**Spring**

**Goals of spring:**

1. Light weight development with JAVA POJOs
2. Dependency Injection to promote loose coupling.
3. AOP.
4. Minimize boilerplate Java code

**Core Framework**

1. Heart of Spring.
2. Manages bean creation by using Bean factory.
3. Manages bean dependency.
4. Has context (Container) with holds beans in memory.

**AOP Structure:**

1. Has application wide services (Logging services, securities, transaction ...) .
2. No need to modify entire code, just maintain config/annotation.

**Data Access Layer:**

1. Communication with DB.
2. Has JDBC, ORM, Transaction, JMS
3. JDBC – helper class to access DB. With Spring JDBC very less code must be written to access.
4. ORM – Integration with Hibernate and JPA.
5. JMS – send message in message queue in async way.
6. Transaction – supports transaction (db calls..)

**Web layer:**

1. Home for spring MVC for building web app.
2. Has integration with JSF, struts.
3. Has support for web remoting (like remote procedure calls, distributed computing).

**Instrumentation:**

1. Can be used to create Java agents to remotely monitor the application using JAVA Management Extension.
2. Uses code weaving, AOP etc.

**Test Layer:**

1. Supports TDD.
2. Supports mocking for Servlets, JNDI access outside the container.
3. Integration testing by creating Application context.

**Inversion of Control**

1. Externalizing the creating and management of the objects. ie outsourcing objection creation to an object factory.
2. XML way - create a bean with the class to be fetched. With ClassPathXmlApplicationContext, get that bean which has the object of the class

Ex : Coach theCoach = xmlContext.getBean(“myCoach”, Coach.class) (Coach.class – Interface that CricketCoach Implements)

In xml,

<bean id = “myCoach” class = “com.learn.CricketCoach”></bean>

**Dependency Injection:**

Outsourcing the construction and injection of an object to an external entity.

Ex: If a car should be purchased, the factory injects all the required dependents component of car like engine, electronics, chasis etc. These are the components the car Is dependent on.

1. **Injection Types:**
   1. Constructor Dependency: