

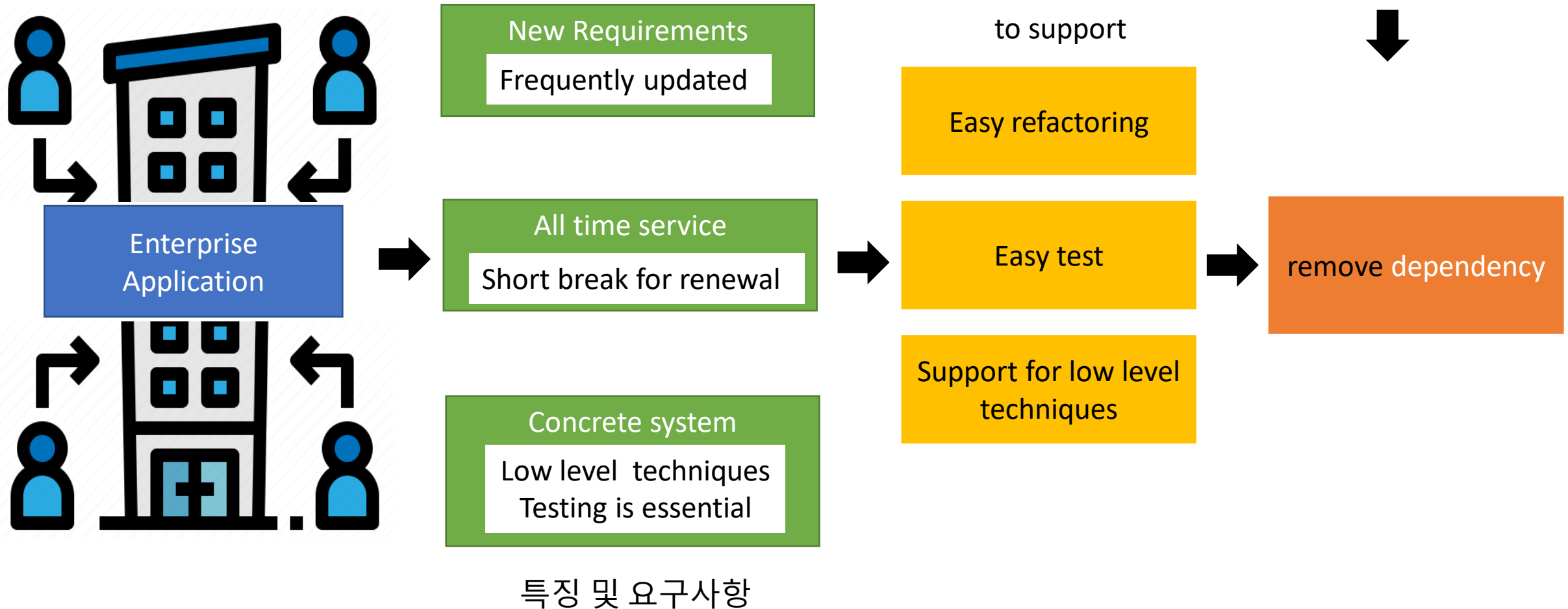
스프링 소개

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지속적인 요구사항 변경



Spring Framework Runtime
design goal

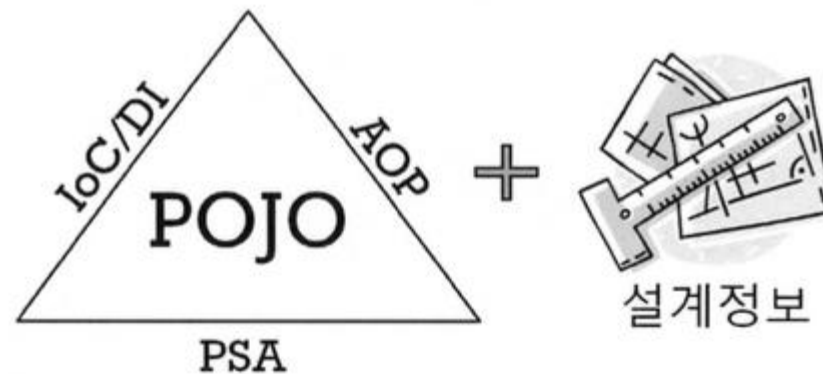


EJB을 개선하자

- Spring has become a popular alternative to the Enterprise JavaBean (EJB) model
- EJB(<https://www.edureka.co/blog/ejb-in-java/>)
 - Server-side software to help to implement enterprise application
 - What are the functions of EJB?
 - Life-cycle management
 - Security
 - Transaction management
 - Object pooling

Spring?

