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PA165: Service Tier I. Introduction

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Content: Service Tier

- Basic Concepts
 - Component lifecycle and configuration, IoC
 - AOP, Interceptors
- Architecture of Application Tier
 - Overview
 - DAO, Services, Service Façade, Adapters
- Transaction Management
 - Where and How control transactions
 - Local vs. Global Transactions
 - JTA

BASIC CONCEPTS

Components Lifecycle

- We need to control component lifecycle and configuration
- Possible approaches
 - Hardcoded
 - Controlled by some container

Component Configuration

- Components needs some resources (other components, data sources, etc.) and configuration
- Configured statically
 - Hardcoded
- Configured dynamically at runtime (IoC)
 - Lookup
 - JNDI
 - ServiceLoader
 - NetBeans Lookup
 - IoC
 - Configured by anotations
 - Configured by XML descriptor

AOP

- We often need to include some aspects that affects lots of our application parts
 - Transaction management
 - Authorization
 - Validation
 - Logging or auditing
 - Exception handling or translation

AOP

- Template method
 - OOP approach
 - You need new class for each operation
- AOP/Interceptors
 - Incompatible with pure OOP
 - More practical

ARCHITECTURE

Architecture Design Patterns

- DAO
- Service Façade
- Adapter

TRANSACTION MANAGEMENT

Local vs. Global Transactions

- Local transactions
 - Controlled by API of given low-level technology
 - Depend on given technology
- Global transactions
 - Controlled independently on persistent technology
 - Allows to include more operations into single transaction
 - Distributed Transaction support (transaction could include operations on different databases or other transactional resources)
 - JTA

Transactions and threads

- Problem with the scope of the transaction
 - Different requests must be processed in different transactions (we can't share transaction between threads)
 - One transaction includes more operations in different components (we can't create new transaction for each operation)
- Solution
 - Transaction is bound to thread
 - EntityManager proxy, ThreadLocal variable

Transactions Control

- Usually global transactions
- Usually declarative approach
- Usually on Service Façade or Adapter level

Questions

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