Software Architecture

Software Engineering
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Learning Objectives

- Learn what is meant by software architecture patterns
- Learn the motivations for software architectural patterns
- Learn the different categories of architectural patterns
- Learn about cloud based architectures

Patterns in Engineering

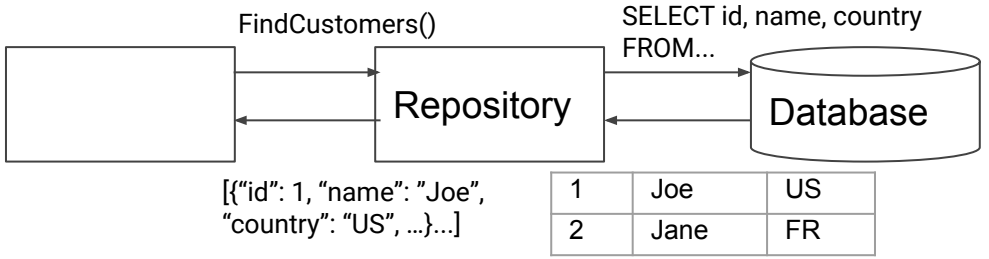
Patterns in Software

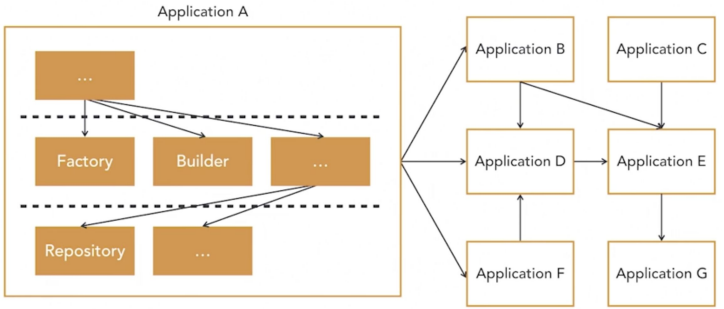
- Solutions to common problems

Kinds of Software Patterns

- Coding Patterns (low level)
- Design Patterns (high level)
- Architecture Patterns (highest level)

```
try (Scanner scanner = new Scanner(new File("test.txt"))) {
    while (scanner.hasNext()) {
        System.out.println(scanner.nextLine());
    }
}
```