- Spring framework is an **open source Java platform** that provides **comprehensive infrastructure support for developing robust Java applications** very easily and very rapidly
- Spring Framework
 - POJO(Plain Old Java Object)s
 - **IoC(Inversion of Control)/DI(Dependency Injection)** → Decoupling
 - AOP(Aspect-oriented programming)
 - PAS(Portable Service Abstraction): remind JDBC(interface and implementation)



History of Spring Framework

- **POJO Programming Model(Plain Old Java Object)**

- The following year, Jonhnson, along with Juergen Hoeller and Yann Caroff, developed Spring as an open source framework
- No references to any particular frameworks

POJO

Hibernate, Spring

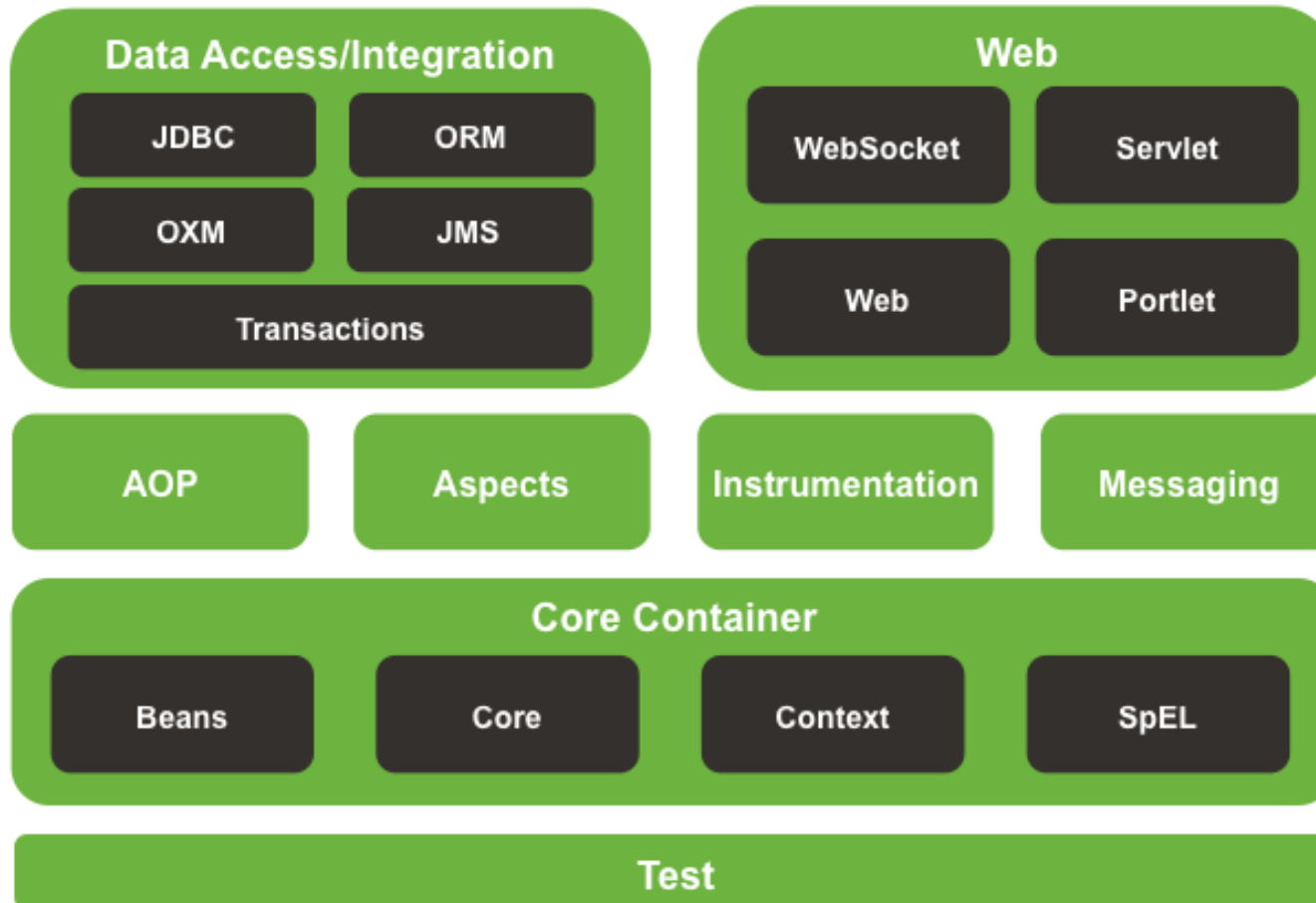
- 해서는 안되는 것
 - 미리 지정된 클래스를 extends 하는 것
 - 미리 정의된 인터페이스를 implement 하는 것
 - 미리 정의된 Annotation을 포함하는 것

