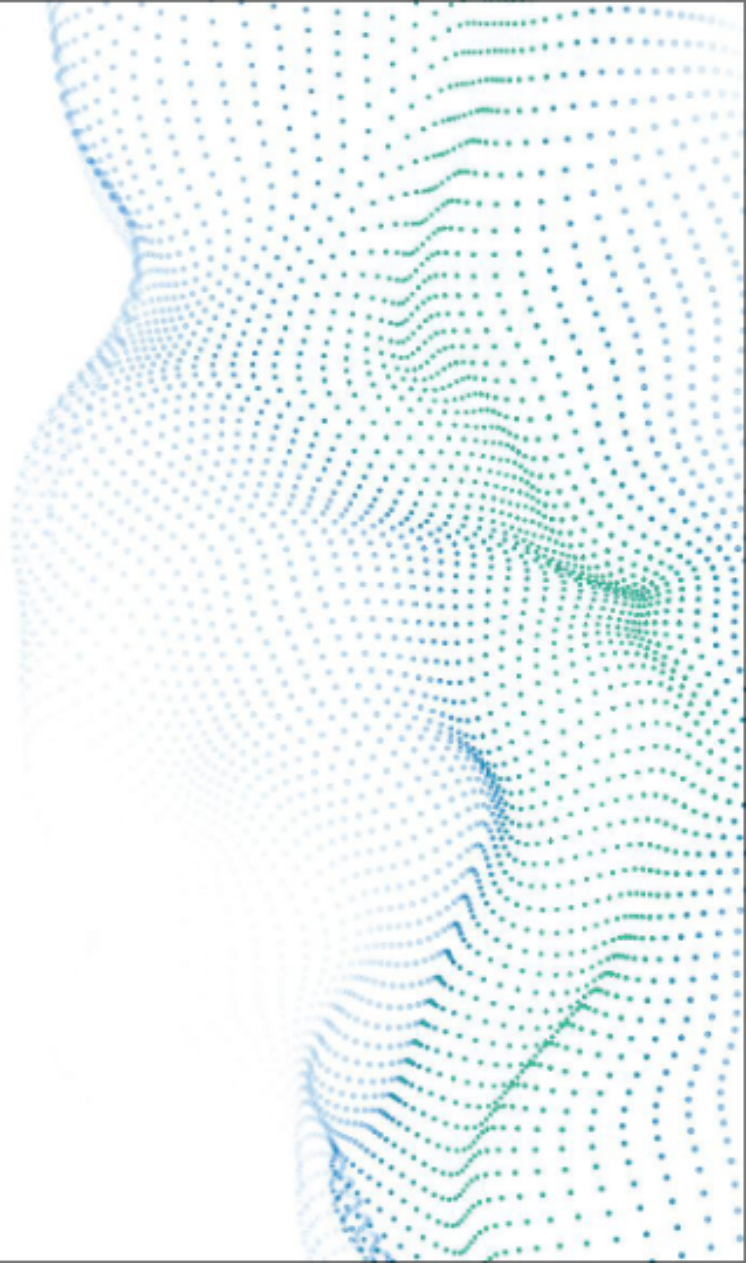
Spring Framework



Introduction:

Prior to the advent of Enterprise Java Beans (EJB), Java developers needed to use JavaBeans to create Web applications. Although JavaBeans helped in the development of user interface (UI) components, they were not able to provide services, such as transaction management and security, which were required for developing robust and secure enterprise applications. The advent of EJB was seen as a solution to this problem EJB extends the Java components, such as Web and enterprise components, and provides services that help in enterprise application development. However, developing an enterprise application with EJB was not easy, as the developer needed to perform various tasks, such as creating Home and Remote interfaces and implementing lifecycle callback methods which lead to the complexity of providing code for EJBs Due to this complication, developers started looking for an easier way to develop enterprise applications.

The Spring framework(which is commonly known as Spring) has emerged as a solution to all these complications 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. It is a lightweight application framework used for developing enterprise applications. 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. Spring framework is loosely coupled because of dependency Injection.

Features of the Spring Framework

The features of the Spring framework such as IoC, AOP, and transaction management, make it unique among the list of frameworks. Some of the most important features of the Spring framework are as follows:

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. This pattern acts as an alternative to the service locator pattern. The IoC container contains assembler code that handles the configuration management of application objects.
The Spring framework provides two packages, namely org.springframework.beans and org.springframework.context which helps in providing the functionality of the IoC container.

Data access framework:

Allows the developers to use persistence APIs, such as JDBC and Hibernate, for storing persistence data in database. It helps in solving various problems of the developer, such as how to interact with a database connection, how to make sure that the connection is closed, how to deal with exceptions, and how to implement transaction management It also enables the developers to easily write code to access the persistence data throughout the application.

Spring MVC framework:

Allows you to build Web applications based on MVC architecture. All the requests made by a user first go through the controller and are then dispatched to different views, that is, to different JSP pages or Servlets. The form handling and form validating features of the Spring MVC framework can be easily integrated with all popular view technologies such as ISP, Jasper Report, FreeMarker, and Velocity.

Transaction management:

Helps in handling transaction management of an application without affecting its code. This framework provides Java Transaction API (JTA) for global transactions managed by an application server and local transactions managed by using the JDBC Hibernate, Java Data Objects (JDO), or other data access APIs. It enables the developer to model a wide range of transactions on the basis of Spring's declarative and programmatic transaction management.

Spring Web Service:

Generates Web service endpoints and definitions based on Java classes, but it is difficult to manage them in an application. To solve this problem, Spring Web Service provides layered-based approaches that are separately managed by Extensible Markup Language (XML) parsing (the technique of reading and manipulating XML). Spring provides effective mapping for transmitting incoming XML message request to an object and the developer to easily distribute XML message (object) between two machines.

END MODULE-9 SPRING FRAMEWORK