**What is Frameworks?**

Framework is set of reusable software program that forms the basis for an application. Frameworks help the programmers to build the application quickly. Earlier it was very hard to develop complex web applications. Now it’s very easy to develop such application using different kinds of frameworks such as Struts, Struts 2, Hibernate, JSF, Tapestry, JUnit, Log4j, Spring etc.

In Java technology there are so many frameworks that helps the programmers to build complex applications easily. You can choose these frameworks for building your applications.

**The Apache Struts web framework**

The Apache Struts web framework is a free open-source solution for creating Java web applications.

Web applications differ from conventional websites in that web applications can create a dynamic response. Many websites deliver only static pages. A web application can interact with databases and business logic engines to customize a response.

Web applications based on Java Server Pages sometimes commingle database code, page design code, and control flow code. In practice, we find that unless these concerns are separated, larger applications become difficult to maintain.

One way to separate concerns in a software application is to use a Model-View-Controller (MVC) architecture. The *Model* represents the business or database code, the *View* represents the page design code, and the *Controller* represents the navigational code. The Struts framework is designed to help developers create web applications that utilize a MVC architecture.

The framework provides three key components:

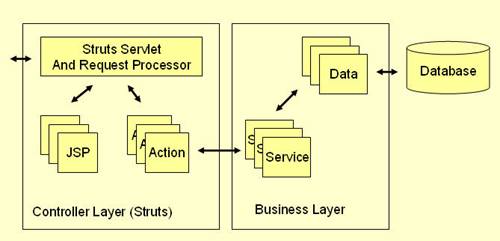
* A "request" handler provided by the application developer that is mapped to a standard URI.
* A "response" handler that transfers control to another resource which completes the response.
* A tag library that helps developers create interactive form-based applications with server pages.

The Struts Framework is a standard for developing well-architected Web applications. It has the following features:

* Open source
* Based on the Model-View-Controller (MVC) design paradigm, distinctly separating all three levels:
  + **Model:** application state
  + **View:** presentation of data (JSP, HTML)
  + **Controller:** routing of the application flow
* Implements the JSP Model 2 Architecture
* Stores application routing information and request mapping in a single core file, struts-config.xml

The Struts Framework, itself, only fills in the View and Controller layers. The Model layer is left to the developer.

**Architecture Overview**



All incoming requests are intercepted by the Struts servlet controller. The Struts Configuration file struts-config.xml is used by the controller to determine the routing of the flow. This flows consists of an alternation between two transitions:

# Disadvantages of servlet?

There are some disadvantages of writing pure servlet in view of developer, these are some of are listed below.

Servlet is a mixture of java skills and web related HTML skills, because you have to write the business logic in java and for presentation you should the HTML, so the role based development is missing in pure servlet. The developer who is writing servlet should know java and HTML both.

If your application is build on using servlet technology, it is very difficult for enhancement and bug fixing.

The servlet technology require more steps to develop, servlet require too long time for development.

To overcome these above disadvantages java people introduce JSP technology. Actually the JSP is finally a Servlet. Using JSP you can achieve the role based development.

You can write any file with .jsp extension and keep it inside you application root directory and you can access that JSP from browser directly. You no need to register it in deployment descriptor web.xml, you no need to compile it though you no need to put it on classes folder of WEB-INF directory of your application.

To explain all examples of jsp we will use tomcat as web server.

Once you create the jsp file and put it into your application, than start tomcat, the tomcat creates a corresponding servlet java file of that jsp file compile it and run it when jsp request. You can find the generated Servlet java and file and compiled class file into tomcat work directory. The name of generated servlet will and your jsp name followed by jsp, for example if your jsp file name is helloWorld.jsp, the generated Servlet java file name will be helloWorld\_jsp.java.

You may have faced some issue first time in tomcat for compile the generate servlet. Because the tomcat does not have compiler by default, you have to keep the tool.jar of your JDK, which you can find in lib folder of your JDK, copy this tool.jar and keep it in the tomcat's common\lib folder

**Advantages of Struts Framework:**

##### We have number of benefits in using struts framework for developing web applications in java, before we look into the benefits of struts you need to remember that all the benefits of the MVC approach and Model 2 development model are available when using struts.

##### For example MVC model 2 provides a clear separation between the presentation logic from the request handling code(using Java Servlets, Plain Java Classes and JSP Scriplet etc) is also one of the benefits of Struts. Web application developed using Struts framework are easier to develop understand and maintain.

##### 1) Struts is open source , which allows us to download the source code and modify that code according to our requirement that supports user extensions

##### 2) The other important advantage of struts being open source is that its code is exposed to the developers and this enable fast development and maintence cycle, as a result we can expect fast response from struts team in fixing the bugs and response to the new requirements in the market.

##### 3) Struts is implemented using the standard java technologies like JavaServlets and JSP and another open libraries like commons bean library of apache , thus we are allowed to host struts project on any java enterprise web server by just including the struts jar files into the lib on our web application/project.

##### 4) Reduces the development time and cost in developing the controller and view parts of web application developed following MVC architecture and model 2 development model.

##### 5) Struts uses XML bsed configuration files to collect the configuration details from the application provider.

##### 6) Centralized XML file-based configuration: This allows us to configure most of the application properties in XML files rather then hard coding into java classes, which means that many changes can be without modifying or recompiling Java code , and the changes can be made modifying a single file.

##### 7) This lets the Java developers focus on implementing the business logic with out needing to know about the overall system layout.

**Hibernate advantages:**

In this section we will discuss Hibernate advantages and disadvantages, and see why we should or shouldn't use Hibernate. Hibernate is an ORM tool that automatically maps your domain object to the relational database. It helps to developers to quickly write database access program and become productive. But we will see the advantages and disadvantages of Hibernate ORM tool.

Java developers of all over the world is mostly using Hibernate or JPA (with Hibernate) for developing enterprise web applications. There are lots of material and tutorials on Hibernate on the web. As a developer if you are stuck some where in your programming, you can easily find the solution of your problem on the web. You can even download and learn Hibernate easily from our [**Hibernate Tutorial**](http://www.roseindia.net/hibernate/) section.

**Let's discuss the advantages and disadvantages of Hibernate**

**Advantages of Hibernate**

* **Hibernate is better than plain JDBC:** You can use Hibernate which generates the SQL on the fly and then automatically executes the necessary SQL statements. This saves a lot of development and debugging time of the developer. Writing JDBC statement, setting the parameters, executing query and processing the result by hand is lot of work. Hibernate will save all tedious efforts.
* **Mapping of Domain object to relational database:** Hibernate maps your domain object with the relational database. Now you can concentrate on your business logic rather than managing the data in database.
* **Layered architecture:** Hibernate is layers architecture and you can use the components as per your application need.
* **JPA Provider:** Hibernate can work as JPA provider in JPA based applications.
* **Standard ORM:** Hibernate is standard ORM solutions and it also supports JPA.
* **Database Independent:** Hibernate is database independent and you can use any database of your choice.
* Caching Framework: There are many caching framework that works with Hibernate. You can use any one in your application to improve the performance of your application.