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ADM Standard Java - Integrated Development Project(IDP)

Design Considerations

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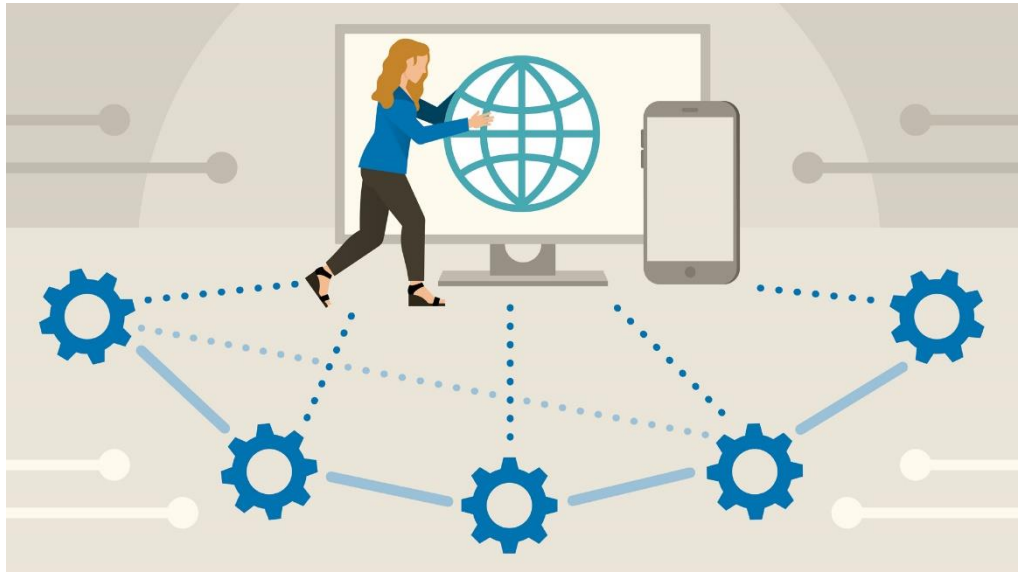
Introduction

Why should I follow design considerations?

Design plays a key role in any software application development process. Proper design is a major factor that contributes to the scalability and performance of any application.



Following are some of the design considerations:

- Architecture
- Extensibility
- Interoperability and many more...

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Areas To Focus On…

- ❑ Introduction
- ❑ Application Architecture
- ❑ UI & User Experience
- ❑ Client-Side UI Validations
- ❑ Business Logic & Service Layer
- ❑ Data Access Layer /Repository
- ❑ Application Configuration
- ❑ Test Driven Development
- ❑ Coding Standards and Best Practices
- ❑ Error Handling
- ❑ Logging

