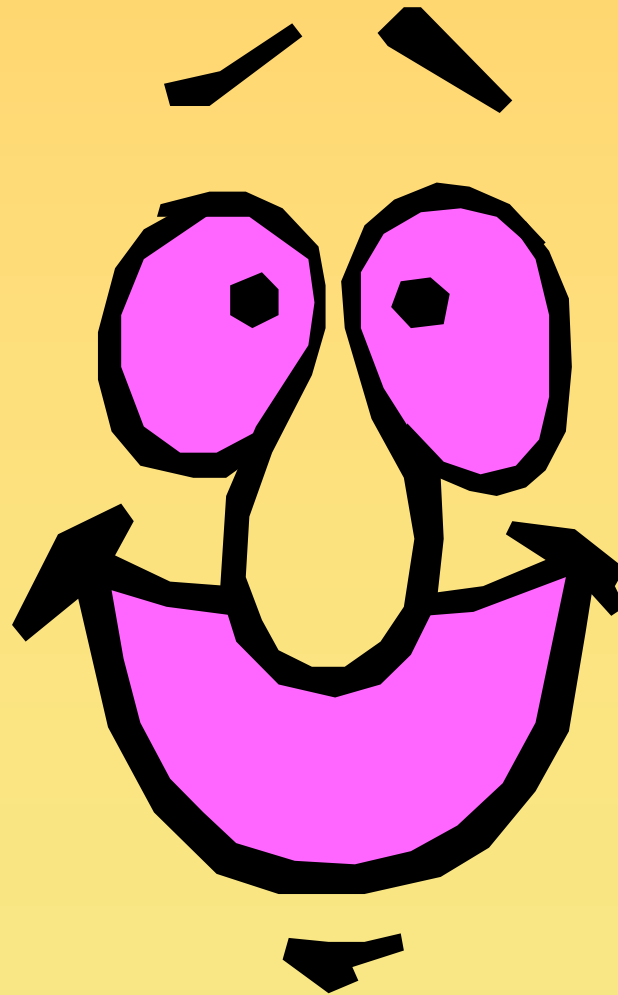


Welcome 😊



Dynamic Content



Outline

Internet and World Wide Web

Web Browsers and Web Servers

Protocols and Standards

Hyper Text Markup Language

Static Content

 **Dynamic Content**

Dynamic Web Pages

CGI Programming

Form elements in HTML

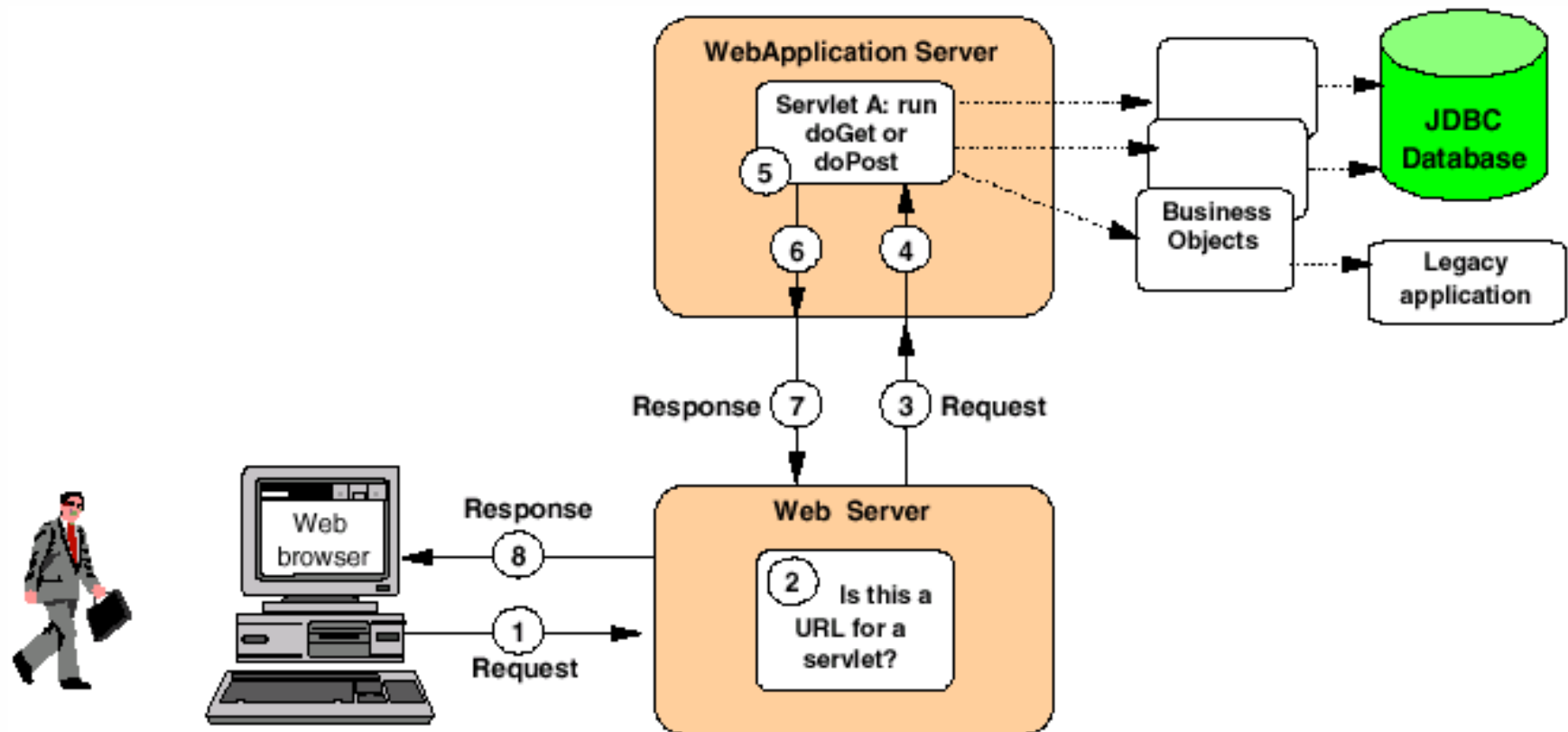
Processing Data from a Form



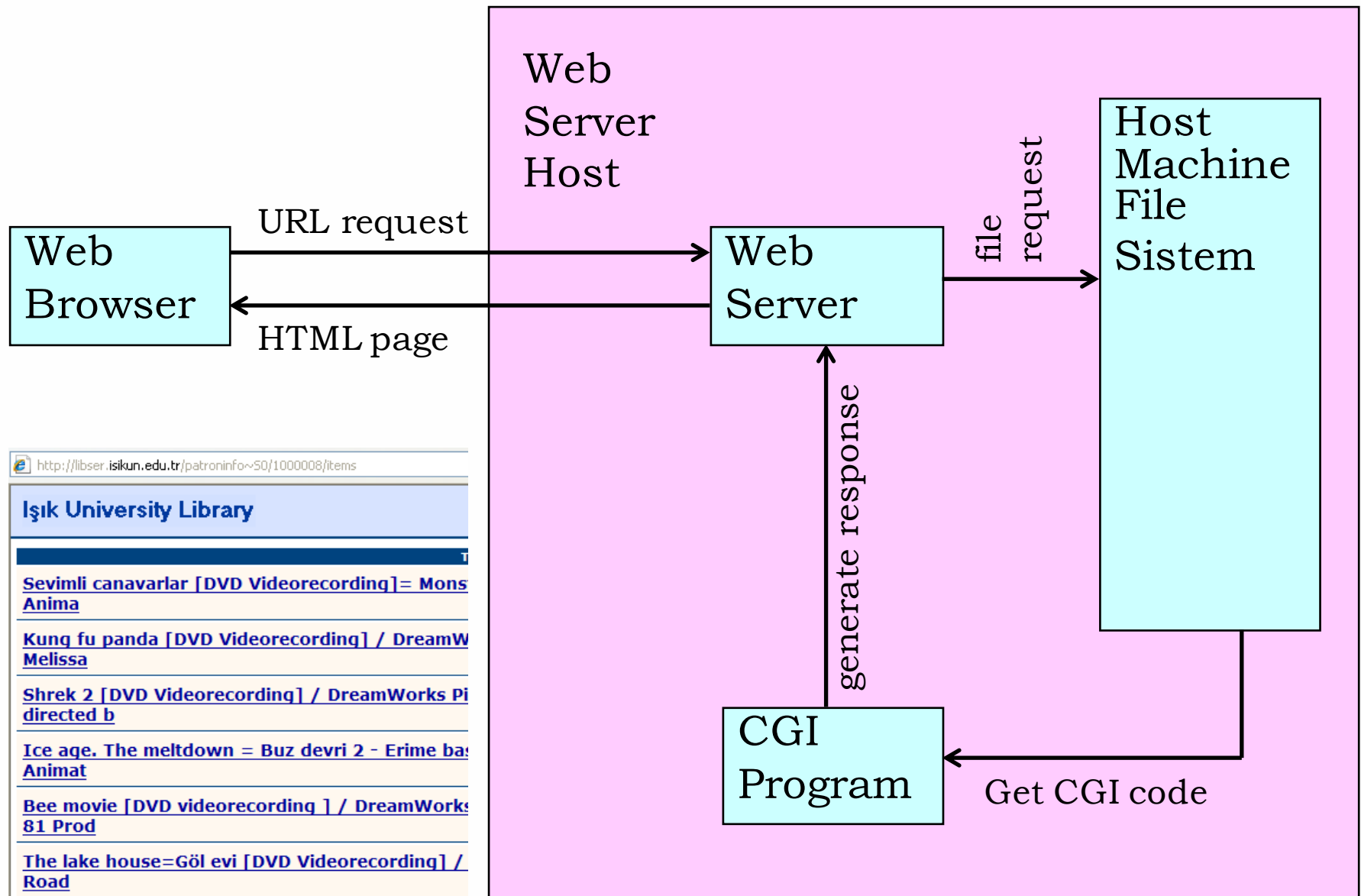
Dynamic Web Content

- Sometimes the content of a page may **change** from time to time
