WEB PROGRAMMING

Explain WML Navigation Elements with the help of WML programs.

WML ke Navigation Elements

1. <a>
   Wml Element h
   Hyperlink banata hai aur dusre page par navigate karta h
   Use in wml and html for making website
2. <go>
   Wml Element h
   *Data submit karta h ya kisi URL par navigate karta h
   Use in wml and html for making website
3. <prev>
   Wml Element h
   Pichhle card par waapas jaane k liye hota h
   Use in wml and html for making website
4. <refresh>
   wml Element h
   Current card ko reload karta h
   Use in wml and html for making website
5. <card> aur id Attribute
   Wml Element h
   *Ek card ek page ki tarah hota hai aur id ki help se internal navigation karta hai.
   Use in wml and html for making website

Code:

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.1//EN"
  "http://www.wapforum.org/DTD/wml_1.1.xml">
<wml>
 <card id="main" title="Main Menu">
  <p></p>
  <p>
   <a href="link">click</a><br/>
  </p>
 </card>
 <card id="page2" title="Page 2">
  <p></p>
  <p>
   <a href="link">click</a>
  </p>
 </card>
</wml>
```

Write a HTML program using <details> and <summary> tag. Also explain both the tags.

<details>

Html ka element h
Detail tag summary tag ke bhar use hota h
Detail tag Summary tag ki informatioin show karta h
Use in html or wml to make webpages or webapps

<summary>

Html ka element h
Summary tag detail tag k andar use hota h
Summary tag click karne par andar ka content khulta ya band hota h
Use in html or wml to make webpages or webapps

code:

```
<!DOCTYPE html>
<html>
<head>
   <title>Details aur Summary Example</title>
</head>
<body>
   <h1>Details aur Summary Tags</h1>
   <details>
      <summary>HTML kya hai?</summary>
      <p>HTML ek language hai jo web pages banane ke liye use hoti hai.</p>
   </details>
 </body>
</html>
```

What is safe method ? Is Get method a safe method ? Give reason in support of your answer.

Safe method kya hai?

1. Safe method server ki koi information change nahi karta h
2. Safe method server par data show, read, delete, change karta h
3. Safe method `GET` method. Hota h
4. Safe method use in web programming to secure data on server

GET method safe hai? Kyun?

get method server se data leta h aur user ko dikhata hai,
agar server galat setup ho, to kabhi kabhi `GET` se galat kaam ho sakta h

Write a JSP program which will demonstrate the use of <jsp:forward> and <jsp:param> actions.

Jsp forward

1. Jsp forward JSP ka ek tag h
2. Jsp forward Bina browser ko notify kiye request ko ek page se doosre page par bhejta hai,
3. Jsp forward jsp param k bahar use hota h
4. Jsp forward use in web programming for making java server page

*** CODE :**

```
<!DOCTYPE html>
<html>
<head>
   <title>JSP</title>
</head>
<body>
   <h1>JSP FORWARD</h1>
   <p></p>
   <jsp:forward page="destination.jsp">
      <jsp:param name="name" value="Alice" />
      <jsp:param name="city" value="Wonderland" />
   </jsp:forward>
</body>
</html>
```

Jsp param

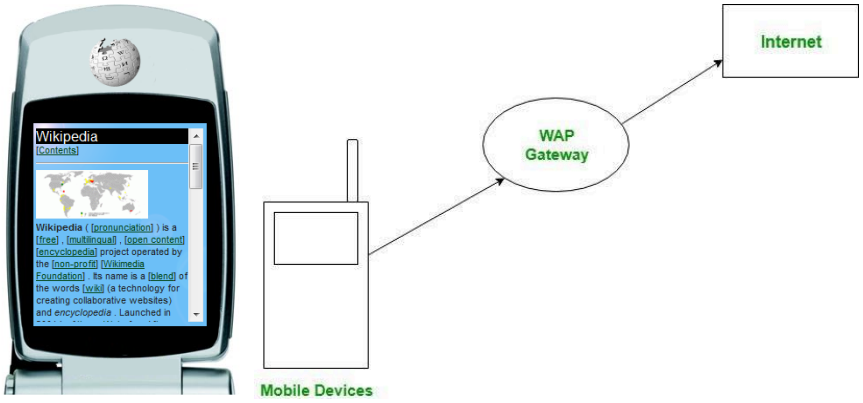
1. Jsp param JSP ka ek tag h
2. Jsp param me web page k data ko ek part se dusre part tak bhejta hai.
3. Jsp param `<jsp:include>` ya `<jsp:forward>`) tags k andar use hota h
4. Jsp param use in web programming for making java server page

CODE :

```
<!DOCTYPE html>
<html>
<head>
   <title>JSP</title>
</head>
<body>
   <h1>JSP PARAM</h1>
   <p></p>
   <ul>
      <li>Name: <%= request.getParameter("name") %></li>
      <li>City: <%= request.getParameter("city") %></li>
   </ul>
</body>
</html>
```

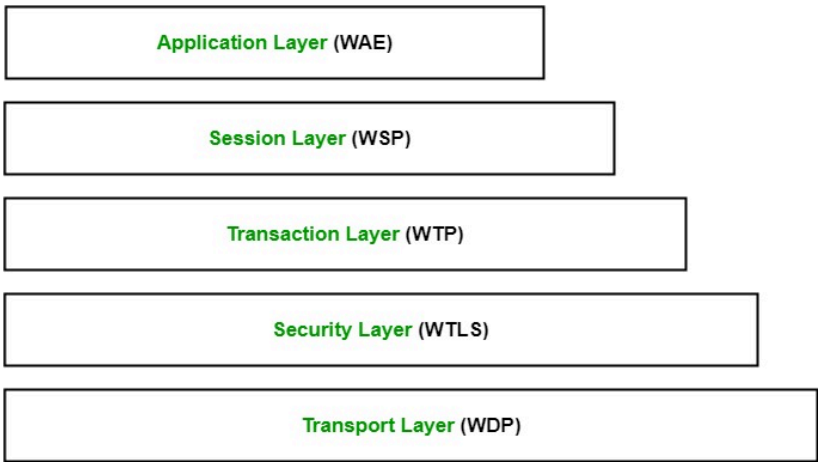
WAP

1. Wireless Application Protocol
2. Wap cellphone par internet aur web services ko chalata h
3. WAP Keypad mobile me use hota tha jinke screen chote the aur power kam lete the
4. WAP me WML (Wireless Markup Language) ka use hota h
5. WAP secure transactions ke liye WTLS (Wireless Transport Layer Security ka use karta hai safe shopping aur banking k liye
6. Ex. purane mobile phones par internet ke bina balance check karna ya chhoti banking services use karna



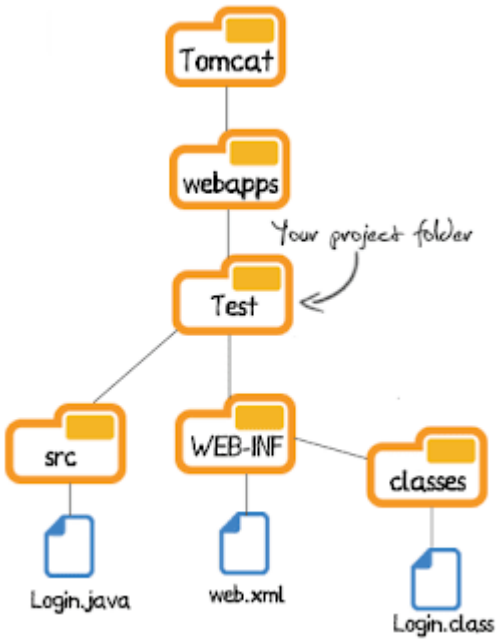
WAP Protocol stack

1. (Wireless Application Protocol) stack ek framework hai
2. Wap wireless devices, jaise mobile phones, internet aur web applications k saath connection banata h aur layers provide karta hai.
3. Layers - (application, session, transaction, security, aur transport)
4. Wap use in web programming to connect web application
5. Ex. user mobile me browser ke through web pages access karta h



*Deployment descriptor

1. Dd ek configuration file hota hai
2. Dd web application ke deployment settings aur resources ko define karta hai
3. Dd me web application k database connections, security settings, aur application environment. ko Desbribe kiya jata h
4. Dd Use in web programming for web application settings



XML

1. (Extensible Markup Language)
2. Xml ek markup language hai jo data ko structure format mein store aur transport karta h
3. Xml me tags ka use hota h jese <tagname>content</tagname>
4. XML mein khud ke tags create kar sakte h
5. XML har operating system ya programming language ke saath compatible hai
6. Ex. Xml use in making android apps or store contact list in xml format

```
<?xml version="1.0" encoding="UTF-8"?>
- <note>
    <to>Tove</to>
    <from>Jani</from>
    <heading>Reminder</heading>
    <body>Don't forget me this weekend!</body>
  </note>
```

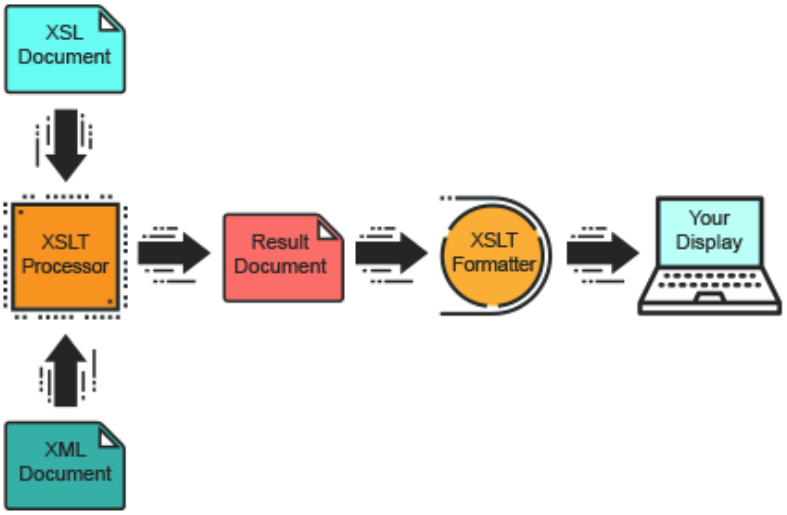
ADVANTAGES

1. Xml Data store karta h aur transport karta h
2. Xml data ko alag dikhata h
3. Xml me Custom tags bana sakte hain
4. Xml Data check karne ki facility deta h
5. Xml Complex data handle karta h
6. Xml Har operating system k saath kaam karta h
7. Xml har programming language ke sath milke kaam karta hai

XSLT

1. Xslt (Extensible Stylesheet Language Transformations) ek language hai
2. Xslt XML data ko doosre format me change karta h
3. Xslt XML ko HTML ya plain text, mein transform karta h
4. Ex. ek website k feature ko XML format mein store karti hai

aur XSLT ka use karkar website ko user-friendly aur HTML page mein convert kiya jata h



JSP Scriptlets

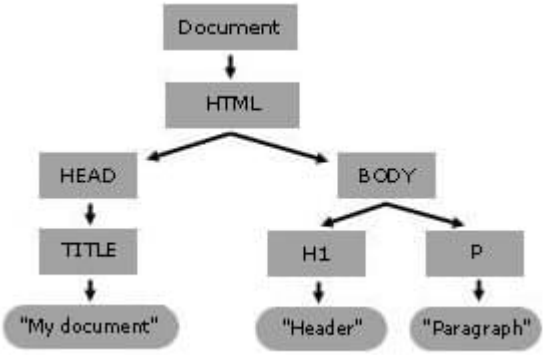
1. ek page par Java aur HTML code ek saath directly likha hota hai
2. JSP Scriptlet server par execute hota h

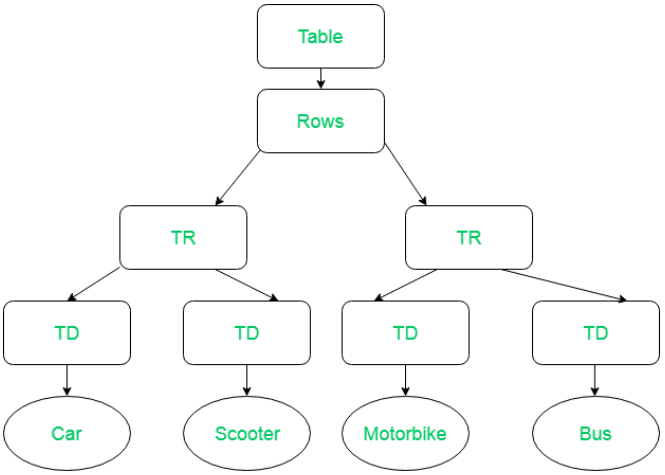
HTML elements which are used in form design.

1. <form>
   Html ka element h foam ko design karne k liye
   jisme user input data collect hota hai.
2. <input>
   Html ka element h foam ko design karne k liye
   Isse text fields, checkboxes, radio buttons jaise controls create kiye jaate hain.
3. <label>
   Html ka element h foam ko design karne k liye
   Isse form elements ke liye labels define kiye jaate h
4. <select>
   Html ka element h foam ko design karne k liye
   Isse dropdown lists create kiye jaate hain
   jisme users options select kar sakte hain.
5. <button>
   Html ka element h foam ko design karne k liye
   Isse clickable buttons create kiye jaate hain
6. <textarea>
   Html ka element h foam ko design karne k liye
   Isse multiple lines of text input kiya jaata hai,
   jaise comments

Dom

1. (Document Object Model)
2. Dom HTML aur XML documents ko tree structure mein represent karta hai
3. Dom web page k elements ko access aur modify karta h
4. DOM web page ke elements ko automatically change aur update karta hain
5. DOM platform-independent hota h
6. Dom alag-alag platforms aur programming languages mein use hota h
7. Ex. Jab webpage par form bharte ho aur kuch likhne se dusri cheez turant badal jaye, jaise dropdown menu ya message



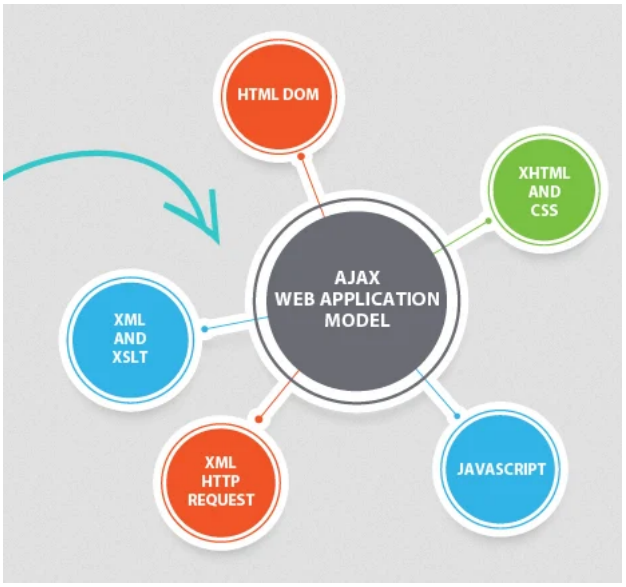


AJAX

1. Asynchronous JavaScript and XML
2. AJAX ek web development software hai
3. AJAX web pages ka page bina refresh kiye webpage k content ko update or show karta h
4. Ajax web page se server ko data bhejta h aur receive karta h
5. Ajax me web page dynamic hota h jisse webpage ko change aur update kar sakte h
6. Ajax websites ko zyada fast banata h aur Ajax websites ko interactive banata h
7. Ex. Social media par "like" button dabane par webpage bina reload kiye like count hota h
8. **Code**

```
<!DOCTYPE html>
<html>
<body>
<div id="demo">
```

```
  <h2>AJAX<h2>
  <button type="button" onclick="loadDoc()">Change Content</button>
</div>
</body>
</html>
```



Ajax vs javascript

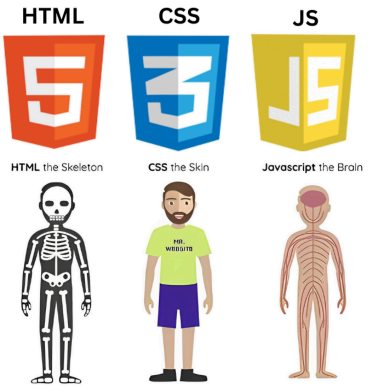
1. AJAX web pages ko bina load kiye update karta h
2. JavaScript web pages ko dynamic aur attractive banata h

CSS (Cascading Style Sheets)

1. Css ek web development programming language hai
2. Css web pages ko design aur appearance karta h
3. Css web pages ko style karta h Aur colors, fonts, aur layout set karte h
4. Css me "cascade" ka matlab hai multiple stylesheets aur rules ek saath apply ho sakte hain
5. Css file ka extension .css hota hai.
6. Ex. CSS se websites par text aur images ke colors, fonts, aur layouts ko style aur organize karta h, jisse website visually appealing aur user-friendly dikhti h

Embedded

1. CSS rules ko HTML file ke <head> section me <style> tag ke andar likhte h
2. Ya CSS ki separate file bana ke isse HTML file se link karte h



Advantages

1. CSS se content aur design alag hote hain
2. Css me Page fast load hota hai
3. Css responsive aur consistent design banata h
4. Css ki coding alag file me kar sakte h aur baad me html se link kar sakte h
5. External style sheet ko HTML document se link karne ke liye <link> tag use hota hai jo HTML file ke <head> section mein use hota hai

code:

```
<!DOCTYPE html>
<html>
<head>
   <link rel="stylesheet" type="text/css" href="styles.css">
</head>
<body>
   <h1>Hello, World!</h1>
   <p>Yeh ek sample paragraph hai.</p>
</body>
</html>
```

Page ka background color red karna:

```
body {
   background-color: red;
}
```

Paragraph ka font size 17 points karna:

```
p {
   font-size: 17pt;
}
```

Paragraph ka color change karna:

