

ICON OF JAVA

ADV. JAVA Servlets

11. Servlet Wrappers



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[ICON of JAVA]

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Servlet Wrappers

The main purpose of Servlet Wrappers in web applications is to simplify the customization of request and response objects.

In general in web application execution when we send a request from client to server for a particular servlet then container will pick up the request, identify the requested servlet, perform servlet life cycle stages like servlet loading, servlet instantiation, servlet initialization, request processing and servlet deinstantiation.

As part of request processing container has to access service(____) method, for this container has to prepare servlet request and servlet response objects.

As part of application requirement we need to use our own request and response objects in the servlets instead of using container provided request and response objects.

To achieve this requirement we have to perform the customization of request and response objects.

In general Servlet is an abstraction i.e. collection of interfaces provided by Sun Micro Systems and whose implementations could be provided by all the server vendors.

Similarly if we want to customize request and response objects we have to implement ServletRequest and ServletResponse interfaces by taking implementation classes.

```
public class MyRequest implements ServletRequest
{
    -----
    ----- }

public class MyResponse implements ServletResponse
{
    -----
    ----- }
```

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To perform request and response objects customization if we use the above approach then we must implement directly `ServletRequest` and `ServletResponse` interfaces i.e. we must provide implementation for each and every method declared in `ServletRequest` and `ServletResponse` interfaces. This approach will increase burden to the developers.

To overcome the above problem Servlet API has provided an alternative in the form of a set of predefined classes called **Wrapper classes**.

All the Servlet Wrapper classes are direct implementation classes to the respective `ServletRequest` and `ServletResponse` and so on.

Servlet Wrapper classes is an idea provided by a design pattern called as **Adapter Design Pattern**.

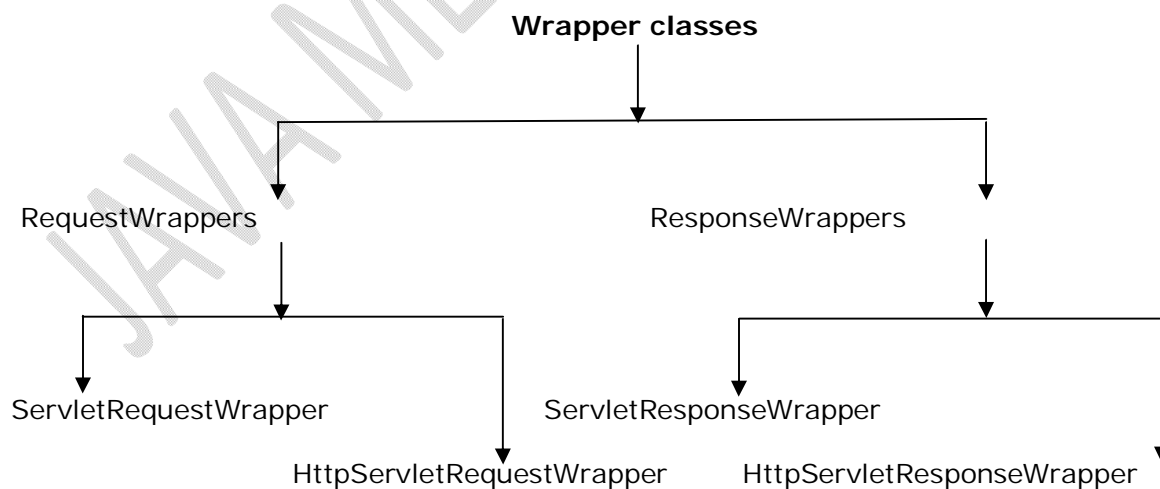
If we want to prepare our own request and response classes we have to extend the respective Servlet Wrapper class and override required method.

```
public class MyClass extends Xxxxx
{
    -----
    ----- }

```

Where Xxxxx may be a particular Wrapper class.

There are 2 types of Wrapper classes in Servlet API.