- For example, if a web page contains following information, its content will be (dynamically) changed each time it is displayed
 - Current Time
 - Currency rate
 - Shopping Chart content
 - ...

Running a (Dynamic) Web Content



Running a (Dynamic) Web Content





Steps

1. Read data

a. Explicit data sent by the client user/program

- **User data entered in an HTML form**
- **Data generated by an application such as an applet or a custom HTTP client program**

b. Implicit HTTP request data sent by browser

2. Generate the results

3. Send data to the client

a. Explicit data to the client

b. Implicit HTTP response data



Web Server functionality

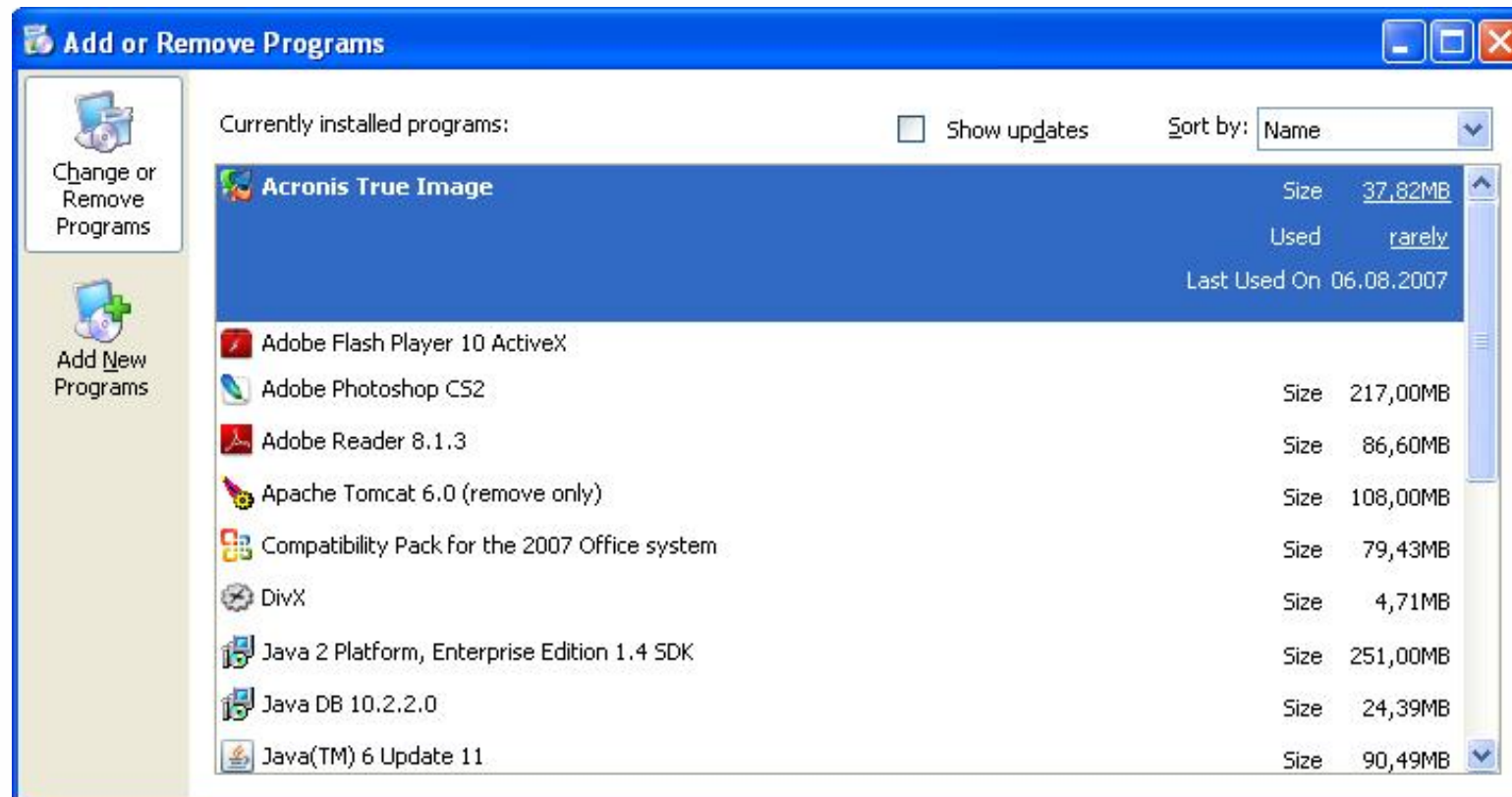
- **Client may request data from the database, or the web server may require talking to the database**
- **DBMS doesn't speak HTTP or return results in HTML, so the Web browser can't talk directly to the database**
- **Even if it could, for security reasons, we would not want it**
- **The same argument applies to most other applications**
- **Web server talks to the application, receive the data, and embed the results inside a document**