```
p {
   color: blue;
}
```

DTD

1. (Document Type Definition)
2. Dtd XML document ka structure define karta h
3. DTD document ko check karta h
4. DTD ko document ke andar likha jata h
5. Dtd 2 types k hote h (internal DTD) aur (external DTD)

6. Ex. ek webpage ka structure define karna jismein headings, paragraphs, aur images ko arrange aur use karna

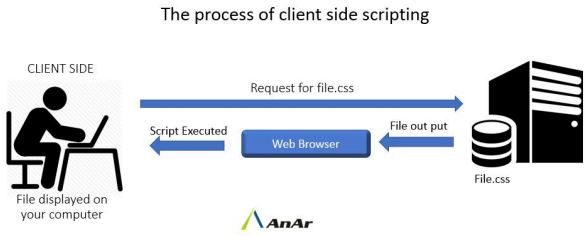
```
<!ELEMENT employees (employee*)>
<!ELEMENT employee (name, department, jobtitle, salary)>
<!ATTLIST employee id ID #REQUIRED>
<!ELEMENT name (#PCDATA)>
<!ELEMENT department (#PCDATA)>
<!ELEMENT jobtitle (#PCDATA)>
<!ELEMENT salary (#PCDATA)>
```

Server-side scripting (backend coding)

1. Sss ek programming hoti h, ek web development technique H
2. sss server par code execute karta hai
3. Sss client ko dynamic web pages ya content deliver karta h
4. Sss me scripts server par chalte h, scripts - PHP, Python, Ruby, etc
5. Sss me Security hoti h
6. Ex. jaise ki forms submit karne par data ko process karna databases se data retrieve karna

Client-side scripting (frontend coding)

1. Css ek programming hoti hai ek web development technique H
2. Css web browser par code execute hota hai
3. Css client ko interactive web page banake deta h
4. Css me scripts browser par chalte hain, scripts - html, css, JavaScript
5. Css me **Security** hoti h
6. Ex. Websites par search karke result dekhna ya button dabakar color change karna

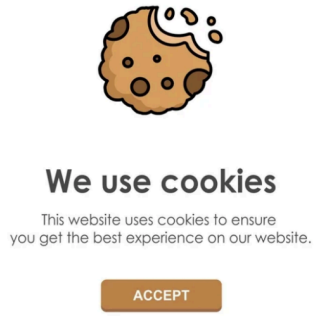


Difference

Sss ka use server par code execute karne k liye jisse webpage ko dynamic banate h
Css ka use browser par code execute karne k liye jisse webpage ko interactive banate h

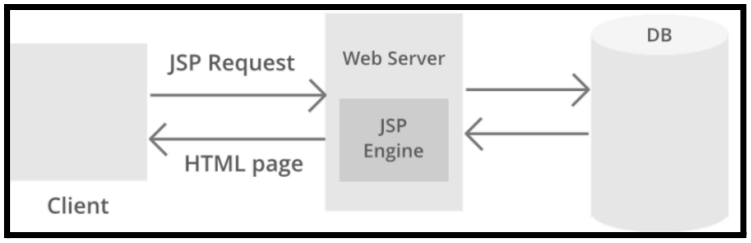
Cookies

1. Cookies website me ek chhoti text file hoti hai
2. Cookies website par user ki information store karti h
3. Cookies User ka browsing data ya activity ko track karti h
4. cookies secaure nhi hoti h
5. Cookies Ek session mein thode time k liye hoti h
6. Ex. website par user ka data lene k liye cookie use hoti h jisse aapki permission li jati h



JSP java server page

1. JSP Java aur html code me likha hota h
2. Jsp dynamic web page banata h jisse server par run karte h,
3. Jsp ek server-side technology hai
4. JSP mein reusable components aur custom tags ka istemal hota h web applications ko design karne k liye

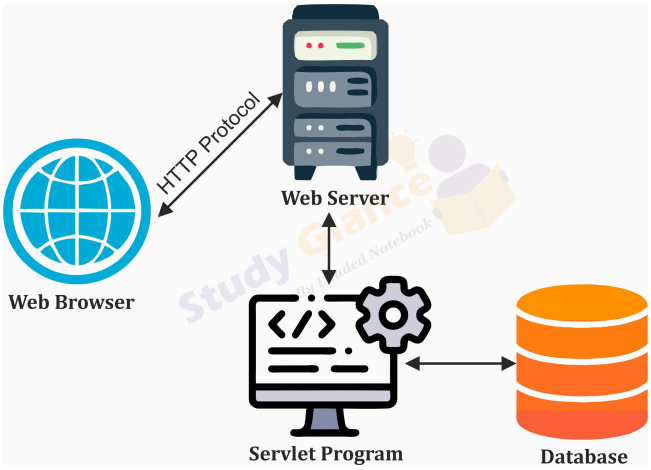


List the advantages of JSP over Servlet.

JSP

Servlet

1. Servlet ek Java program hai
2. Servlet web server par run hota h
3. Servlet HTTP request ko process karta hai
4. Servlet dynamic web page banata hai



JSP advantages

1. **Asaani se Use:**
   JSP mein HTML aur Java ko ek saath likhna asaan hota hai Jo simple web pages banata h

2. **Built-in Objects**: JSP mein kuch pre-defined objects hote hain jaise `request`, `response`, `session`, jo kaam ko simple banate hain.
3. **Custom Tags aur Expression Language**: JSP mein custom tags aur expression language ka use hota h jisse code clean aur samajhne mein asaan hota hai
4. **Automatic Compilation**: JSP pages pehli baar use hone par automatically compile ho jaate hain, manual compile karne ki zarurat nahi.
5. **Jaldi Development**: HTML ke andar directly Java likh sakte hain aur JSP tags use karke jaldi web applications bana sakte hain
6. **Simple Data Access**: JSP database me data ko access aur display karna asaan hota h

Wml

1. WML (Wireless Markup Language) ek markup language hai
2. wml chote mobile ya wireless devices jinke screen chote h unke web pages ko design aur display karta h
3. Wml mobile k web pages jaldi load karta h
4. Wml se mobile ko use karna easy hota hai
5. WML (WAP) ke saath milke kaam karta h
6. Ex. mobile phones par website jo text aur images ko display hota h jaise kisi news website ka mobile version.

WML ELEMENTS

1. WML mobile device पर webpage dikhata h

WML Tables

1. WML tables me data को rows और columns में organize karta h
2. Wml table me `<table>`, `<tr>` (table row), और `<td>` (table cell) elements ka use hota h

Example:

```
<wml>
```

```
<card id="card1" title="WML Table Example">
  <p>
    <table columns="2">
      <tr>
        <td>Name</td>
        <td>Age</td>
      </tr>
      <tr>
        <td>John Doe</td>
        <td>30</td>
      </tr>
      <tr>
        <td>Jane Smith</td>
        <td>25</td>
      </tr>
    </table>
  </p>
 </card>
</wml>
```

<anchor>` Element

1. WML mein `<anchor>` element hyperlinks banata h
2. Yeh HTML ke `<a>` tag ki tarah hota hai
3. pehla card ek link contain karta hai jo doosre card par navigate karta hai.