스프링 프레임워크

Spring



Spring Framework Runtime

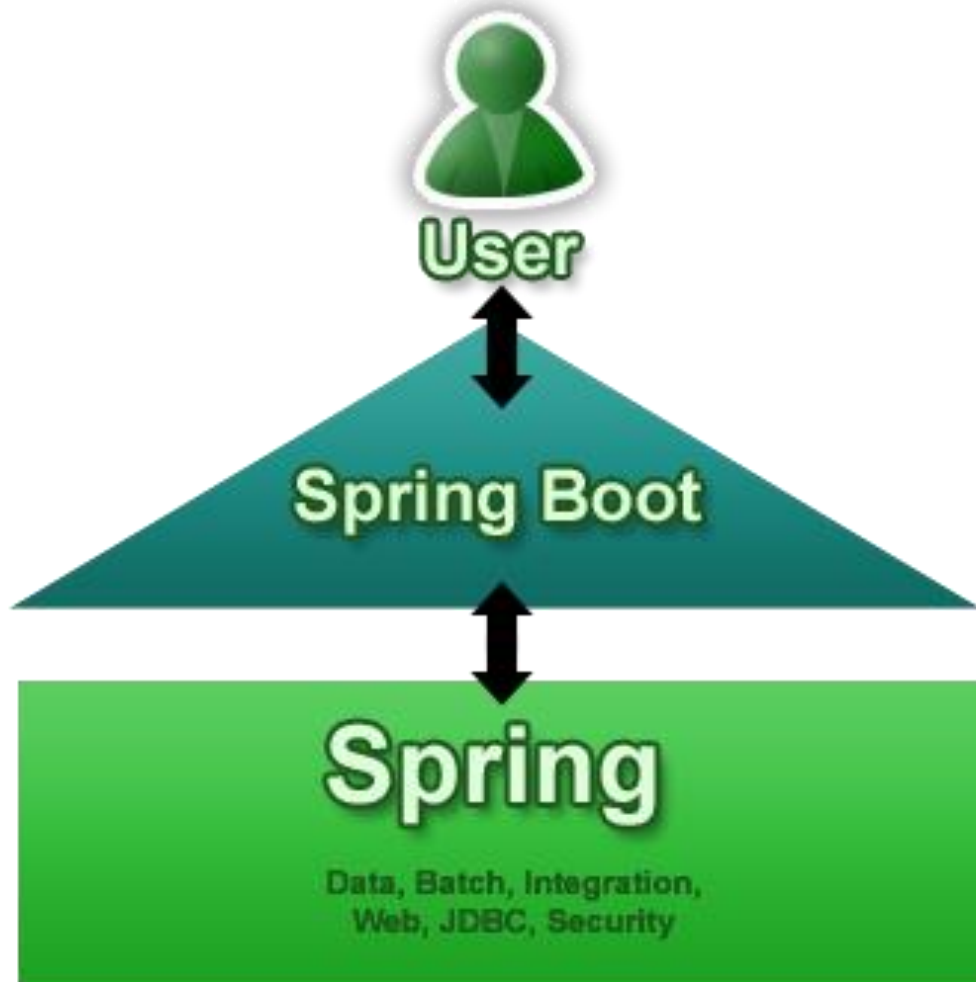


- Spring MVC
- Spring Security
- Spring AOP
- Spring ORM
- Spring Test

<https://docs.spring.io/spring/docs/4.0.x/spring-framework-reference/html/overview.html>

Spring Boot

- Spring and Spring Boot



Spring Boot

- Spring Boot의 장점(<https://elevatingcodingclub.tistory.com/25>)

- 라이브러리 관리 자동화

- 스타터(Starter)라는 것을 이용해 특정 기능에 필요한 라이브러리 의존성을 더욱 간단히 처리

- 설정의 자동화

- 개발자들은 복잡한 설정을 하지 않고도 개발이 가능

- 라이브러리 버전 자동 관리

- 스프링 라이브러리 외에 서드파티 라이브러리 사용 시 호환되는 버전으로 다운로드

- 테스트 환경과 내장 Tomcat

- JUnit을 비롯한 테스트 관련 라이브러리들이 기본적으로 포함
- Tomcat 서버를 내장(embed Tomcat)하고 있기 때문에 단지 main() 메소드를 가진 클래스를 실행하는 방식으로 서버를 구동