Why to build pages dynamically?

- Content of the page may **depend upon user** submitted data
 - a static page never satisfies the request, or
 - too many options may exist
- **Information** represented by the HTML may be dynamic (**may change** over time) by nature
- The HTML may be customizable on a per user basis (depend on user)

Why to build pages dynamically?



Why to build pages dynamically?

Google Accounts



Create a Google Account - Google Mail

Create an account

Get started with Google Mail

First name:

Last name:

Desired Login Name: @gmail.com
Examples: JSmith, John.Smith

Choose a password: [Password strength:](#)
Minimum of 8 characters in length.

Re-enter password:


- ☒ Stay signed in
- ☒ Enable Web History.

Security Question:

Location:

Word Verification: Type the characters you see in the picture below.




Letters are not case-sensitive

Terms of Service: Please check the Google Account information you've entered above (feel free to change anything you like), and review the Terms of Service below.

With Google Mail, you won't see blinking banner ads. Instead, we display ads you might find useful that are relevant to the content of your messages. [Learn more](#)

[Printable Version](#)

Google Terms of Service

Welcome to Google!

1. Your relationship with Google

By clicking on 'I accept' below you are agreeing to the [Terms of Service](#) above and both the [Programme Policy](#) and the [Privacy Policy](#).



Outline

Internet and World Wide Web

Web Browsers and Web Servers

Protocols and Standards

Hyper Text Markup Language

Static Content

Dynamic Content

 **Forms**

CGI Programming

Form elements in HTML

Processing Data from a Form



Form


- A form on a web page allows a **user** to enter **data** which will be **sent** by the web browser **to the web server** (user name)
- Forms can also be used to
 - submit data to save on a server (e.g., ordering a product), or:
 - retrieve data (e.g., searching on a search engine)
 - which also includes submitting data to the server



Form

- When the data is entered, the user should press a button with `type=submit` to enable processing another (jsp) file on the web server, by reading the values that the user entered

Form Examples



The image shows a screenshot of the Google Turkey homepage as it appeared in the Windows Internet Explorer browser. The browser's title bar reads "Google - Windows Internet Explorer". The address bar shows the URL "http://www.google.com.tr/". Below the address bar, there are navigation links: "Web", "Görseller", "Gruplar", "Bloglar", "Dizin", "Gmail", and "diğer" with a dropdown arrow. The Google logo is prominently displayed in the center, with the word "Google" in its characteristic multi-colored font and "Türkiye" in blue below it. At the bottom, there is a search bar and two buttons: "Google'da Ara" and "Şansımı Denemek İstiyorum". To the right of the search bar, there are links for "Gelişmiş Arama", "Tercihler", and "Dil Araçları". Below the search bar, there are radio buttons for "Ara: Web", "Türkçe sayfalar", and "Türkiye'den sayfalar", with "Web" being the selected option.

