# Event Listeners in Servlet Programming

**Event::** An action performed on the object/component is called event.

**Event Handling::** Executing logic when event is raised is called event handling.

**Event Listener::** Event Listener provides event handling methods to place event handling logic's.

For even handling we need 4 details:

1. Source object/Component:: Like button component on which even is raised.
2. Event Class:: Like Action event when we click on button ActionEvent class object will be created representing the event raising.
3. Event Listener:: Like ActionListener(I) by implementing this interface on the class we can write event handling logic in the event handling method. ActionListener(I) interface gives *public void actionPerfromed()* as the even handling method.

In servlet programming we can perform event handling on Request, Response, ServletContex, HttpSession objects to keep track of when they are created or destroyed by servlet container. And according we can write event handling logic's.

Event handling on request object allows us to keep track of when request object is created and destroyed. Based on the difference between request object destruction time and request object creation time we can find out the request processing time I.e the time that is taken to process the request.

Event handling on ServletContex object allows us to keep track of when ServletContex object is created and destroyed. Based on the difference between ServletContex object destruction time and ServletContex object creation time we can find out how much time our web application is running mode without any problems. Moreover we can find out when the web application is deployed and undeployed (useful to check weather monitoring team is maintaing the website properly or not.

Event handling on HttpSession object allows us to keep track of when request object is created and destroyed. Based on the difference between HttpSession object destruction time and HttpSession object creation time we can find out session duration of a client or user. We can charge money from customer based on session duration while playing online commercial games.

**Details for Event Handling in Servlet Programming**::

|  |  |  |  |
| --- | --- | --- | --- |
| **Source Object** | **Event Class** | **Event Listener** | **Event Handling Methods** |
| ServletRequest/ HttpServlet Request | ServeltRequestEvent | ServletRequestListener | Void requestInitialized(ServletRequestEvent ser)  Void requestDestroyed(ServletRequestEvent ser) |
| Servlet Context | ServletContextEvent | ServletContextListener | Void contexInitialized(ServletContexEvent scv)  Void contextDestroyed(ServletContextDestroyed scd) |
| HttpSessionObject | HttpSessionEvent | HttpSessionListener | Void sessionCreated(HttpSessionEvent sce)  Void sessionDestroyed(HttpSessionEnent scd) |

**Event Listeners in Servlet Programming/ Servlet Listener::** These are given to perform event handling the web application and on various web components of the web application.

Every Servlet Listener class (the class that implements xxxListener(I)) must be configured either in web.xml file using ***<listener>, <listener-class>*** tags or using ***@WebListner*** annotation.

Servlet container creates objects in the following order during the deployment of the web application:

1. Listener Classes objects (if Confi)
2. ServletContext object
3. Filter Classes objects
4. FilterConfig objects
5. <load-on-startup> enable servelt class object.
6. ServletConfig objects for <load-on-startup> enable servelt class object.