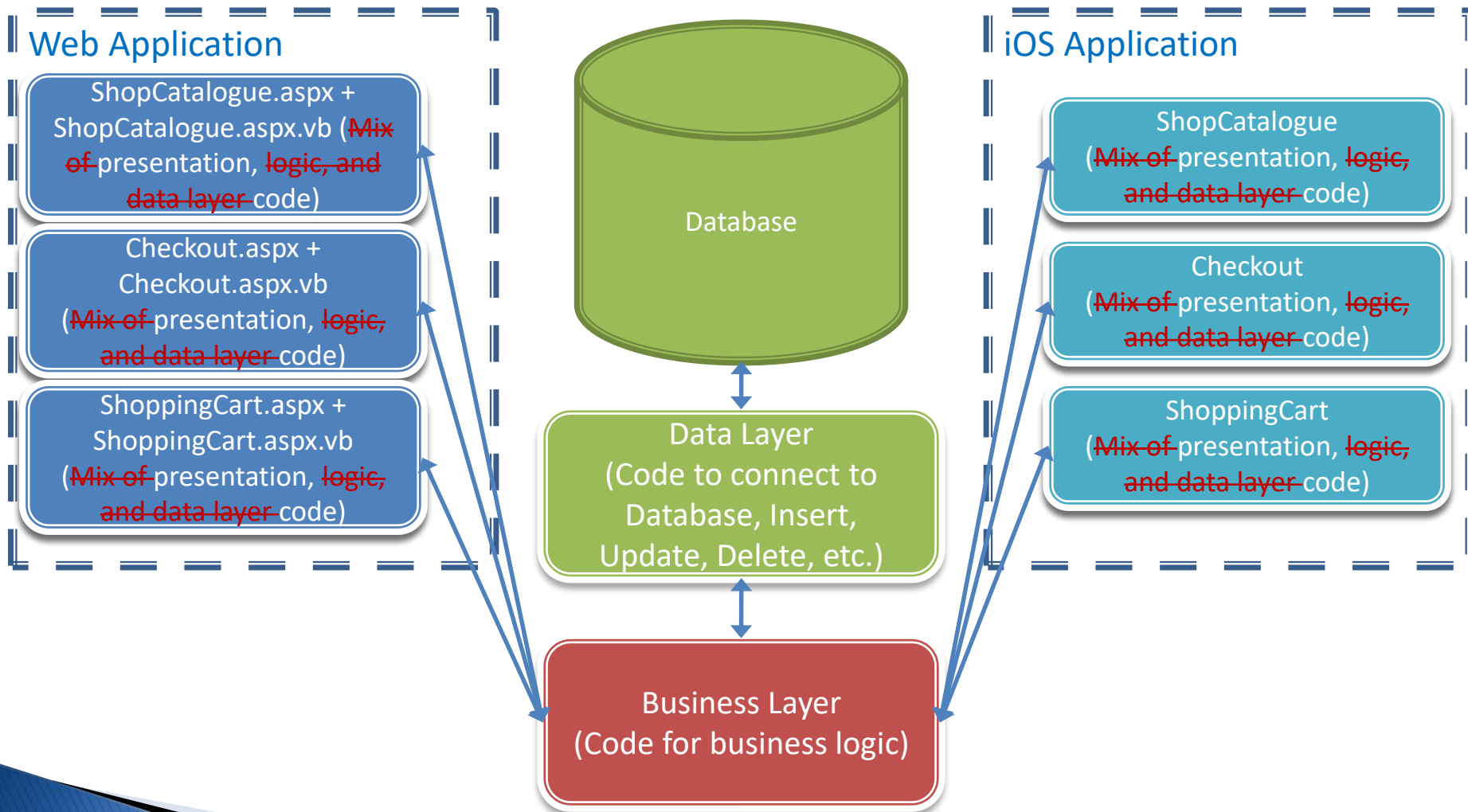
No Architecture



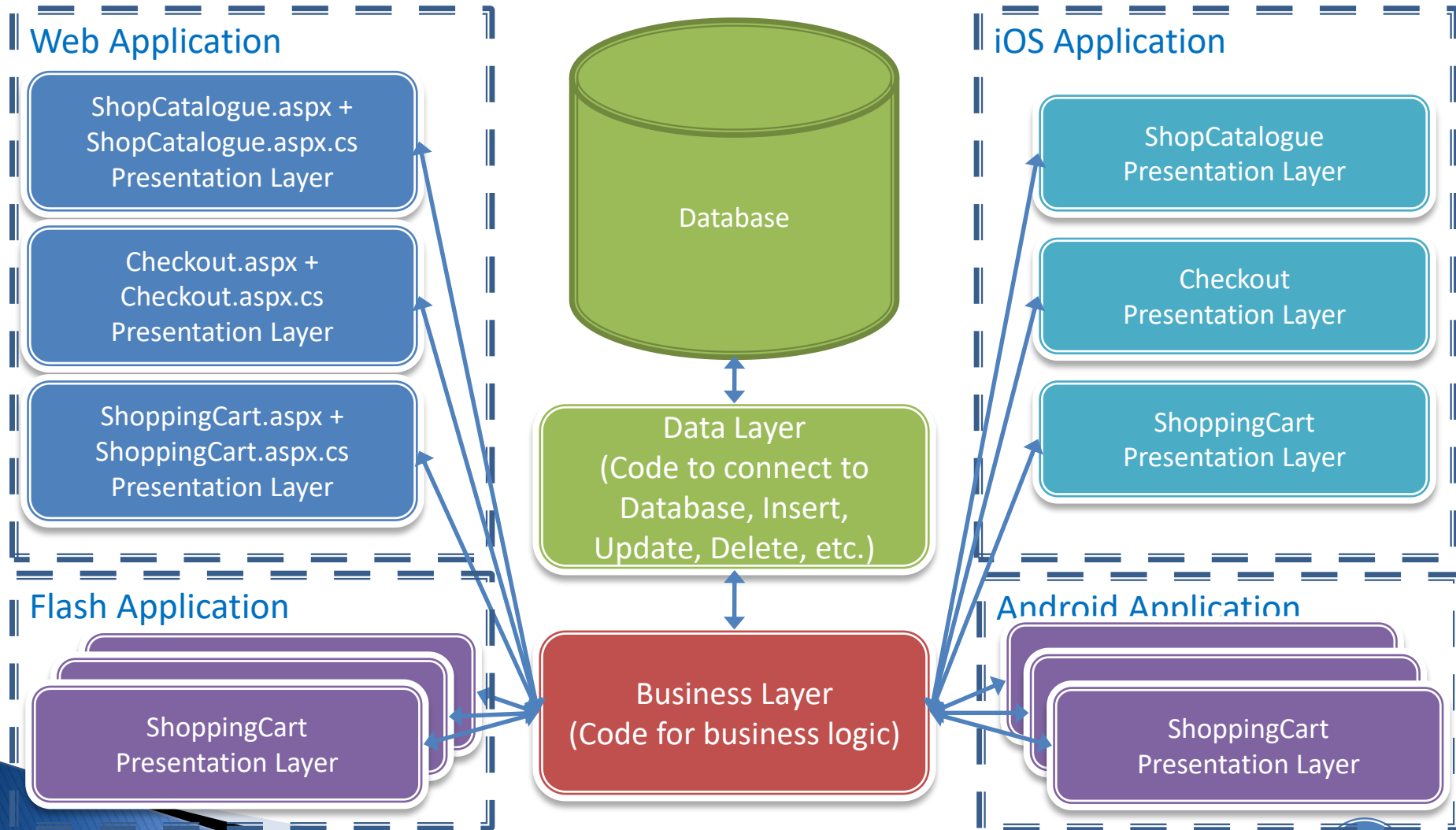
With Data Layer



With Business Layer (and Data Layer)



Easier to Add New Applications



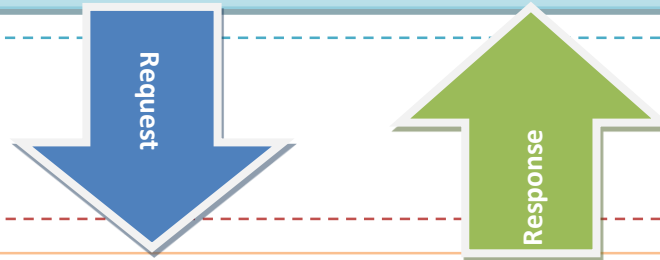
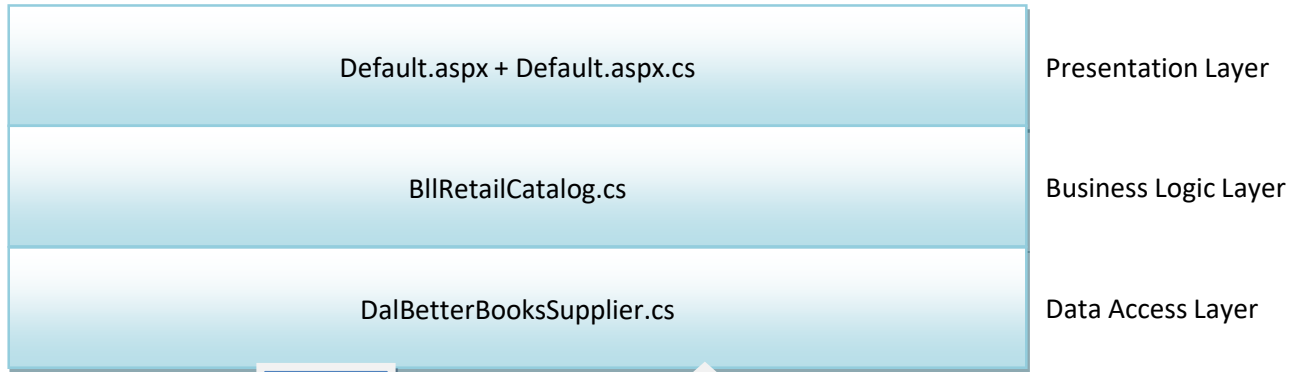
Summary

- ▶ 3 Tier Architecture allows developers:
 - to break their application into logically separate layers
 - easily manage their code
 - easily extend their applications



PRACTICAL TIME!

Acme Bookshop System (Consumes Web Service)



Better Books Supplier System (Provides Web Service)