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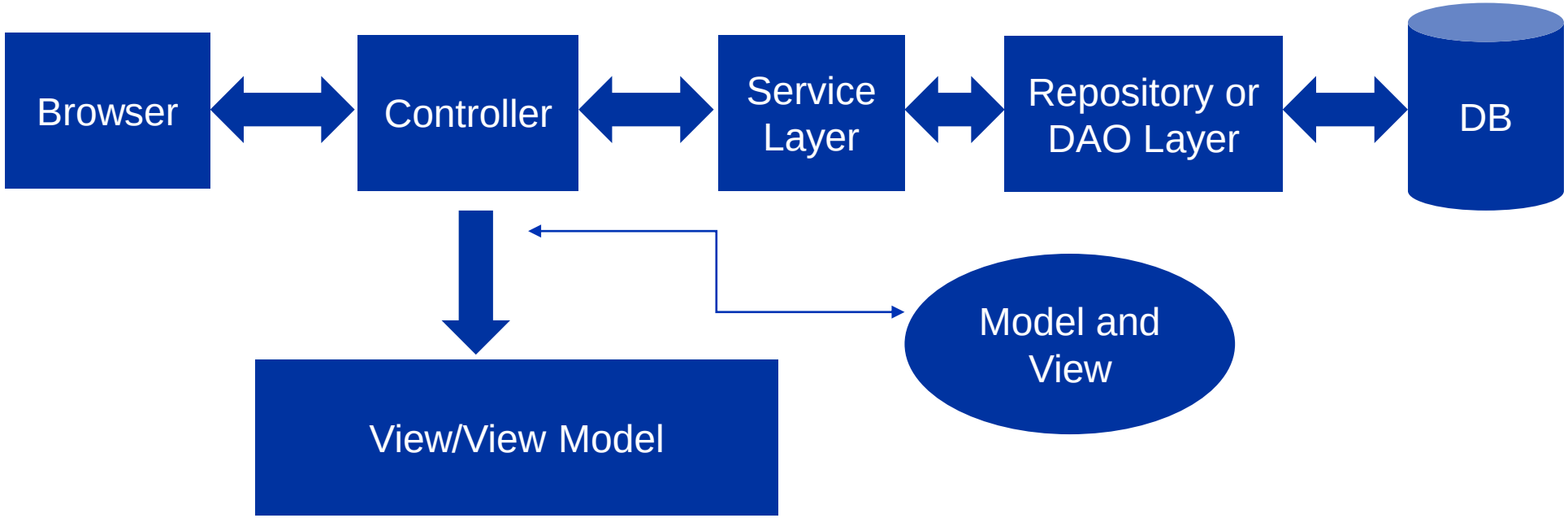
Application Architecture



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Application Architecture Contd…

Java	
Presentation Layer	Controller Classes
Business Layer	POJO, Service Classes
Data Access Layer	Spring Data JPA
Back End	Oracle
Development Tool	Eclipse

- There should be minimum 2 use cases except User/Role Management with end-to-end flow from UI to DB.
- The front-end application should be built with Spring MVC
- Application must contain the Controller class, Service layer and the DAO layer
- Use Annotation based configuration to build MVC application
- Do not include business logic in Controller classes
- Perform form validation using JSR 303 Hibernate Validator
- Include code related to database connection, insert/update/querying functionality in the DAO layer
- Use annotation-based spring MVC exception handling mechanism
- Application should have logging enabled
- All service should have Unit tests

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UI & User Experience

- Consider RWD (Responsive Web Design)

"Responsive web design (**RWD**) is an approach to web design aimed at allowing desktop web pages to be viewed in response to the size of the screen or web browser one is viewing with." — Wikipedia

Use Bootstrap for achieving responsive web design

Prefer Bootstrap flexbox over grid system…

Use Spring MVC for constructing the UI layer

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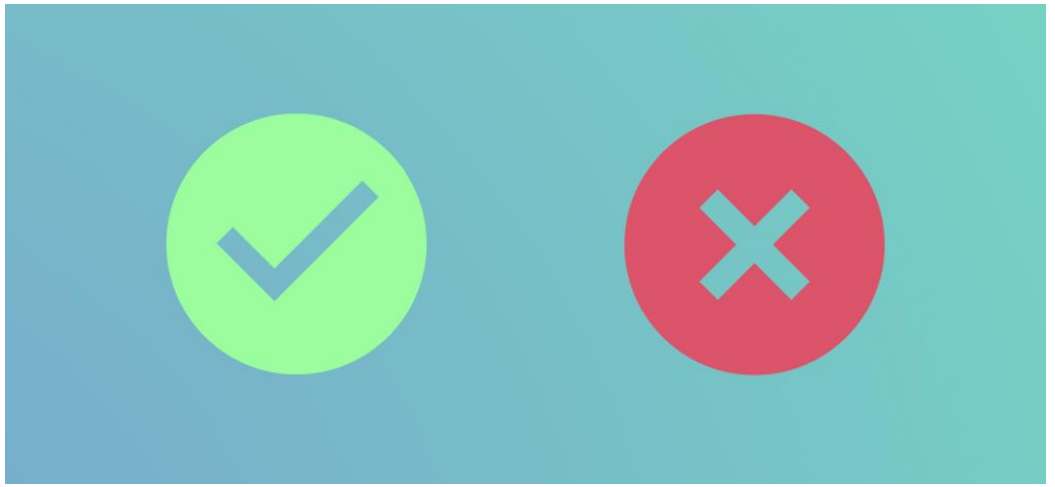
Client-Side UI Validations

