

Tutorial-1

HTML, CSS, Bootstrap, Glyphicons, Carousel, Servlets and JSP

CSP 584 – Enterprise Web Application

Dr. Atef Bader

Illinois Institute of Technology

Objectives

- In this tutorial, we will review and discuss the follow topics/technologies and show how they are utilized in design and development of the GameSpeed web-app:
 - Basic HTML tags
 - CSS
 - Bootstrap
 - Glyphicons
 - Carousel
 - Servlets & JSP

HTML:

- HTML is a markup language used to define the content of a web page
- The contents are described using HTML tags
- There are different kind of tags to describe different elements of a web page such as headings, paragraphs, images, tables, form etc.
- A html document is saved with '.html' extension
- Create a new text file, type in the following code and save it with a name (Eg. firstPage.html)
- Double click on the newly created file, this should open a new web page on your default browser

```
<html>
<head>
<title>Page Title</title>
</head>
<body>

<h1>My First Heading</h1>
<p>My first paragraph.</p>

</body>
</html>
```

HTML Elements:

- HTML elements begin with a start tag and ends with an end tag

`<tagname>content</tagname>`

- The browser renders everything that is within the start and the end tags
- HTML is a forgiving language, it does not generate any error if you misplace any of the tags or do any other mistakes

HTML General Structure:

- A typical HTML file is based on the following structure
- There are 2 distinct parts
 - Head – Head comprises of a title element which describes the title of the page
 - Body – The body is usually composed of many elements with the intention of showing relevant information to the user

```
<html>
<head>
<title>Page Title</title>
</head>
<body>
...
<h1>My First Heading</h1>
<p>My first paragraph.</p>

</body>
</html>
```

- To learn more on HTML, visit: http://www.w3schools.com/html/html_intro.asp

Difference between HTML & HTML 5:

- HTML 1.0 - 4.0 were basically to design the layout of static content such as text and images
- HTML 5.0 aims more at cross platform application development. It has got support for including 2D, 3D graphics, playing audio and video
- Following are a few features of HTML 5;
 - New elements: article, aside, audio, bdi, canvas, command, data, datalist, details, embed, figcaption, figure, footer, header, hgroup, keygen, mark, meter, nav, output, progress, rp, rt, ruby, section, source, summary, time, track, video, wbr
 - Deprecated elements: A few older tags will be dropped altogether Eg. acronym, applet, basefont, big, center, dir, font, frame, frameset, isindex, noframes, strike, tt
 - Clear syntax and backward compatibility: Unlike Html 4.0 you don't have to write a longer doctype `<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN" "http://www.w3.org/TR/html4/strict.dtd">` declaration. You just need to write `<!DOCTYPE html>` and that's all. It is also designed to be backward compatible.

CSS:

- CSS, Cascading Style Sheet is used to design the HTML elements
- HTML defines the content of the web page, CSS is used to design the style of the web page
- There are 3 common ways to include CSS in the HTML page;
 - Inline CSS – Style is defined **within the HTML element**
 - Embedded CSS – The style is defined with in the **head section of the HTML page**
 - External CSS – The CSS is stored **in an external file** and the reference is given in the head section of the HTML page
- To learn more on CSS, visit:
http://www.w3schools.com/css/css_intro.asp

CSS – Inline CSS:

- The inline CSS is included within the HTML element
- Syntax:

```
< HTML tag style = "Style Attribute"> </ HTML tag>
```

- Following is an example of inline CSS, here the 'h1' heading element is given some style

```
<h1 style="color:blue;margin-left:30px;">This is a heading.</h1>
```


CSS – Embedded CSS:

- In Embedded CSS, the style is included in the head section of the HTML file.
- Syntax:

```
<html>  
  <head>  
    <style>  
      All the style logic is defined here  
    </style>  
  </head>  
  <body>  
  </body>  
</html>
```

- The style logic is incorporated inside the <style> tag. The <style> tag is within the head section

CSS – Embedded CSS:

- Following is an example of Embedded CSS, here the style is defined in the head section of the html page

```
<head>
<style>
body {
    background-color: linen;
}

h1 {
    color: maroon;
    margin-left: 40px;
}
</style>
</head>
```