```
<wml>
  <card id="card1" title="Anchor Example">
    <p>
      <a href="#card2">Go to Card 2</a>
    </p>
  </card>
</wml>
```

<optgroup>

1. <optgroup> Wml mein Ek html element h
2. <optgroup> options ko ek group mein organize karta hai.
3. <optgroup> `<select>` element ke andar use hota hai jo options ko groups mein organize karta h

Code :

```
<select>
  <optgroup label="Fruits">
    <option>Apple</option>
    <option>Orange</option>
    <option>Banana</option>
  </optgroup>
</select>
```

<setvar>

1. WML mein ek html element hai
2. <setvar> jo variable ko set karta h
   <setvar name="username" value="John Doe" />

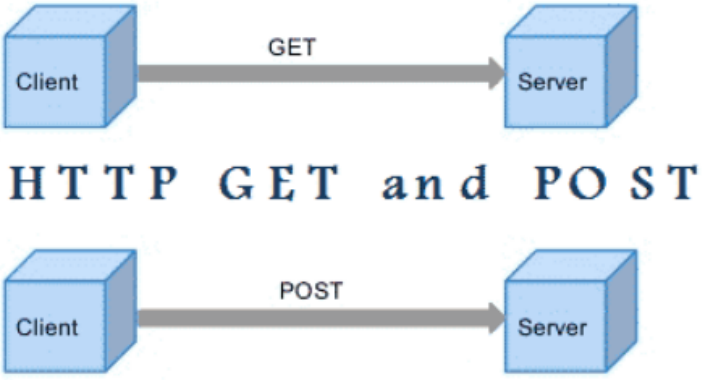
Get

GET aur POST HTTP request bhejte H aur data ko receive karte hain

1. Get server se data mangta hai
2. Get Limited data bhejta hai kyunki data ko header mein bheja jata hai
3. Yah secure nahi hota kyunki data URL mein exposed ho jata hai
4. Iski request bookmarked hoti hai
5. Get ki request jyada efficient hoti hai
6. Get post se jyada use Kiya jata hota hai

Post

1. Jo server ko data bhejta hai
2. Post large amount of data bhejta hai kyunki data ko body mein bheja jata hai
3. Post secured hota hai kyunki data URL mein expose nahin hota
4. Post ki request bookmarked nahin Hoti
5. Post ki request kam efficient hoti hai
6. Post get se kam use hota hai



include directive

1. Id ek programming command hai
2. Id coding k andar dusre files ya header files ko main file mein integrate/include karta h
3. Id code reusability aur maintainability improve karta hai.
4. Id me PHP, c lang ka use hota h
5. id ko compile time pe resolve kiya jata hai
6. Ex. #include`<stdio.h>` ek include directive hai jo C lang me include karne ke liye istemal hota hai

Include action

1. Ia ek programming command hai
2. Ia Coding me module ko dusre file mein import kiya jata hai
3. Ia code reusability aur maintainability improve karta hai.
4. Ia me Javascript, python use hota h
5. Ia ko runtime pe resolve kiya jata h
6. Ex. include function ek python1file mein dusre python2file ko import kiya jata h

jisse py2file ke contents us original file (py1file) mein jud ho jaate hain

Difference

Id coding mein header files ko usi file mein include karta h

Ia coding mein module ko 1 file se dusri file import karta h

*** Mvc architecture**

1. MVCa (Model-View-Controller) ek soft design h
2. Mvca application ko teen components mein divide karta hai
3. Mvc k components - Model (data logic), View (user interface), aur Controller (user input handling),
4. Mvca code ko organize, maintain karna asaan hota hai
5. Ex. ek mobile app jo weather dikhata hai:
   Works:

Model

Data ko manage, store, retrieve aur manipulate karta hai

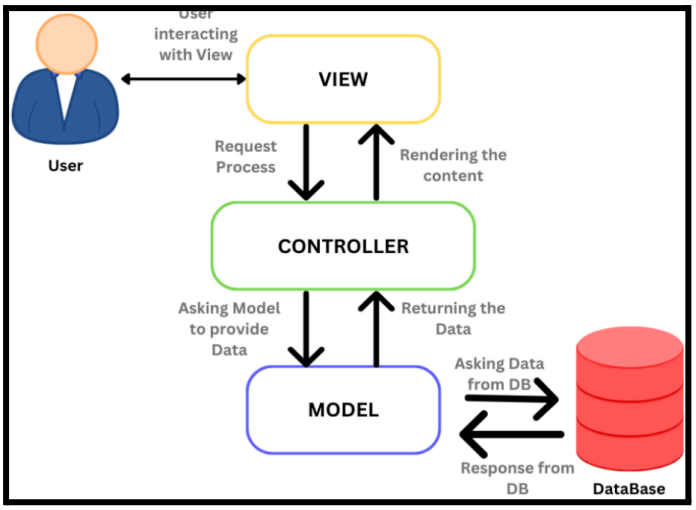
View

Data ko users ko dikhata h aur unki commands ko controller tak pahunchata hai. ek interface hota h

Controller

model aur view ke beech data flow ko manage karta hai Yeh user k inputs ko handle karta hai (jaise button press)

6. **Model** weather data ko store karta hai
   View user ko weather dikhata hai, aur
   Controller user ke inputs (jaise location change) ko handle karta hai aur data update karta hai.



Box model

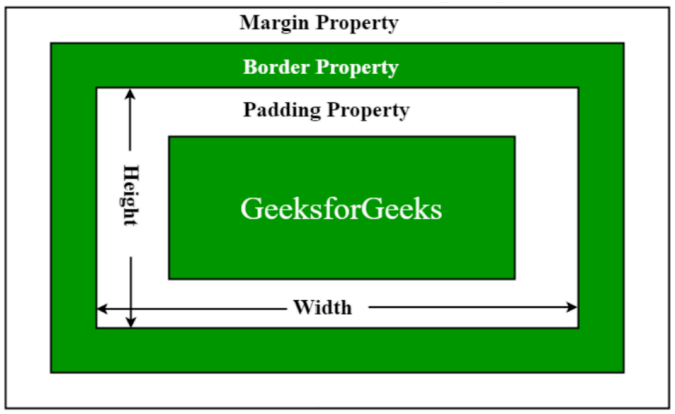
1. Bm CSS mein kisi bhi element ke andar content, padding, border aur margin ko control karta h
2. Bm layout aur design ko sahi tarike se manage karta h
3. Bm ek web development me html ka topic h
4. Bm ke chaar hisson hain:

Content: Andar ka hissa jismein text ya images hoti hain

Padding: Content aur border ke beech ka space hota h

Border: Padding ke baahar ka outline.
Margin: Border ke bahar ka space jo doosre elements se gap banata hai

5. Ex. Ex. ek photo frame hai, jisme photo content hai, frame ka andar ka space padding hai, frame ka edge border hai, aur frame aur wall ke beech ka space margin h



`GETELEMENTBYID()

1. getElementById()` ek JavaScript function hai
2. getElementById() ek HTML document mein kisi specific element ko uska unique ID se dhoondhta aur access karta h
3. getElementById() HTML document me ek web page ke kisi bhi element ko uske unique ID ke basis par find karta h
4. Ex. Website par 'Submit' button click karne par uske ID se button ko dhoondh kar uska color badalna