- 독립적으로 실행 가능한 JAR

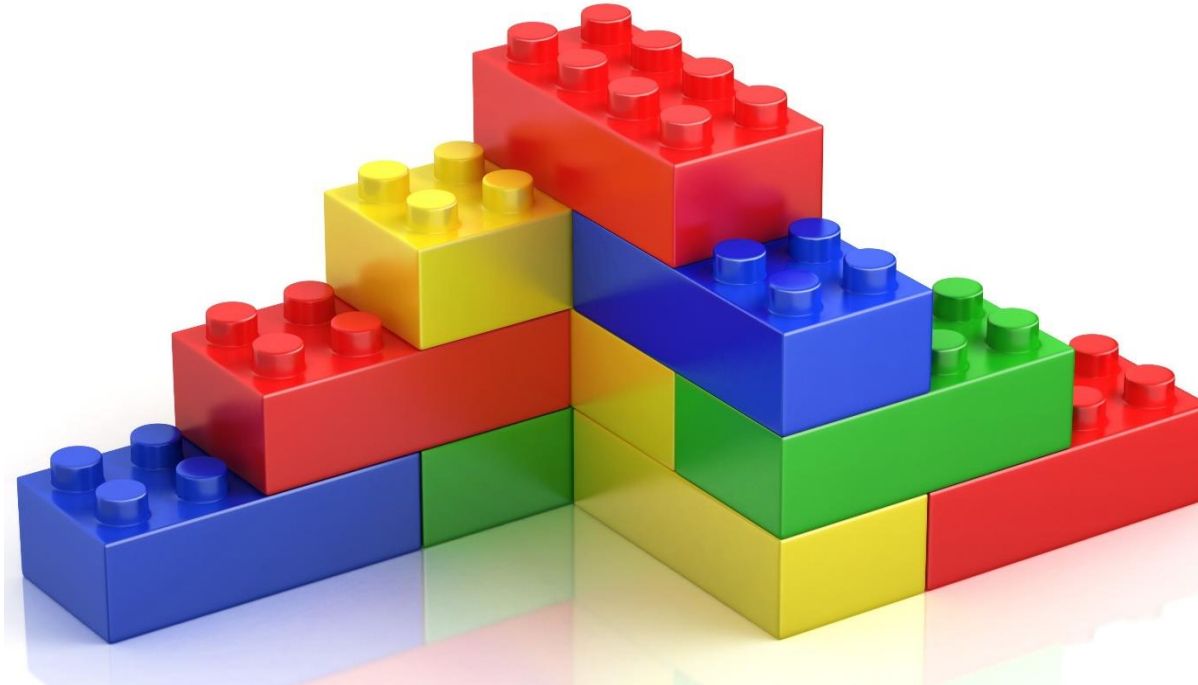
- 웹 애플리케이션도 WAR가 아닌 JAR파일로 패키징 하여 사용

Spring for OOP

Spring for OOP