Google - Windows Internet Explorer

http://www.google.com.tr/

Web Görseller Gruplar Bloglar Dizin Gmail diğer ▼

Google™
Türkiye

Google'da Ara Şansımı Denemek İstiyorum

Ara: ☒ Web ☐ Türkçe sayfalar ☐ Türkiye'den sayfalar

[Gelişmiş Arama](#)
[Tercihler](#)
[Dil Araçları](#)

Form Examples

Google Gelişmiş Arama - Windows Internet Explorer

http://www.google.com.tr/advanced_search?hl=tr

Google™ Gelişmiş Arama

| | | | | |
|------------------|---|---------------------------------|---------------|---|
| Sonuçları bul | kelimelerin tümü | <input type="text"/> | 10 sonuç | ▼ |
| | aynen girildiği gibi | <input type="text"/> | Google'da Ara | |
| | kelimelerden herhangi biri | <input type="text"/> | | |
| | bu kelimeler hariç | <input type="text"/> | | |
| Dil | Sonuç sayfalarının dili | herhangi bir dil ▼ | | |
| Region | Burada bulunan sayfalarda ara: | herhangi bir bölgede ▼ | | |
| Dosya Biçimi | Sadece bu ▼ sonuçların getirileceği dosya biçimi | tüm biçimler ▼ | | |
| Tarih | İlk kez şu zaman aralığında görülen web sayfalarını döndür: | herhangi bir zaman ▼ | | |
| Geçiş yerleri | Arama yapılacak alan/yer | Sayfanın herhangi bir yerinde ▼ | | |
| Alanlar/Siteler | Sadece bu ▼ sitesi ve alanındaki sayfalar | <input type="text"/> | | |
| Kullanım Hakları | Gösterilecek sonuçlar: | lisansa göre filtrelenmemiş | | |

Form Examples

Hürriyet - Windows Internet Explorer

http://uyelik.hurriyet.com.tr/register.aspx

| Gerekli Bilgiler | Kişisel Bilgiler |
|---|---|
| Adı * : <input type="text"/> | Doğum Tarihi : -- ▾ ----- ▾ --- ▾ |
| Soyadı * : <input type="text"/> | Cinsiyet <input checked="" type="radio"/> Seçiniz... <input type="radio"/> Erkek <input type="radio"/> Kadın |
| E-Posta * : <input type="text"/> | Medeni Durum <input checked="" type="radio"/> Seçiniz... <input type="radio"/> Evli <input type="radio"/> Bekar |
| E-Posta Tekrar * : <input type="text"/> | Ev Telefonu : <input type="text" value="Türkiye"/> <input type="text"/> <input type="text"/> |
| Şifre * : <input type="text"/> | İş Telefonu : <input type="text" value="Türkiye"/> <input type="text"/> <input type="text"/> |
| Şifre (tekrar) * : <input type="text"/> | Cep Telefonu : <input type="text" value="Türkiye"/> <input type="text"/> <input type="text"/> |
| Hatırlatma Sorusu * : <input type="text" value="Seçiniz..."/> | Faks : <input type="text" value="Türkiye"/> <input type="text"/> <input type="text"/> |
| Hatırlatma Sorusu Cevabı * : <input type="text"/> | Adres : <input type="text"/> |

Devam

Form Examples



Home Browse Search My Settings Alerts Help

Quick Search All fields Author

? search tips Journal/book title Volume Issue Page Clear Go Advanced Search

Add to my Quick Links

All Sources Journals Books Reference Works Advanced Search | Expert Search

Term(s): within:

AND within:

Source: ☒ Include Articles in Press

Select one or more:

Subject:
Agricultural and Biological Sciences
Arts and Humanities
Biochemistry, Genetics and Molecular Biology

Hold down the Ctrl key (or ⌘ key) to select multiple entries.

Limit by document type: ☐ Article ☐ Short Communication ☐ Book Review ☐ Publisher's Note
☐ Review Article ☐ Correspondence, Letter ☐ Product Review ☐ Erratum
☐ Short Survey ☐ Discussion ☐ Editorial

Dates: ☒ All Years ☐ 1999 to:

Volume: Issue: Page:

? Search Tips



GET and POST methods

- Two most common parameter passing methods by the Web browser to the CGI program via Web server are **GET** and **POST** methods
- When issuing a CGI requests directly from a URL, GET method is used
- This URL is known as a **Query String**. It contains:
 - Name of the CGI program
 - Parameters
 - Values of the parameters

[http://www.vedatcoskun.com/cgi-bin/
getResult.cgi?userid=vedat+coskun&pass=seal](http://www.vedatcoskun.com/cgi-bin/getResult.cgi?userid=vedat+coskun&pass=seal)



GET and POST methods

- The form explicitly specifies which method will be used
- When GET method is used, data created in the form is **appended to the Query String**
- When POST method is used, a file containing the data is sent **as a seperate file**
- POST method is more secure