CSS – External CSS:

- Here the CSS styles are written in an external file and is included in the HTML page as a link in the head section
- Create a new file and write the style logic, save that file with a name and '.css' extension
- Include the location of the file in the 'href' as highlighted below

```
<html>  
  <head>  
    <link rel = "stylesheet" type = "text/css" href = "location_of_css_file">  
  </head>  
  <body>  
  </body>  
</html>
```

CSS – External CSS:

- Create a new file and enter the following, save it as 'mystyle.css'

```
body {  
    background-color: lightblue;  
}  
  
h1 {  
    color: navy;  
    margin-left: 20px;  
}
```

- To include this in the html file, enter the following;

```
<head>  
<link rel="stylesheet" type="text/css" href="mystyle.css">  
</head>
```

Servlets and JSPs:

- HTML and CSS together can produce only static web pages, pages that you can see but not interact with
- Technologies such as Servlets, JSP, JavaScript, provide the dynamic aspect to the web page
- Servlet is a Java program that can be used to collect the input from through web page forms, display records from a database or another source and thus provide a means for the user to interact with the web page
- JSP is a technology to create dynamic web page
- JSP has got some advantages over Servlets, it is easier to write and maintain JSP than Servlets
- A typical JSP file can contain both the HTML tags and Java logic

Bootstrap:

- Bootstrap is a free front-end framework for faster and easier web development
- Bootstrap is the most popular HTML, CSS, and JavaScript framework for developing responsive, mobile-first web sites.
- Bootstrap makes front-end web development faster and easier. It's made for folks of all skill levels, devices of all shapes, and projects of all sizes.
- Bootstrap is completely free to download and use!
- Bootstrap includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels and many other, as well as optional JavaScript plugins
- Bootstrap also gives you the ability to easily create responsive designs

Bootstrap: How to use in your application ?

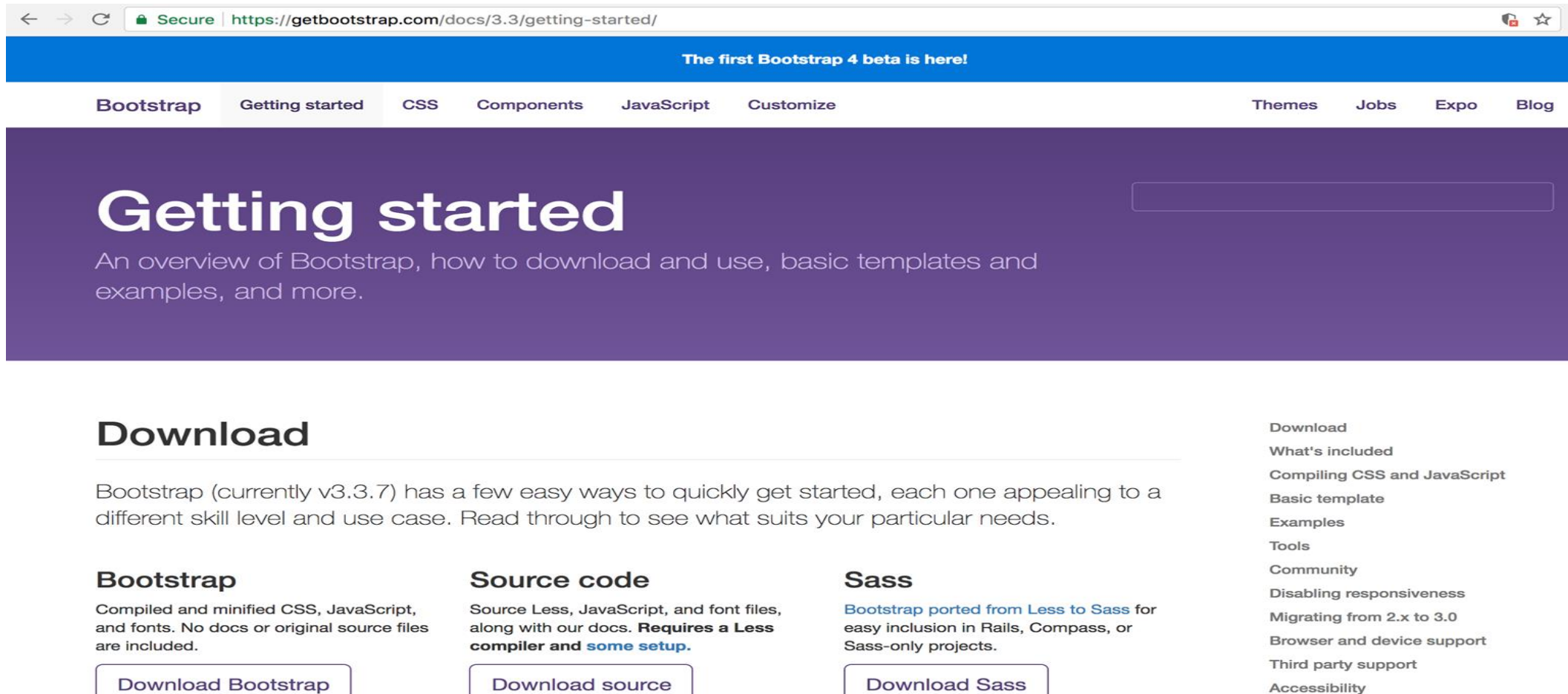
- There are two ways to start using Bootstrap on your own web site.
 - Download Bootstrap from getbootstrap.com
 - Include Bootstrap from a CDN