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To customize the request and response objects we have to use a Filter in order to prepare our own request and response objects and to pass our own request and response objects to the service(_____) method.

requestwrapperapp:-

registrationform.html:-

```
<html>
<body bgcolor = "lightgreen">
  <center><h1><u>Registration Form</u></h1></center>
  <b><fontsize = "7">
    <form method = "get" action = ". /reg">
      <pre>
        Name    <input type = "text" name = "uname" />

        Password <input type = "password" name = "upwd" />

        Email    <input type = "text" name = "email" /> @dss.com

        Mobile   <input type = "text" name = "mobile" />

        <input type = "submit" value = "REGISTRATION" />
      </pre>
    </form>
  </font></b>
</body>
</html>
```

web.xml:-

```
<web-app>
<display-name>requestwrapperapp</display-name>
<welcome-file-list>
<welcome-file>registrationform.html</welcome-file>
</welcome-file-list>

<filter>
<filter-name>MyFilter</filter-name>
<filter-class>MyFilter</filter-class>
</filter>
<filter-mapping>
<filter-name>MyFilter</filter-name>
<url-pattern>/reg</url-pattern>
</filter-mapping>
<servlet>
<servlet-name>MyServlet</servlet-name>
<servlet-class>MyServlet</servlet-class>
</servlet>
<servlet-mapping>
<servlet-name>MyServlet</servlet-name>
```

```
<url-pattern>/reg</url-pattern>
</servlet-mapping>
</web-app>
```

MyFilter.java:-

```
import java.io.IOException;
import javax.servlet.Filter;
import javax.servlet.FilterChain;
import javax.servlet.FilterConfig;
import javax.servlet.ServletException;
import javax.servlet.ServletRequest;
import javax.servlet.ServletResponse;

public class MyFilter implements Filter {

    public void destroy() {

    }

    public void doFilter(ServletRequest request, ServletResponse response, FilterChain
chain) throws IOException, ServletException {

        MyRequest myRequest=new MyRequest(request);
        chain.doFilter(myRequest, response);
    }

    public void init(FilterConfig fConfig) throws ServletException {

    }

}
```

MyRequest.java:-

```
import javax.servlet.ServletRequest;
import javax.servlet.ServletRequestWrapper;

public class MyRequest extends ServletRequestWrapper {

    ServletRequest request;

    public MyRequest(ServletRequest request){
        super(request);
        this.request=request;
    }

    public String getParameter(String name){
        String value=request.getParameter(name);
        if(name.equals("email")){
            if(!value.endsWith("@dss.com")){
                value=value+"@dss.com";
            }
        }
    }

}
```



```
        return value;
    }
}

MyServlet.java:-

import java.io.IOException;
import java.io.PrintWriter;

import javax.servlet.GenericServlet;
import javax.servlet.ServletException;
import javax.servlet.ServletRequest;
import javax.servlet.ServletResponse;

public class MyServlet extends GenericServlet {

    public void service(ServletRequest request, ServletResponse response)throws
    ServletException,IOException{

        response.setContentType("text/html");
        PrintWriter out=response.getWriter();
        String uname=request.getParameter("uname");
        String upwd=request.getParameter("upwd");
        String email=request.getParameter("email");
        String mobile=request.getParameter("mobile");
        out.println("<html><body bgcolor='lightyellow'>");
        out.println("<b><font size='7'><br><br>");
        out.println("Name....."+uname+"<br><br>");
        out.println("Password....."+upwd+"<br><br>");
        out.println("Email....."+email+"<br><br>");
        out.println("Mobile....."+mobile);
        out.println("</font></b></body></html>");

    }
}
```

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responsewrapperapp1:-

web.xml:-

```
<web-app>
<display-name>responsewrapperapp1</display-name>
<filter>
<filter-name>MyFilter</filter-name>
<filter-class>MyFilter</filter-class>
</filter>
<filter-mapping>
<filter-name>MyFilter</filter-name>
<url-pattern>/wrapper</url-pattern>
</filter-mapping>
<servlet>
<servlet-name>MyServlet</servlet-name>
<servlet-class>MyServlet</servlet-class>
</servlet>
<servlet-mapping>
<servlet-name>MyServlet</servlet-name>
<url-pattern>/wrapper</url-pattern>
</servlet-mapping>
</web-app>
```

MyFilter.java:-

```
import java.io.IOException;
import javax.servlet.Filter;
import javax.servlet.FilterChain;
import javax.servlet.FilterConfig;
import javax.servlet.ServletException;
import javax.servlet.ServletRequest;
import javax.servlet.ServletResponse;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

public class MyFilter implements Filter {

    public void init(FilterConfig fConfig) throws ServletException {}

    public void doFilter(ServletRequest request, ServletResponse response, FilterChain chain)
    throws IOException, ServletException {

        HttpServletRequest httpRequest=(HttpServletRequest)request;
        HttpServletResponse httpResponse=(HttpServletResponse)response;
        MyResponse myResponse=new MyResponse(httpResponse);
        chain.doFilter(httpRequest, myResponse);
    }

    public void destroy() { }
```