Outline

Internet and World Wide Web

Web Browsers and Web Servers

Protocols and Standards

Hyper Text Markup Language

Static Content

Dynamic Content

Forms

 **CGI Programming**

Form elements in HTML

Processing Data from a Form



Dynamic Web Content

- **Common Gateway Interface (CGI)** is the standard to generate **dynamic web content**
- **CGI provides a standard on the communication among:**
 - 1. Web browsers**
 - 2. Web servers**
 - 3. Executable programs running on the Web Server (computer)**



CGI is execution

- Web server responds to requests of the web browsers by returning the appropriate output:
 1. if the request identifies a (html) **file** stored on disk, it returns that file
 2. if the request identifies an **executable program** and arguments, it runs the program and returns its output
- CGI defines a standard way of doing the second



Processing User Request

- **The task of Web Servers is to respond to requests of client web browsers**
- **Each time a request is received, the server analyzes what the request asks for, and returns the appropriate output:**
 1. **Static processing: if the request identifies a file stored on disk, return the contents of that file**
 2. **Dynamic processing: if the request identifies an executable command and possibly arguments, run the command and return its output**



What CGI program outputs?

- The result of running a Common Gateway Interface (CGI) program is a **static html file**
- Hence, what a Web server returns to a web browser which requires running a CGI program is still **a static web page**



CGI protocol

- **CGI is a standard protocol for interfacing the client and server on the internet**
- **CGI defines how information about the server and the request is passed to the command in the form of arguments and environment variables, and how the command can pass back extra information about the output (such as the type)**



Outline

Internet and World Wide Web

Web Browsers and Web Servers

Protocols and Standards

Hyper Text Markup Language

Static Content

Dynamic Content

Forms

CGI Programming

 **Form elements in HTML**

Processing Data from a Form



Form Elements

- `<form>` creates a form
- `<select name="xyz">...</select>` creates a selection list, from which the user can select a single option. May be rendered as a dropdown list.
- `<option value="x">` creates an item in a select list.
- `<label for="id">...</label>` creates a label for a form input (e.g. radio button). Clicking on the label fires a click on the matching input.



Form Elements

1. `<input type="text">` one-line text
2. `<input type="password">` masked text input
3. `<textarea>...</textarea>` multi-line text area
4. `<input type="checkbox">` checkbox
5. `<input type="radio">` radio button
6. `<input type="file">` file select
7. `<input type="hidden">` invisible component
8. `<input type="button">` button
9. `<button>` button
10. `<input type="image">` button with an image
11. `<input type="reset">` reset button
12. `<input type="submit">` submit button



1. `<input type="text">`

`<INPUT`

`type="text"`

`name="firstname"`

`size=10`

`maxlength=20`

`>`

- Creates a one-line text input
- **size** attribute specifies the default width of the input in character-widths
- **maxlength** sets the maximum number of characters the user can enter (which may be greater than size)



2. `<input type="password">`

```
<INPUT  
  type="password"  
  name="mypass"  
  size=10  
  maxlength=20  
>
```

- Creates a one-line text input
- **size** and **maxlength** attributes behave same as in "text"



3. `<input type="textarea">`

```
<INPUT  
  type="textarea"  
  name="comment"  
  rows=10  
  cols=20  
>
```

- Creates a multiple line text input
- **rows** and **cols** attributes defines size of the area



4. `<input type="checkbox">`

```
<INPUT  
  type="checkbox"  
  name="check1"  
>Option 1
```

```
<INPUT  
  type="checkbox"  
  name="check2"  
  CHECKED  
>Option 1
```



5. `<input type="radio">`

```
<INPUT  
  type="radio"  
  name="radio1"  
>Option 1
```

```
<INPUT  
  type="radio"  
  name="radio2"  
  CHECKED  
>Option 1
```



11. `<input type="reset">`

```
<INPUT  
  type="reset"  
  name="reset1"  
>
```

- **Creates a button which resets all input areas with default values when clicked**