You can download Bootstrap from below link:

<https://getbootstrap.com/docs/3.3/getting-started/>

Bootstrap: Download Bootstrap

You can download in your system and use it.



The screenshot shows the Bootstrap 3.3 'Getting started' page. At the top, a blue banner reads 'The first Bootstrap 4 beta is here!'. Below this is a navigation bar with links for Bootstrap, Getting started (active), CSS, Components, JavaScript, and Customize. On the right side of the navigation bar are links for Themes, Jobs, Expo, and Blog. The main content area has a purple background with the heading 'Getting started' and a subtext: 'An overview of Bootstrap, how to download and use, basic templates and examples, and more.' Below this is a search bar. Further down, there's a 'Download' section with three columns: 'Bootstrap' (compiled and minified CSS, JavaScript, and fonts), 'Source code' (Less, JavaScript, and font files), and 'Sass' (porting from Less to Sass). Each column has a 'Download' button. To the right of these columns is a vertical list of links: Download, What's included, Compiling CSS and JavaScript, Basic template, Examples, Tools, Community, Disabling responsiveness, Migrating from 2.x to 3.0, Browser and device support, Third party support, and Accessibility.

Secure | <https://getbootstrap.com/docs/3.3/getting-started/>

The first Bootstrap 4 beta is here!

Bootstrap Getting started CSS Components JavaScript Customize Themes Jobs Expo Blog

Getting started

An overview of Bootstrap, how to download and use, basic templates and examples, and more.

Download

Bootstrap (currently v3.3.7) has a few easy ways to quickly get started, each one appealing to a different skill level and use case. Read through to see what suits your particular needs.

Bootstrap

Compiled and minified CSS, JavaScript, and fonts. No docs or original source files are included.

[Download Bootstrap](#)

Source code

Source Less, JavaScript, and font files, along with our docs. **Requires a Less compiler and some setup.**

[Download source](#)

Sass

[Bootstrap ported from Less to Sass](#) for easy inclusion in Rails, Compass, or Sass-only projects.

