Assignment No. 8

TITLE

Design a web application using Spring.

PROBLEM STATEMENT

Create and fetch student records like studentName, studentRollNo, studentBranch,etc using Spring Framework.

OBJECTIVES

1. To understand working of Spring
2. To explore the usage of Spring and develop application using it.

OUTCOMES

1. I understood the working of Spring Framework and developed application using it.

H/W and S/W REQUIREMENTS

Operating System :Fedora 20 Networked computer with internet access
Editor : IDE : Netbeans 8.1
Web browser Mozilla Firefox, Google Chrome

THEORY

Spring

The Spring Framework is an application framework and inversion of control container for the Java platform. The framework's core features can be used by any Java application, but there are extensions for building web applications on top of the Java EE platform.

This framework uses various new techniques such as Aspect-Oriented Programming (AOP), Plain Old Java Object (POJO), and dependency injection (DI), to develop enterprise applications, thereby removing the complexities involved while developing enterprise applications using EJB, Spring is an open source lightweight framework that allows Java EE 7 developers to build simple, reliable, and scalable enterprise applications. This framework mainly focuses on providing various ways to help you manage your business objects.

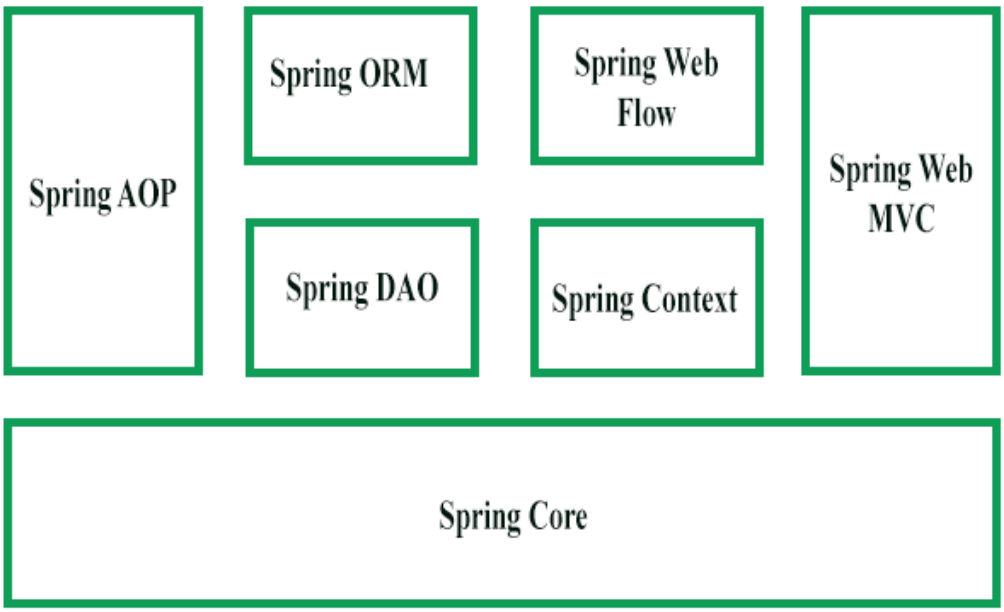
It made the development of Web applications much easier as compared to classic Java frameworks and Application Programming Interfaces (APIs), such as Java database connectivity(JDBC), JavaServer Pages(JSP), and Java Servlet.

The Spring framework can be considered as a collection of sub-frameworks, also called layers, such as Spring AOP. Spring Object-Relational Mapping (Spring ORM). Spring Web Flow, and Spring Web MVC. You can use any of these modules separately while constructing a Web application. The modules may also be grouped together to provide better functionalities in a Web application.

Features of the Spring Framework

- **IoC container**:Refers to the core container that uses the DI or IoC pattern to implicitly provide an object reference in a class during runtime.
- **Data Access framework**:Allows the developers to use persistence APIs, such as JDBC and Hibernate, for storing persistence data in database.
- **Spring MVC Architecture**:Allows you to build Web applications based on MVC architecture.
- **Transaction management**:Helps in handling transaction management of an application without affecting its code.
- **Spring Web Services**:Spring Web Service provides layered-based approaches that are separately managed by XML.
- **JDBC abstraction layer**:Helps the users in handling errors in an easy and efficient manner.

Spring Framework Architecture



Hello World Example using Spring

```java
package com.javainterviewpoint;

import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.EnableAutoConfiguration;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RestController;

@RestController
@EnableAutoConfiguration
public class HelloWorld {

    @RequestMapping("/")
    String hello() {
        return "Hello World! JavaInterviewPoint";
    }

    public static void main(String[] args) throws Exception {
        SpringApplication.run(HelloWorld.class, args);
    }
}
```

Annotations used in Stateless Session Bean

There are 3 important annotations used in stateless session bean:

1. **@RestController**:The @RestController annotation was introduced in Spring 4.0 to simplify the creation of RESTful web services.
2. **@Controller**:The first annotation is used for traditional Spring controllers and has been part of the framework for a very long time.
3. **@EnableAutoConfiguration**:This annotation auto-configures the beans that are present in the classpath.
4. **@RequestMapping**:his annotation maps HTTP requests to handler methods of MVC and REST controllers.

Spring framework jar files

1. spring-beans-4.1.6.RELEASE
2. spring-context-4.1.6.RELEASE
3. spring-context-support-4.1.6.RELEASE
4. spring-core-4.1.6.RELEASE
5. spring-expression-4.1.6.RELEASE

CONCLUSION

In this assignment we studied Spring Framework and developed application to get Student details using the framework.