11. `<input type="submit">`

`<INPUT`

`type="submit"`

`name="submit1"`

`>`

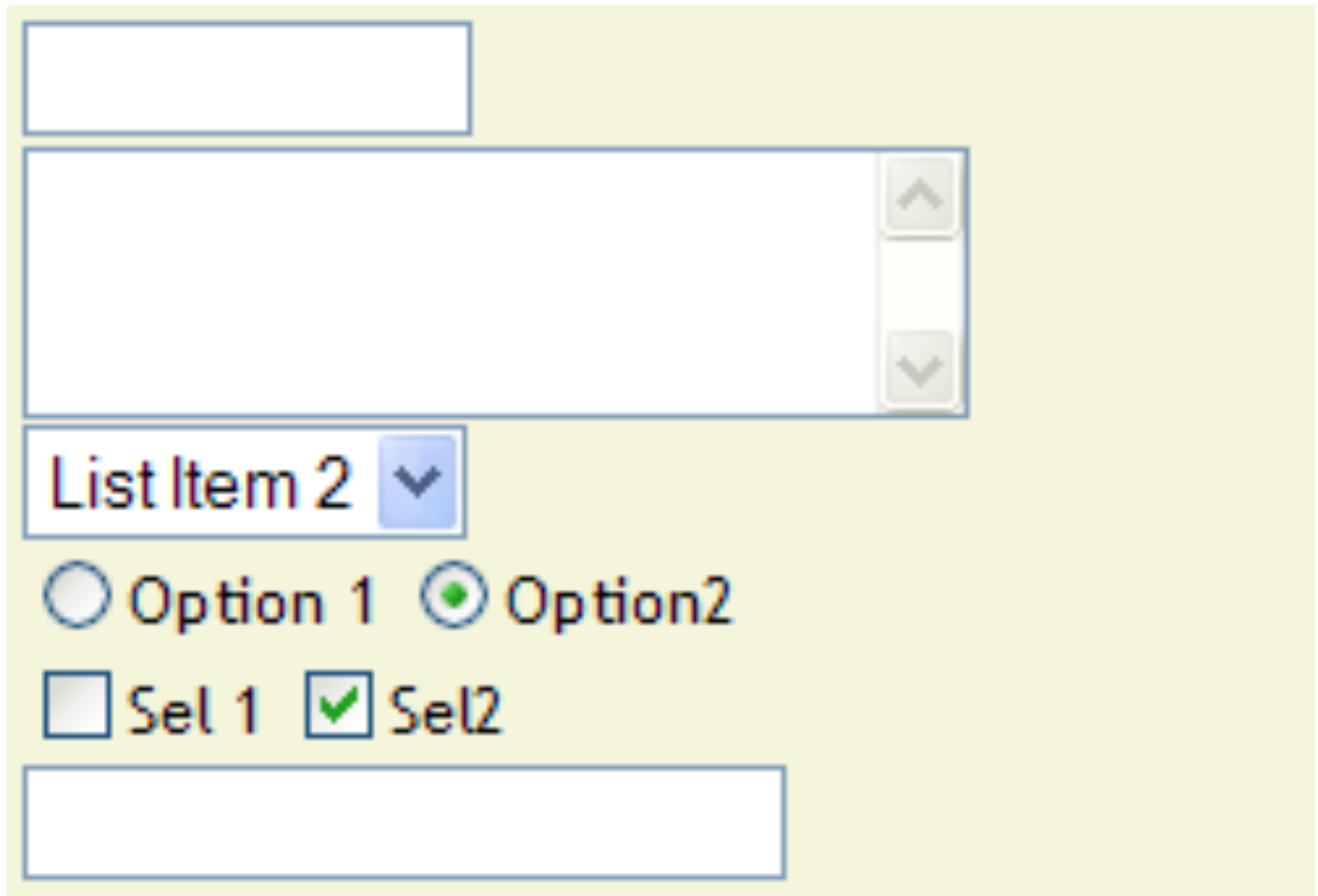
- **Creates a button which tells the web browser to take action on the form**
- **When it is pressed, web browser sends the inserted data to the web server**



A Form Example

```
<FORM METHOD=post ACTION="example.jsp">  
  <INPUT type="text" size="10">  
  <TEXTAREA rows=3 cols=20></TEXTAREA>  
  
  <SELECT>  
    <OPTION >List Item 1  
    <OPTION SELECTED>List Item 2  
  </SELECT>  
  
  <INPUT type="radio" name="o1">Option 1  
  <INPUT type="radio" name="o1" CHECKED>Option2  
  
  <INPUT type="checkbox" name="c1">Sel 1  
  <INPUT type="checkbox" name="c1" CHECKED>Sel2  
  
  <INPUT type="Submit">  
  <INPUT type="Reset">  
</FORM>
```

A Form Example



A form example with the following elements:

- A single-line text input field at the top.
- A multi-line text area below it, with up and down arrow buttons on the right side.
- A dropdown menu showing "List Item 2" with a downward arrow button.
- Two radio buttons: "Option 1" (unselected) and "Option2" (selected with a green dot).
- Two checkboxes: "Sel 1" (unselected) and "Sel2" (selected with a green checkmark).
- A single-line text input field at the bottom.