[Download Sass](#)

- Download
- What's included
- Compiling CSS and JavaScript
- Basic template
- Examples
- Tools
- Community
- Disabling responsiveness
- Migrating from 2.x to 3.0
- Browser and device support
- Third party support
- Accessibility

Bootstrap: Include Bootstrap from CDN

Include Bootstrap CDN in the head section of the html

Bootstrap CDN

The folks over at [MaxCDN](#) graciously provide CDN support for Bootstrap's CSS and JavaScript. Just use these [Bootstrap CDN](#) links.

```
<!-- Latest compiled and minified CSS -->
<link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css" integrity="sha384-
BVYiISIFeK1dGmJRAkycuHAHRg320mUcww7on3RYdg4Va+PmSTsz/K68vbdEjh4u" crossorigin="anonymous">

<!-- Optional theme -->
<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap-
theme.min.css" integrity="sha384-rHyoN1iRsVXV4nD0JutlnGaslCJuC7uwjduW9SVrLvRYooPp2bWYgmgJQIXwl/Sp"
crossorigin="anonymous">

<!-- Latest compiled and minified JavaScript -->
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"
integrity="sha384-Tc5IQib027qvyjSMfHjOMaLkfuWVxZxUPnCJA7l2mCWNIpG9mGCD8wGNlcpPD7Txa"
crossorigin="anonymous"></script>
```

Example: Header.html

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>

<meta http-equiv="content-type" content="text/html; charset=utf-8" />
<title>GameSpeed</title>
<meta name="keywords" content="" />
<meta name="description" content="" />
<link href="style.css" rel="stylesheet" type="text/css" media="screen" />
<!-- Links for JQuery and bootstrap css -->
  <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css">
  <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.2.1/jquery.min.js"></script>
  <script
src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"></script>