MyResponse.java:-

```
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpServletResponseWrapper;

public class MyResponse extends HttpServletResponseWrapper {

    HttpServletResponse httpResponse;

    public MyResponse(HttpServletResponse httpResponse){
        super(httpResponse);
        this.httpResponse=httpResponse;
    }

    public void setContentType(String type){
        if(!type.equals("text/html")){
            httpResponse.setContentType("text/html");
        }
    }
}
```

MyServlet.java:-

```
import java.io.IOException;
import java.io.PrintWriter;

import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

public class MyServlet extends HttpServlet {

    protected void doGet(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
        response.setContentType("img/jpg");
        PrintWriter out=response.getWriter();
        out.println("<h1>Hello..... from MyServlet</h1>");
    }
}
```



responsewrapperapp2:-

reverseform.html:-

```
<html>
<body bgcolor="lightgreen">
  <form method="get" action="/wrapper">
    <center><b><font size="6"><br><br>
      Enter Text : <input type="text" name="text"/>
      <br><br>
      <input type="submit" value="Reverse"/>
    </font></b></center>
  </form>
</body>
</html>
```

web.xml:-

```
<web-app>
<display-name>responsewrapperapp2</display-name>
<welcome-file-list>
<welcome-file>reverseform.html</welcome-file>
</welcome-file-list>
<filter>
<filter-name>MyFilter</filter-name>
<filter-class>MyFilter</filter-class>
</filter>
<filter-mapping>
<filter-name>MyFilter</filter-name>
<url-pattern>/wrapper</url-pattern>
</filter-mapping>
<servlet>
<servlet-name>MyServlet</servlet-name>
<servlet-class>MyServlet</servlet-class>
</servlet>
<servlet-mapping>
<servlet-name>MyServlet</servlet-name>
<url-pattern>/wrapper</url-pattern>
</servlet-mapping>
</web-app>
```

MyFilter.java:-

```
import java.io.IOException;
import javax.servlet.Filter;
import javax.servlet.FilterChain;
import javax.servlet.FilterConfig;
import javax.servlet.ServletException;
import javax.servlet.ServletRequest;
import javax.servlet.ServletResponse;
import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

public class MyFilter implements Filter {

    public MyFilter() {

    }

    public void init(FilterConfig fConfig) throws ServletException {

    }

    public void destroy() {

    }

    public void doFilter(ServletRequest request, ServletResponse response, FilterChain
chain) throws IOException, ServletException {
        HttpServletRequest httpRequest=(HttpServletRequest)request;
        HttpServletResponse httpResponse=(HttpServletResponse)response;
        MyResponse myResponse=new MyResponse(httpResponse);
        chain.doFilter(httpRequest, myResponse);
    }

}
```

MyResponse.java:-

```
import java.io.IOException;
import java.io.PrintWriter;

import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpServletResponseWrapper;

public class MyResponse extends HttpServletResponseWrapper{
    HttpServletResponse httpServletResponse;
    public MyResponse(HttpServletResponse httpServletResponse){
        super(httpServletResponse);
    }
}
```

```

        this.httpServletResponse=httpServletResponse;
    }
    public PrintWriter getWriter() throws IOException{
        PrintWriter out=httpServletResponse.getWriter();
        MyWriter myWriter=new MyWriter(out);
        return myWriter;
    }
}

```

MyWriter.java:-

```

import java.io.PrintWriter;

public class MyWriter extends PrintWriter {
    PrintWriter out;
    public MyWriter(PrintWriter out){
        super(out);
        this.out=out;
    }
    public void println(String data){
        if(!data.startsWith("<")){
            StringBuffer sb=new StringBuffer(data);
            out.println(sb.reverse());
        } else{
            out.println(data);
        }
    }
}

```

MyServlet.java:-

```

import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

public class MyServlet extends HttpServlet {

    protected void doGet(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
        response.setContentType("text/html");
        PrintWriter out=response.getWriter();
        String data=request.getParameter("text");
        out.println("<html><body bgcolor='lightblue'>");
        out.println("<center><b><font size='7' color='red'>");
        out.println("<br><br>");
        out.println(data);
        out.println("</font></b></center></body></html>");
    }
}

```


}

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