Before submitting data to the server, it is important to ensure all required form controls are filled out, in the correct format

- **Consider the following for client-side UI validation**
  - **HTML5 form validation**
  - **Pure JavaScript**
  - **jQuery validation plugin**



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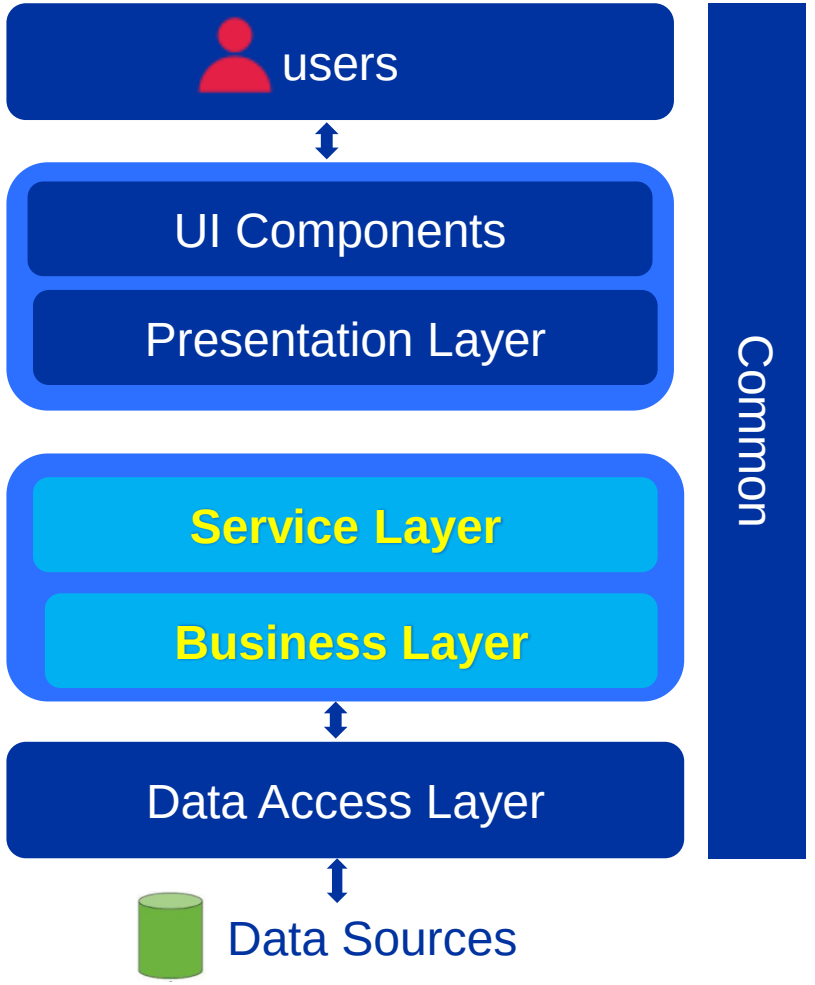
Business, Service Layers