<script>
```

Bootstrap documentation:

The screenshot shows the Bootstrap 3.3 documentation page for Components. The browser address bar shows the URL <https://getbootstrap.com/docs/3.3/components/>. A blue banner at the top reads "The first Bootstrap 4 beta is here!". Below this is a navigation bar with links: Bootstrap, Getting started, CSS, Components, JavaScript, and Customize. The "Components" link is circled in red. To the right of these links are links for Themes, Jobs, Expo, and Blog. The main content area has a purple header with the title "Components" and a subtitle "Over a dozen reusable components built to provide iconography, dropdowns, input groups, navigation, alerts, and much more." Below this is a section titled "Glyphicons" with a subtitle "Available glyphs". The text explains that Bootstrap includes over 250 glyphs from the Glyphicons Halflings set, which are normally not available for free but have been made available for Bootstrap at no cost. A note asks users to include a link back to Glyphicons whenever possible. Below the text is a row of eight glyph icons: a flower, a plus sign, a Euro symbol, another Euro symbol, a minus sign, a cloud, an envelope, and a pencil. On the right side of the page, there is a sidebar with a list of component categories: Glyphicons, Dropdowns, Button groups, Button dropdowns, Input groups, Navs, Navbar, Breadcrumbs, and Pagination.

Secure | <https://getbootstrap.com/docs/3.3/components/>

The first Bootstrap 4 beta is here!

Bootstrap Getting started CSS Components JavaScript Customize Themes Jobs Expo Blog

Components

Over a dozen reusable components built to provide iconography, dropdowns, input groups, navigation, alerts, and much more.

Glyphicons

Available glyphs

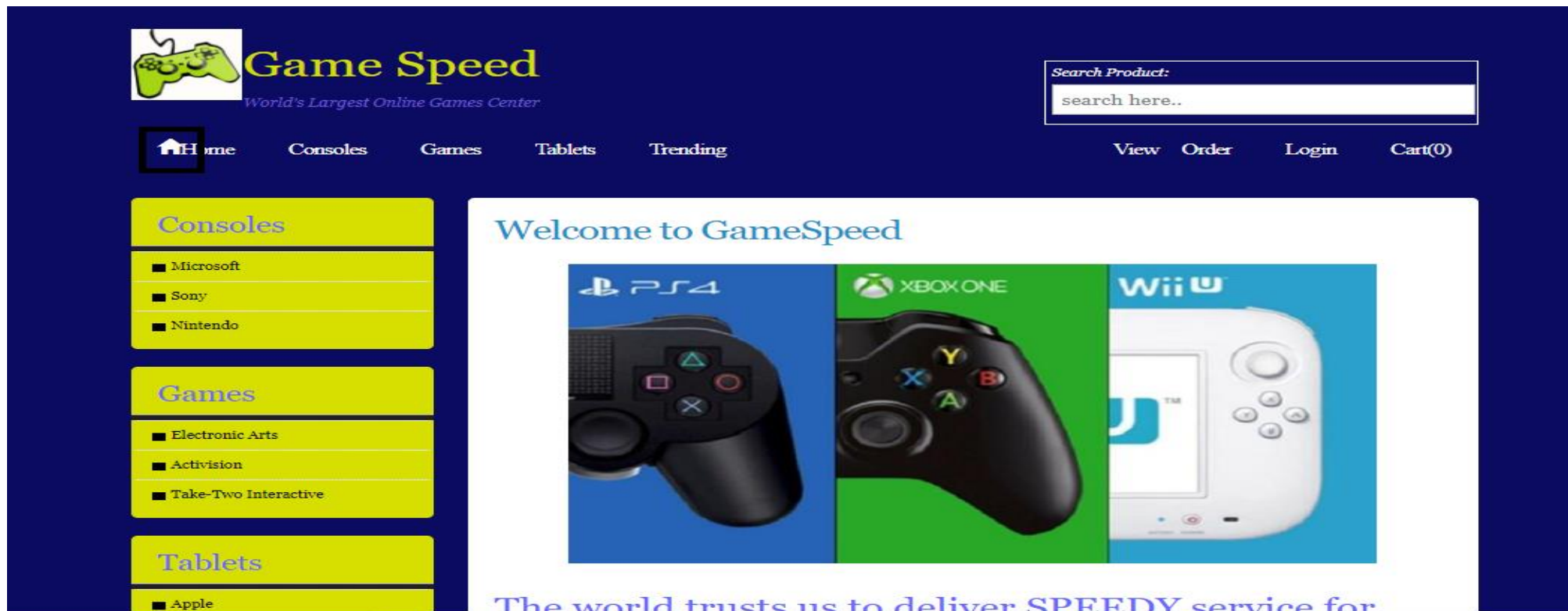
Includes over 250 glyphs in font format from the Glyphicons Halflings set. [Glyphicons Halflings](#) are normally not available for free, but their creator has made them available for Bootstrap free of cost. As a thank you, we only ask that you include a link back to [Glyphicons](#) whenever possible.

* + € € - ☁ ✉ ✎

- Glyphicons
- Dropdowns
- Button groups
- Button dropdowns
- Input groups
- Navs
- Navbar
- Breadcrumbs
- Pagination

Glyphicons:

- GLYPHICONS is a library of precisely prepared monochromatic icons and symbols, created with an emphasis to simplicity and easy orientation.

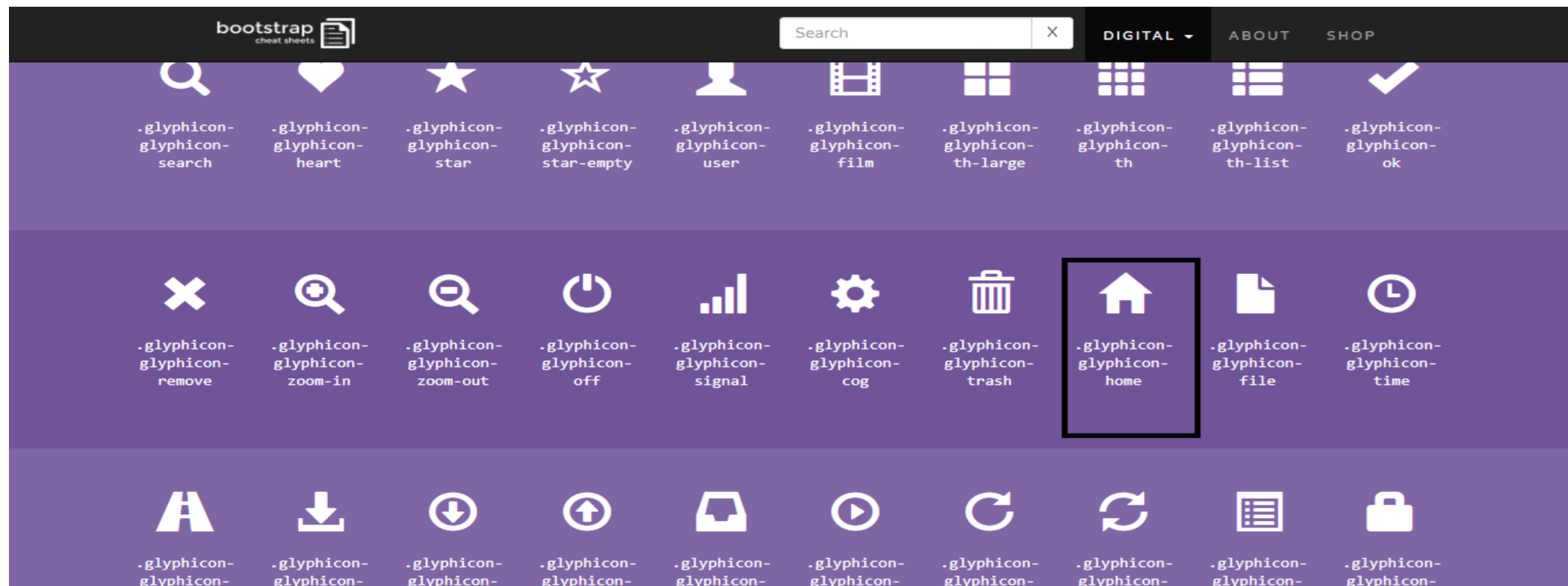


Glyphicons:

- You can get free glyphicons for bootstrap from:

<https://glyphicons.bootstrapcheatsheets.com/>

<https://getbootstrap.com/docs/3.3/components/>



Glyphicons: How to use:

- Header.html:

```
<div id="header">  
    <div id="menu">  
        <ul>  
            <li><a href="Home" class="first"><span class="glyphicon glyphicon-home">Home</span></a></li>  
            <li><a href="ConsoleList">Consoles</a></li>  
            <li><a href="GamesList">Games</a></li>  
            <li><a href="TabletList">Tablets</a></li>  
            <li><a href="Trending">Trending </a></li>  
        </ul>  
    </div>
```

Bootstrap Carousel

- The carousel is a slideshow for cycling through a series of content, built with CSS 3D transforms and a bit of JavaScript. It works with a series of images, text, or custom markup. It also includes support for previous/next controls and indicators.
- In browsers where the Page Visibility API is supported, the carousel will avoid sliding when the webpage is not visible to the user (such as when the browser tab is inactive, the browser window is minimized, etc.).
- Please be aware that nested carousels are not supported, and carousels are generally not compliant with accessibility standards.

How To Create a Carousel?

Secure | https://www.w3schools.com/bootstrap/bootstrap_carousel.asp

HTML

CSS

JAVASCRIPT

SQL

PHP

BOOTSTRAP

JQUERY

MORE ▾

REFERENCES ▾

EXAM

BS Alerts

BS Buttons

BS Button Groups

BS Glyphicons

BS Badges/Labels

BS Progress Bars

BS Pagination

BS Pager

BS List Groups

BS Panels

BS Dropdowns

BS Collapse

BS Tabs/Pills

BS Navbar

BS Forms

BS Inputs

BS Inputs 2

BS Input Sizing

BS Media Objects

BS Carousel

BS Modal

BS Tooltip

BS Popover

BS Scrollspy

BS Affix

Bootstrap Grids

BS Grid System

How To Create a Carousel

The following example shows how to create a basic carousel:

Example

```
<div id="myCarousel" class="carousel slide" data-ride="carousel">
  <!-- Indicators -->
  <ol class="carousel-indicators">
    <li data-target="#myCarousel" data-slide-to="0" class="active"></li>
    <li data-target="#myCarousel" data-slide-to="1"></li>
    <li data-target="#myCarousel" data-slide-to="2"></li>
  </ol>

  <!-- Wrapper for slides -->
  <div class="carousel-inner">
    <div class="item active">
      