Caveats

- Other solutions are possible
- No guarantee
- Just a starting point

Categories of Architecture Patterns

1

Application Landscape

2

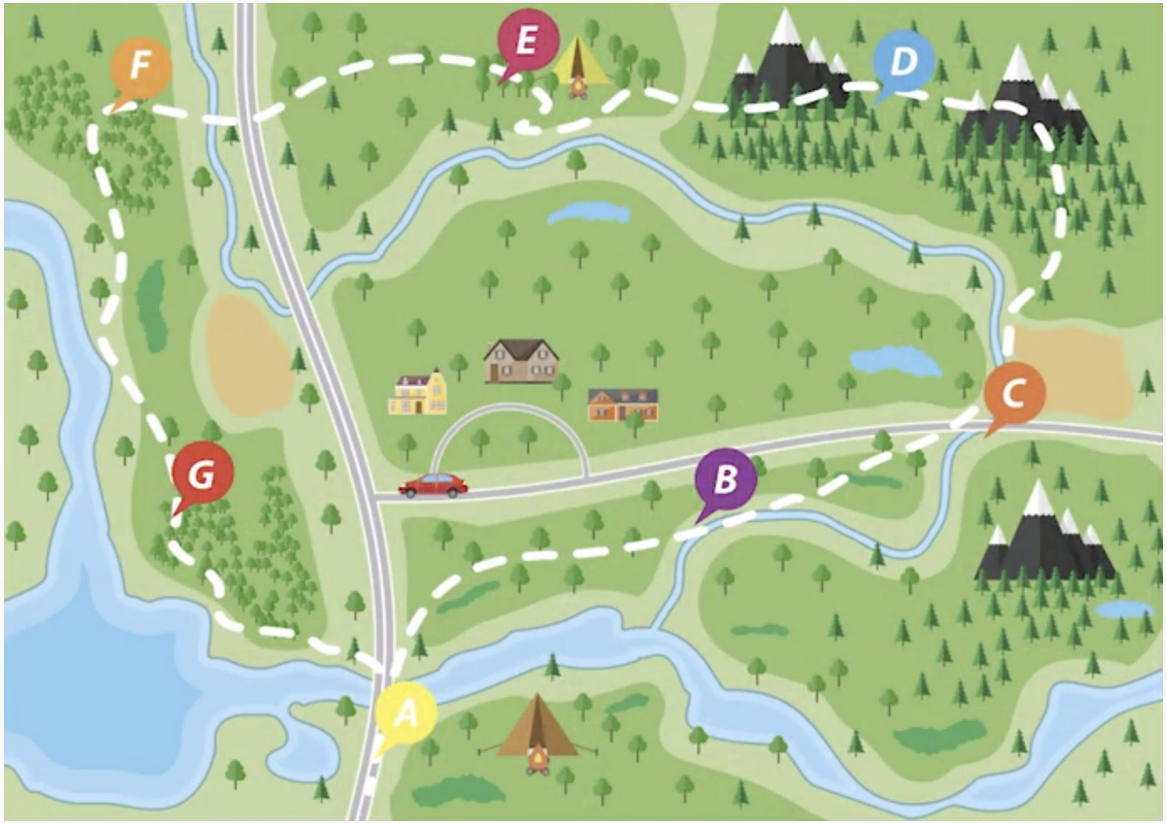
Application Structure

3

User Interface

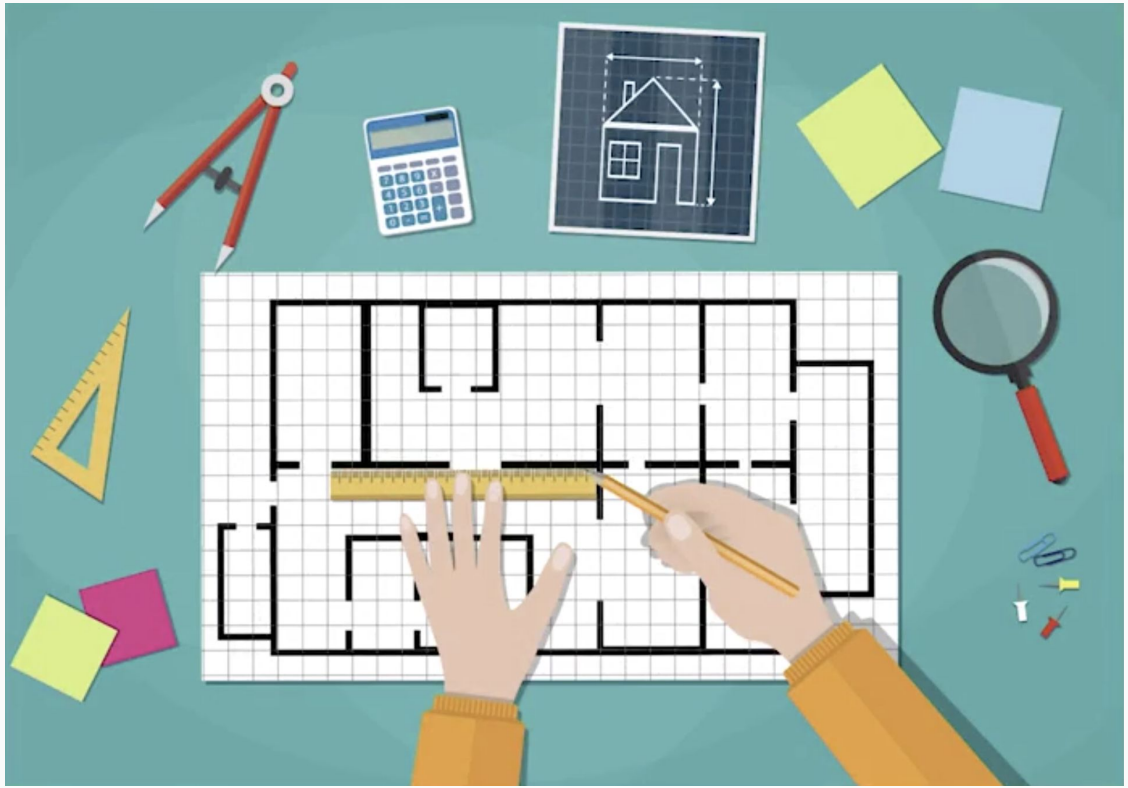
Application Landscape Patterns

- Monolith
- N-tier
- Service-oriented
- Microservices
- Serverless
- Peer-to-peer



Application Structure Patterns

- Layered
- Microkernel
- CQRS
- Event Sourcing



User Interface Patterns

- Model-View-Controller (MVC)
- Model-View-Presenter (MVP)
- Model-View-ViewModel (MVVM)

Cloud Based Architectures

- Scriptable infrastructure
- Improved development life cycle
- Unconstrained resources
- On-demand scaling
- High availability and disaster recovery
- Shared security model
- Optimized cost