```
<!DOCTYPE html>
<html>
<head>
  <title>Simple Example</title>
</head>
<body>
<h2>JavaScript Example</h2>
<p id="myParagraph">This is a paragraph.</p>
<script>
  var paragraph = document.getElementById("myParagraph");
  paragraph.textContent = "This paragraph has been updated!";
</script>
</body>
</html>
```

WEB 2.0, THE FOLLOWING TECHNOLOGIES PLAY SIGNIFICANT ROLES:IN THE CONTEXT OF

(I) WIDGETS

1. Widgets ek tarah ke chhote tools ya components hote hai
2. jo kisi app ya website par specific features ya functions ko easy aur quick access ke liye dikhate hain
3. jaise weather updates ya search bar
4. EX. google, music, whether, notes, clock widgets

(II) BLOGGING

1. Blogging ek online platform par apne thoughts, ideas, ya knowledge ko articles ke form mein share karne ka tarika hai
2. Ex. medium, blogger, wordpress blog likhne aur dekhne k liye

(III) PODCASTING

1. Podcasting ek aisa medium hai jisme audio recording ko internet par share kiya jata h
2. jise log kabhi bhi apne smartphone ya computer par sun sakte hain
3. Ex. podcasting channels, radio channels etc

Explain the features of Web 2.0. Explain any *three* technologies of Web 2.0.

Web 2.0 ke Technologies aur Features

Web 2.0 ne web ko zyada interactive aur user-friendly banaya hai:

1. User-Generated Content: Users khud content create aur share karte hain.
2. Social Networking: Log social media par connect aur communicate karte hain.
3. Rich Experience: Websites fast aur interactive hain, bina reload ke updates milte h
4. Collaboration: Users milkar content banate aur improve karte hain (blogs, wikis).
5. Tagging: Content ko keywords ke sath mark karna, jo search ko asan banata hai.
6. Mashups: Alag sources ka data mila kar naye tools banate hain

Web 2.0 ke Technologies :

AJAX (Asynchronous JavaScript and XML)

RSS

1. (Really Simple Syndication)
2. Updates, posts websites par automatically upload hote h jisse baar-baar visit nhi karna padta
3. jaisi hi naye articles, blogs, ya news publish hote h to user sab ek hi jagah par asani se dekh sakta hain
4. Ex. news websites ya blogs se updates automatically receive hote h jisse users ko nayi posts ya articles ke liye bar bar website check karne ki zaroorat nahi hoti

Social Networking Technologies / Social Media

1. Sm apps, sites aur softwares hote hain
2. sm logon ko connect aur share karte hain
3. Sm communication aur collaboration ko easy banate h
4. Sm user-generated content ko promote karte hai
5. Ex. Jaise Facebook, Twitter, youtube

Web services

1. ek software application hota hai
2. Ws internet se dusre applications ko data ya functionality provide karta hai
3. Ws standard protocols (jaise HTTP, SOAP, REST) ka istemal karke access karta h
4. Ex. Amazon Web Services (AWS)
5. Ws businesses ko cloud computing resources jaise storage, databases, aur computing power provide karta hai through APIs

MORE TECH.

Wikis: Jaise Wikipedia, jisme log milke information add aur edit karte h

CMS (Content Management Systems): Jaise WordPress, jo bina coding ke website banana me help karta h

APIs: Ye alag-alag apps ko connect karne mein help karte hain, jaise kisi website mein Google Maps ka use

What is a DTD in the context of an XML document ? Given the following DTD :

<!ELEMENT University (Name, Address)>

<!ELEMENT Name (# PCDATA)>

<!ELEMENT Address (Location, Pincode)>

<!ELEMENT Location (# PCDATA)>

<!ELEMENT Pincode (# PCDATA)>

Create a document having two records, which are valid as per the DTD given above.