- Key idea of Spring

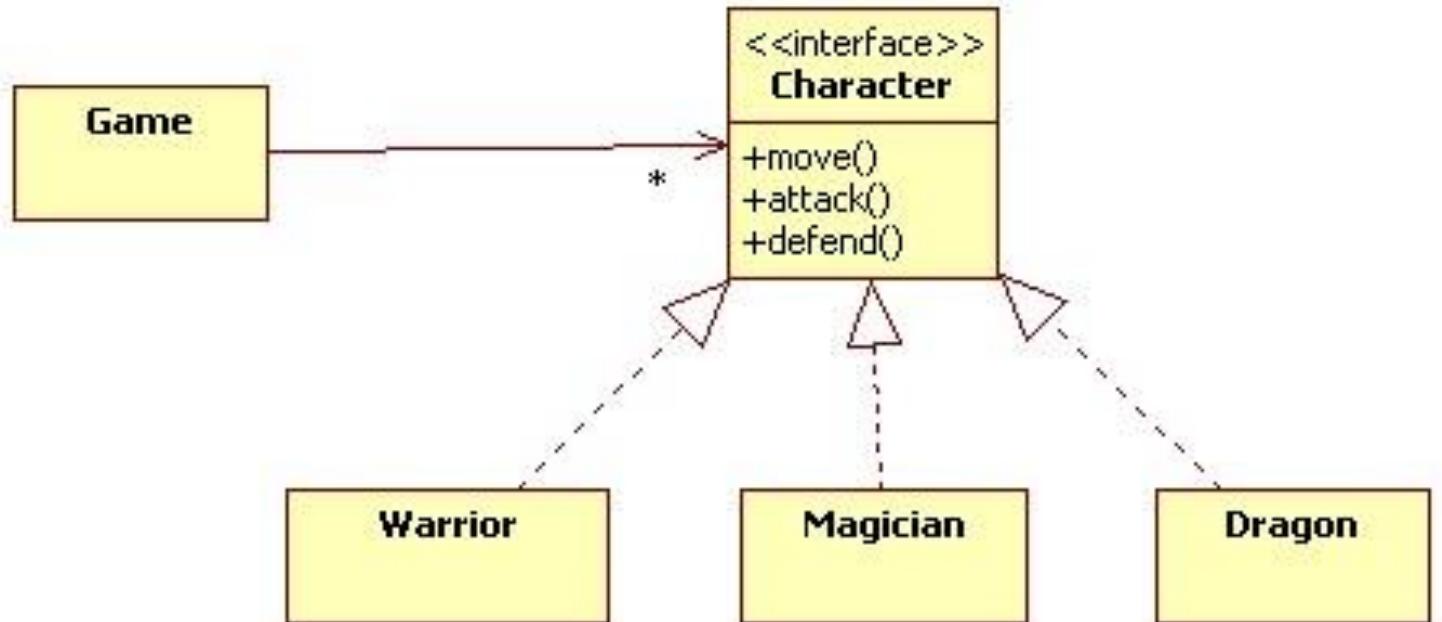
- OOP makes the program flexible and **easy to change**
- Polymorphism and Abstraction