    </div>

    <div class="item">
      
    </div>

    <div class="item">
      
    </div>
  </div>
</div>
```

https://www.w3schools.com/bootstrap/bootstrap_carousel.asp

How To Create a Carousel?

Secure | https://www.w3schools.com/bootstrap/bootstrap_carousel.asp

Home HTML CSS JAVASCRIPT SQL PHP **BOOTSTRAP** JQUERY MORE ▾ REFERENCES ▾ EXAM

- BS Alerts
- BS Buttons
- BS Button Groups
- BS Glyphicons
- BS Badges/Labels
- BS Progress Bars
- BS Pagination
- BS Pager
- BS List Groups
- BS Panels
- BS Dropdowns
- BS Collapse
- BS Tabs/Pills
- BS Navbar
- BS Forms
- BS Inputs
- BS Inputs 2
- BS Input Sizing
- BS Media Objects
- BS Carousel**
- BS Modal
- BS Tooltip
- BS Popover
- BS Scrollspy
- BS Affix

Bootstrap Grids

```
<div class="carousel-inner">
  <div class="item active">
    
  </div>

  <div class="item">
    
  </div>

  <div class="item">
    
  </div>
</div>

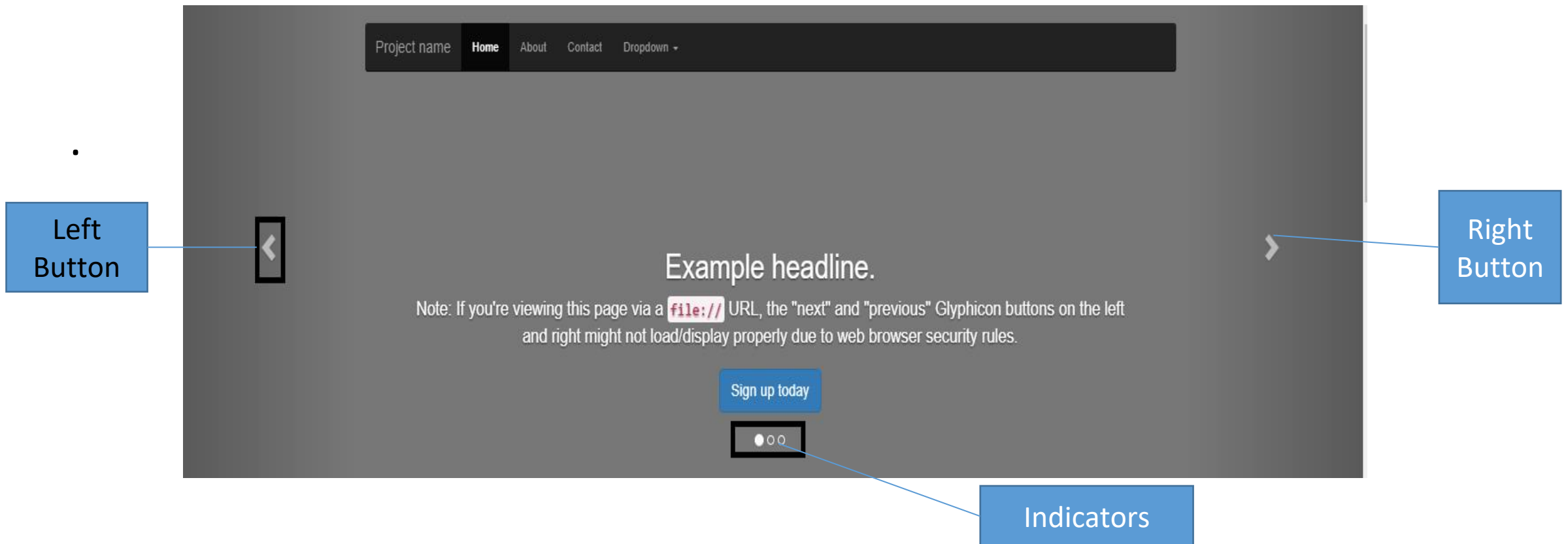
<!-- Left and right controls -->
<a class="left carousel-control" href="#myCarousel" data-slide="prev">
  <span class="glyphicon glyphicon-chevron-left"></span>
  <span class="sr-only">Previous</span>
</a>
<a class="right carousel-control" href="#myCarousel" data-slide="next">
  <span class="glyphicon glyphicon-chevron-right"></span>
  <span class="sr-only">Next</span>
</a>
</div>
```

Try it Yourself »

Carousel: Example

You can visit the link:

<https://getbootstrap.com/docs/3.3/examples/carousel/#>



Bootstrap Carousel

Secure

https://getbootstrap.com/docs/3.3/javascript/#carousel

Carousel carousel.js

A slideshow component for cycling through elements, like a carousel. **Nested carousels are not supported.**

Examples

EXAMPLE

<

First slide

>

<div id="carousel-example-generic" class="carousel slide" data-ride="carousel">

https://getbootstrap.com/docs/3.3/javascript/#carousel

Overview

Transitions

Modal

Dropdown

Scrollspy

Tab

Tooltip

Popover

Alert

Button

Collapse

Carousel

Examples

Usage

Options

Methods

Events

Affix

Back to top

Preview theme