- **Use POJO classes / Interfaces for creating the Business/Service Layers**



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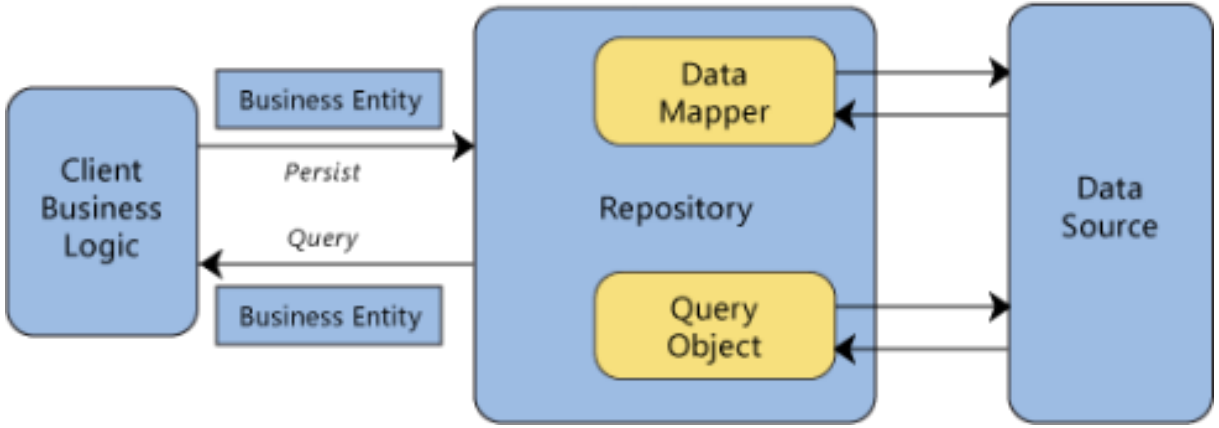
Data Access Layer (DAL)

- Design patterns (Structural) to consider…
  - **Repository**
  - **Query Object**
  - **DAO**



Use DAO pattern to abstract database related functionalities

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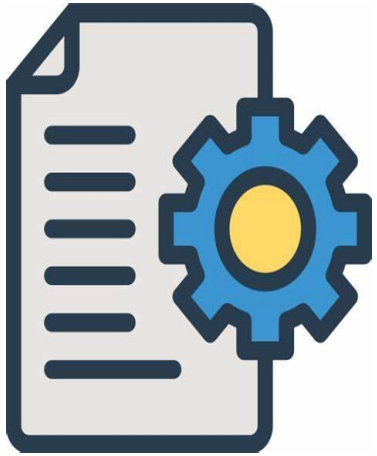
Application Configuration

- Use Application configuration for:
  - Connection strings to databases
  - Application settings, property files



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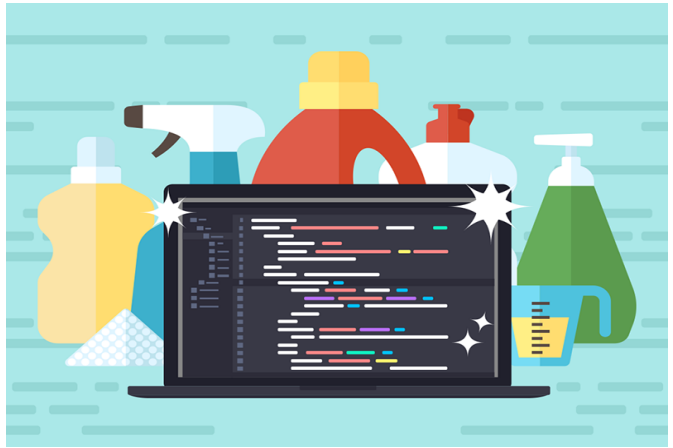
Coding Standards and Best Practices

It's a must



Why Coding Standards?

- Easier to **understand**
- Easier to **develop**
- Easier to **maintain**

Note: Best Practices will be updated shortly in the PPT

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Error Handling

- Use **try/catch/finally** blocks to recover from errors or release resources
- Handle common conditions without throwing exceptions
- End exception class names with the word Exception
- Use grammatically correct error messages
- In **custom exceptions**, provide additional properties as needed

- Use appropriate status code for handling errors in Controller | Service Layer

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Logging

Logging is a powerful tool for both development and production debugging.
Write Logs to files, Not the console.

Use Log4J for generating self describing log data.

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Thank you