Spring for OOP

- Key idea of Spring

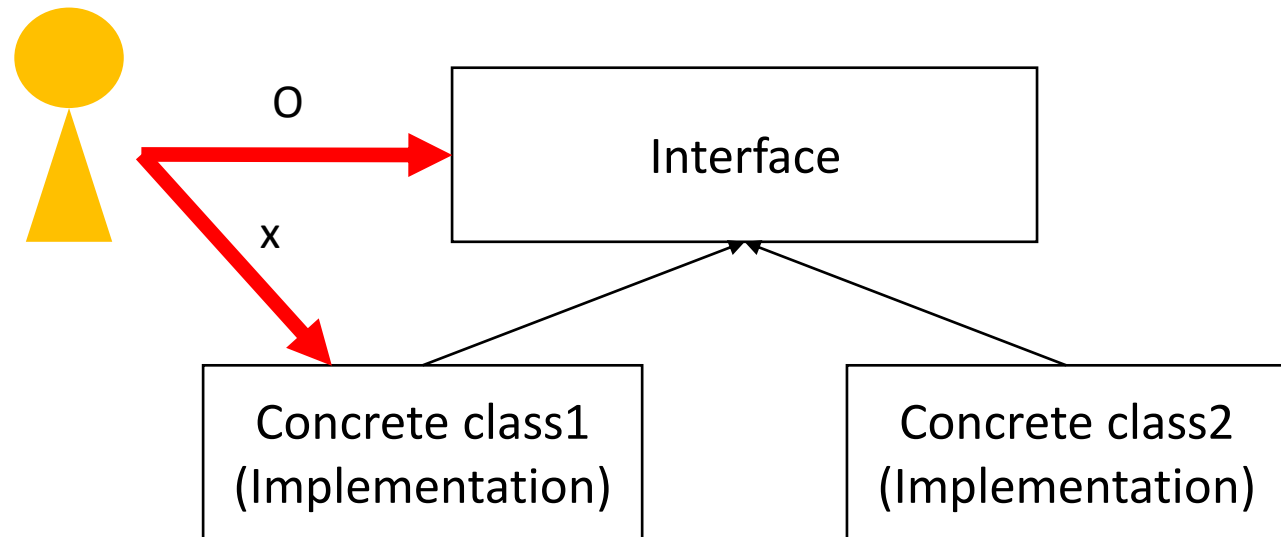
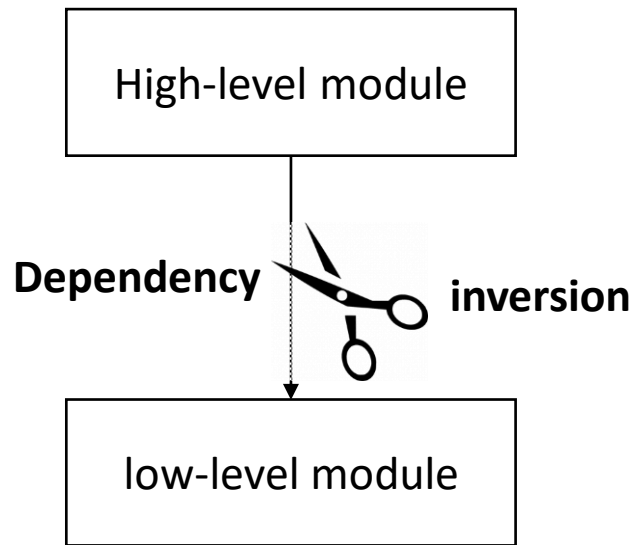
- Spring is a framework that helps you keep object-oriented concept
- List of OOP Concepts in Java(<https://stackify.com/oops-concepts-in-java/>)
 - Abstraction
 - Polymorphism
 - Encapsulation
 - Inheritance



Spring for OOP

- **Dependency Injection**

- High-level modules should be unaffected by changes in low-level modules , which provide utility features
- Well designed interface is very important



Spring for OOP

- Exam

```
public interface MemberPrint {  
    void print();  
}
```

```
public class KoreanMemberPrint implements MemberPrint{  
    public void print() {  
        System.out.println("김");  
    }  
}
```

```
public class EnglishMemberPrint implements MemberPrint{  
    public void print() {  
        System.out.println("kim");  
    }  
}
```

Spring for OOP

- Exam

```
public class PrintInfo {  
    private MemberPrint memberPrint = new KoreanMemberPrint();  
}
```



```
public class PrintInfo {  
    //private MemberPrint memberPrint = new KoreanMemberPrint();  
    private MemberPrint memberPrint = new EnglishMemberPrint();  
}
```

The program codes are modified(the dependency is changed) → build, test, deployment...



Spring framework is solution