```
<?xml version="1.0"?>
<!DOCTYPE University [
   <!ELEMENT University (Name, Address)>
   <!ELEMENT Name (#PCDATA)>
   <!ELEMENT Address (Location, Pincode)>
   <!ELEMENT Location (#PCDATA)>
```

```
    <!ELEMENT Pincode (#PCDATA)>
]>
<Universities>
    <University>                    1st record
        <Name>ABC University</Name>
        <Address>
            <Location>New York</Location>
            <Pincode>10001</Pincode>
        </Address>
    </University>
    <University>                    2nd record
        <Name>XYZ University</Name>
        <Address>
            <Location>Los Angeles</Location>
            <Pincode>90001</Pincode>
        </Address>
    </University>
</Universities>
```

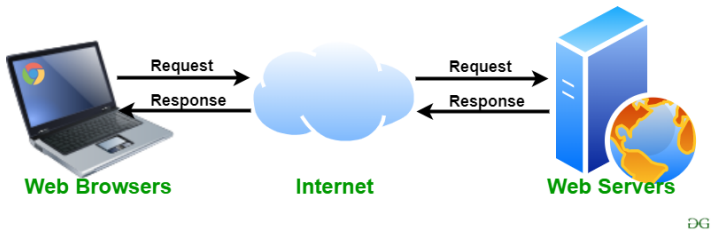
Write the code in WML that creates the following table :

Course Name	Teacher
Web Programming	ABC
DBMS	XYZ

```
<wml>
  <card id="table" title="Table Example">
    <p>
      <table columns="2">
        <tr>
          <td>Course Name</td>
          <td>Teacher</td>
        </tr>
        <tr>
          <td>Web Programming</td>
          <td>ABC</td>
        </tr>
        <tr>
          <td>DBMS</td>
          <td>XYZ</td>
        </tr>
      </table>
    </p>
  </card>
</wml>
```

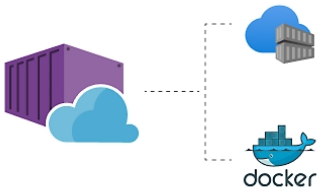
Web server

1. web server websites ko chalane ke liye data bhejta aur leta hai.
2. web server internet se web browsers me data bhejta hai
3. Internet dono ko connect karta h aur bich ka medium hota h
4. Ex. apache, oracle



Web container

1. Wc Ek software h jo web applications ko chalata aur manage karta hai
2. Web container ek software environment hota hai jo cloud par chalta h
3. wc web applications ko run karne ke liye zaroori services aur resources provide karta h
4. Ex. docker, Jetty, GlassFish



Diff.

1. Web container application ko chalata hai
   Web container ek environment hai jo web applications ko run karta hai
2. HTTP web server web pages ko dikhata hai.
   HTTP web server requests ko handle karta hai aur responses provide karta h

*Jsp Action elements

1. Jsp k action elements user k interactions ko handle karte h
   jaise buttons aur forms
2. Jab user button clicks karta h to action elements inputs ko handle karte h

JSP implicit objects

1. JSP ke implicit objects automatically milte hain
   jaise `request` aur `response`,
2. JSP implicit objects data ko access karta hain.
3. Jsp objects ko bina setup ke seedha use kiya jata hai bina explicity declare kiye

Diff.

1. JSP implicit objects automatically milte hain jaise `request` aur `response`,
   jo aapko data access karne mein madad karte hain.
2. Jsp action se alag-alag tasks, jaise files include karna ya requests forward karna, perform kar sakte h

Static web pages and dynamic web pages.

Static web pages

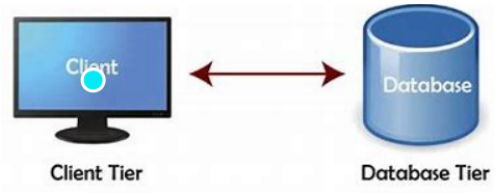
1. ek company ka simple portfolio website jo sirf HTML aur CSS mein banaya gaya h
2. jisme information fixed h aur koi user interaction ya backend functionality na ho

Web pages

1. Wp ek tarah ke digital documents hote hain
2. Wp internet par available hote hain
3. Wp me text, images, videos aur links added hote hain,
4. Wp ko web browsers ke zariye access karte hain.
5. Ex. ek online shopping site hai, jaise Amazon, jahan aap products dekh sakte ho, unhe compare kar sakte ho aur purchase kar sakte ho

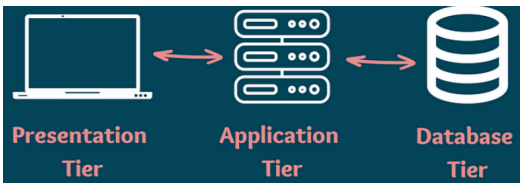
2-Tier architecture

1. ek client-server model hai
2. jisme client application aur database server ke beech direct communication hoti hai, bina kisi middle layer ke.
3. Ex. ek online shopping website, jisme ek user (client) directly website ke server se product ka data dekh sakta hai



***3-Tier architecture**

1. ek client-server model hai
2. jisme application ko teen layers mein divide kiya jata hai
3. Presentation Layer (User Interface), Business Logic Layer (Processing), aur Data Layer (Database).
4. Ex. ek online shopping website hai, jisme ek layer website dikhati hai (presentation) doosri layer shopping cart aur payment process karti hai (business logic) aur teesri layer customer aur product data ko store karti hai (database).



What is an exception ? What are the different types of errors in JSP ? Give *one* example of each.

1. jo program ke normal flow ko run se rok deti hai
2. jab program run hota hai. tab program ko handle karna padta hai taaki wo crash na ho.

JSP (JavaServer Pages) mein alag-alag tareeke ke errors hote h

1. **Translation Errors:**
   Ye tab hote hain jab JSP page ko Java code mein badla jata hai
   Example: Agar aap code mein kuch galat likh dete ho, jaise Hello World ke aas-paas quotes na lagana
2. **Compilation Errors:**
   jab Java code ko class file mein badla jata hai.
   Example: Agar code mein syntax galat ho, jaise semicolon bhool jana.
3. **Runtime Errors:**
   jab JSP page chalta h tab error hota h
   Example: Zero se divide karne ki koshish karna, jo ki error dega.
4. **Logic Errors:**
   Ye errors aapke code mein galat soch ya calculation ki wajah se hote hain.
   Example: Galat operator use karna, jaise addition ki jagah subtraction kar dena.

Explain the following with the help of an example :

(a) DriverManager class

(b) PrepareStatement( ) method

(c) ResultSet object

(d) MVC architecture

***(a) DriverManager Class**

1. dmc program ko database se connect karta h
2. Dmc deciede karta h kaunsa driver use karke connection banaya jayega.
3. Dmc ek helper class hai jo database ke liye sahi driver ko find aur load karta hai
4. Ex. jaise ek car ke liye engine ki types ko choose karna.

(b) **PreparedStatement Method**

1. Psm SQL queries ko asaani se tayaar karta h
2. Psm me pehle query likhte h phir values daal dalte h
3. Psm ka use karne k baad website ki secaurity bad jati h
4. Psm se se SQL injection nahi hota h

(c) **ResultSet Object**

1. Rso SQL query ka result handle karta h
2. Rso database se data retrieve karta h
3. Rso object ka data ko line-by-line dekhta h

(d) **MVC Architecture**

Ch What is the need of session management in the context of HTTP? Define the terms "session" and "state" in this context. Explain with the help of a JSP script how the session object can be used to create a session.

1. HTTP mein Session Management ki Zaroorat

HTTP ek stateless protocol hai

jab client server ko request bhejta hai

toh server ko pichle requests yaad nahi rehte
Session management isliye zaroori hai
taaki hum ek user ka data ko multiple requests ke beech save karke k rakh saken
jaise login information, shopping cart, etc.

2. "Session" aur "State" ki Definitions

Session: Yeh ek temporary storage hai
jo server par store hota h hai
jab ek user website use kar raha hota hai
Isme user ka data store hota hai, jaise username, preferences, etc.

State:
Yeh application ka wo status hai
jo humein ek request se dusre request tak save karna padta hai
jaise ki user ka login status ya shopping cart ka content.

3. JSP Script ke Saath Session Object Ka Use

JSP (JavaServer Pages) mein session management `HttpSession` object se hota hai
Yeh raha ek example kaise session create aur use karte hain JSP script mein:

Ch Example JSP Script:

```
<%@ page language="java" %>
<%@ page import="java.util.*" %>
<%@ page session="true" %>
<html>
<head>
   <title>Session Management in JSP</title>
</head>
<body>
   <h1>Session Management Example</h1>
   <%
      HttpSession session = request.getSession(true);
      if (session.isNew()) {
         out.println("New session created.");
      } else {
         out.println("Welcome back!");
      }
      String username = "JohnDoe";
      session.setAttribute("username", username);
      String storedUsername = (String) session.getAttribute("username");
      out.println("<p>Username stored in session: " + storedUsername + "</p>");
   %>
</body>
</html>
```

A database table consists of the following

1. ek database par kaam ho kar rha h
   database table me se jin program ki duration 1 saal se zyada hai uski list nikalni h
2. Ab SQL query likho aur usko `stmt` object ka use karke chalao
   Maan lo duration years mein store hai
3. String query = "SELECT * FROM Programme WHERE Duration > 1";
   ResultSet rs = stmt.executeQuery(query);

4. jo `Programme` table se un rows ko select karega jinki `Duration` 1 saal se zyada hai
5. executeQuery` method `stmt` object ka use karke query chalata hai
   aur ek `ResultSet` object return karta hai jisme results hote hain.
   Complete code:
   // Maan lo stmt pehle se bana hua hai aur connection establish hai
   String query = "SELECT * FROM Programme WHERE Duration > 1";
   ResultSet rs = stmt.executeQuery(query);

Explain how errors are handled at application level in JSP programs, with the help of a program fragment. 4

How It Works:

1. Create an Error Page: Make a special JSP file that will display the error message when something breaks.
2. Link the Error Page: Tell your main JSP page to go to the error page when an error happens.
3. Setup in web.xml: Use a configuration file (web.xml) to handle specific errors like a missing page (404) or an exception (e.g., division by zero).

Example Code:
Error Page (errorPage.jsp):
This is the page that will show the error details.
jsp
Copy code

```
<%@ page isErrorPage="true" %>
<html>
<head><title>Error Page</title></head>
<body>
    <h1>Oops! Something went wrong.</h1>
    <p>Error: <%= exception.getMessage() %></p>
</body>
</html>
```

Main Page (mainPage.jsp):
This is the main page where errors might happen.
jsp

Copy code

```
<%@ page errorPage="errorPage.jsp" %>
<html>
<head><title>Main Page</title></head>
<body>
   <h1>Welcome to the Main Page!</h1>
   <%
      // Example: This will cause an error (division by zero)
      int result = 10 / 0;
   %>
</body>
</html>
```

Configuration in web.xml:
This tells the server to use the error page for certain types of errors.
xml
Copy code

```
<web-app>
   <!-- If there's an ArithmeticException, show errorPage.jsp -->
   <error-page>
      <exception-type>java.lang.ArithmeticException</exception-type>
      <location>/errorPage.jsp</location>
   </error-page>

   <!-- If a page is missing (404), also show errorPage.jsp -->
   <error-page>
      <error-code>404</error-code>
      <location>/errorPage.jsp</location>
   </error-page>
</web-app>
```

```
<%@ page language="java" %>
<!DOCTYPE html>
<html>
<head>
   <title>Odd Numbers</title>
</head>
<body>
   <h1>Odd Numbers and Their Sum</h1>
   <p>
      <%
         int sum = 0; // Start the sum at 0
         for (int i = 1; i <= 100; i += 2) { // Start at 1, skip every 2 numbers
            out.print(i + " "); // Print the odd number
            sum += i; // Add the number to the sum
         }
      %>
   </p>
```

```
   <h2>Total Sum: <%= sum %></h2> <!-- Show the total sum -->
</body>
</html>
```

Write a JSP program which may print the series of odd numbers from 1 to 100. Also find the sum of these numbers.

```
<%@ page language="java" %>
<!DOCTYPE html>
<html>
<head>
   <title>Odd Numbers</title>
</head>
<body>
   <h1>Odd Numbers and Their Sum</h1>
   <p>
      <%
         int sum = 0; // Start the sum at 0
         for (int i = 1; i <= 100; i += 2) { // Start at 1, skip every 2 numbers
            out.print(i + " "); // Print the odd number
            sum += i; // Add the number to the sum
         }
      %>
   </p>
   <h2>Total Sum: <%= sum %></h2> <!-- Show the total sum -->
</body>
</html>
```

BY ANKIT KUMAR