Outline

Internet and World Wide Web

Web Browsers and Web Servers

Protocols and Standards

Hyper Text Markup Language

Static Content

Dynamic Content

Forms

CGI Programming

Form elements in HTML

 **Processing Data from a Form**



Combining Forms with Programs

- **Forms can be combined with various scripting languages to allow developers to create dynamic web sites**
- **This includes both client-side and server-side languages**



Client-Side Programs

- The disadvantage of client-side programming is implementing same functionality with **different codes** for different web browser
- Another disadvantage is the possibility of users banning execution of client programs on the web client
- Javascript is the **de facto** standard client-side scripting language for web



Practical usage of Client-Side Programs

Client Side Programs (Javascript) are used for:

- 1. Browser Detection:** When same server side programs are to be viewed by different browsers, different behaviours might be required. Javascript can detect the client browser type, and behave accordingly
- 2. Browser Control:** Various client-side actions such as opening a new window, triggering some time-dependent actions and sending a new request to server might be only done by client-side programs
- 3. Form Validation:** When user enters an input to a form, it might be better to validate it, and send only the appropriate inputs to the server

Why to build pages dynamically?

Google Accounts



Create a Google Account - Google Mail

Create an account

Get started with Google Mail

First name:

Last name:

Desired Login Name: @gmail.com
Examples: JSmith, John.Smith

Choose a password: [Password strength:](#)
Minimum of 8 characters in length.

Re-enter password:


- ☒ Stay signed in
- ☒ Enable Web History.

Security Question:

Location:

Word Verification: Type the characters you see in the picture below.




Letters are not case-sensitive

Terms of Service: Please check the Google Account information you've entered above (feel free to change anything you like), and review the Terms of Service below.

With Google Mail, you won't see blinking banner ads. Instead, we display ads you might find useful that are relevant to the content of your messages. [Learn more](#)

[Printable Version](#)

Google Terms of Service

Welcome to Google!

1. Your relationship with Google

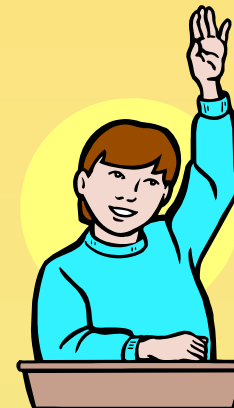
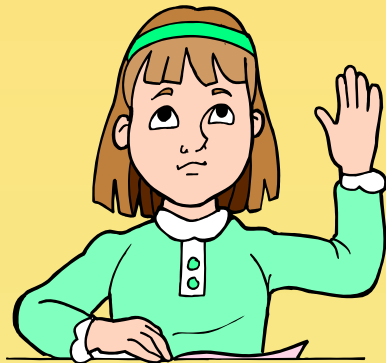
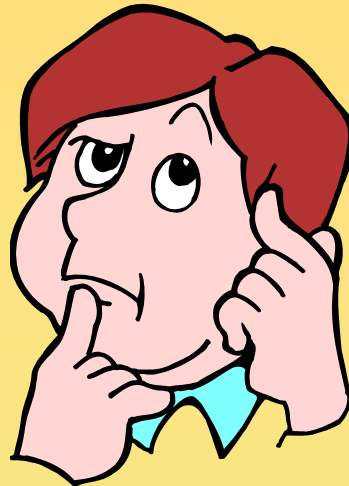
By clicking on 'I accept' below you are agreeing to the [Terms of Service](#) above and both the [Programme Policy](#) and the [Privacy Policy](#).



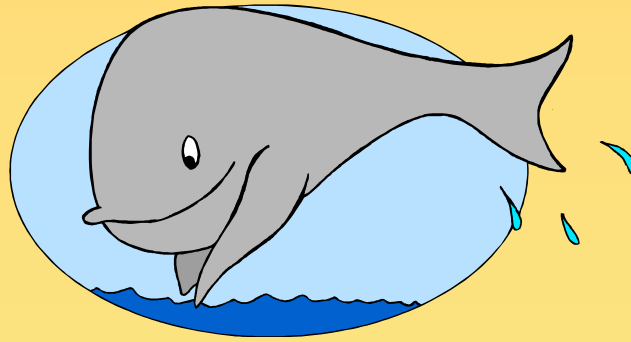
Server-Side Programs

- **Scripting languages are common:**
 - **PHP**
 - **Perl**
 - **ASP**
 - **Servlet, JSP, JSF**
- **Compiling languages are rarely used:**
 - **C**
 - **C++**
 - **Java**

Questions?



Thank you. 😊



Teşekkürler