```
<div id="carousel-example-generic" class="carousel slide" data-ride="carousel">
  <!-- Indicators -->
  <ol class="carousel-indicators">
    <li data-target="#carousel-example-generic" data-slide-to="0" class="active"></li>
    <li data-target="#carousel-example-generic" data-slide-to="1"></li>
    <li data-target="#carousel-example-generic" data-slide-to="2"></li>
  </ol>

  <!-- Wrapper for slides -->
  <div class="carousel-inner" role="listbox">
    <div class="item active">
      
      <div class="carousel-caption">
        ...
      </div>
    </div>
    <div class="item">
      
      <div class="carousel-caption">
        ...
      </div>
    </div>
    ...
  </div>

  <!-- Controls -->
  <a class="left carousel-control" href="#carousel-example-generic" role="button" data-
slide="prev">
    <span class="glyphicon glyphicon-chevron-left" aria-hidden="true"></span>
    <span class="sr-only">Previous</span>
  </a>
  <a class="right carousel-control" href="#carousel-example-generic" role="button" data-
slide="next">
    <span class="glyphicon glyphicon-chevron-right" aria-hidden="true"></span>
    <span class="sr-only">Next</span>
  </a>
</div>
```

- Overview
- Transitions
- Modal
- Dropdown
- Scrollspy
- Tab
- Tooltip
- Popover
- Alert
- Button
- Collapse
- Carousel**
 - Examples
 - Usage
 - Options
 - Methods
 - Events
- Affix

[Back to top](#)
[Preview theme](#)

Usage

Multiple carousels

Carousels require the use of an `id` on the outermost container (the `.carousel`) for carousel controls to function properly. When adding multiple carousels, or when changing a carousel's `id`, be sure to update the relevant controls.

Via data attributes

Use data attributes to easily control the position of the carousel. `data-slide` accepts the keywords `prev` or `next`, which alters the slide position relative to its current position. Alternatively, use `data-slide-to` to pass a raw slide index to the carousel `data-slide-to="2"`, which shifts the slide position to a particular index beginning with `0`.

The `data-ride="carousel"` attribute is used to mark a carousel as animating starting at page load. **It cannot be used in combination with (redundant and unnecessary) explicit JavaScript initialization of the same carousel.**

Via JavaScript

Call carousel manually with:

```
$('.carousel').carousel()
```

Options

Options can be passed via data attributes or JavaScript. For data attributes, append the option name to `data-`, as in `data-interval=""`.

Name	type	default	description
interval	number	5000	The amount of time to delay between automatically cycling an item. If false, carousel will not automatically cycle.
pause	string null	"hover"	If set to <code>"hover"</code> , pauses the cycling of the carousel on <code>mouseenter</code> and resumes the cycling of the carousel on <code>mouseleave</code> . If set to <code>null</code> , hovering over the carousel won't pause it.

Overview

Transitions

Modal

Dropdown

Scrollspy

Tab

Tooltip

Popover

Alert

Button

Collapse

Carousel

Examples

Usage

Options

Methods

Events

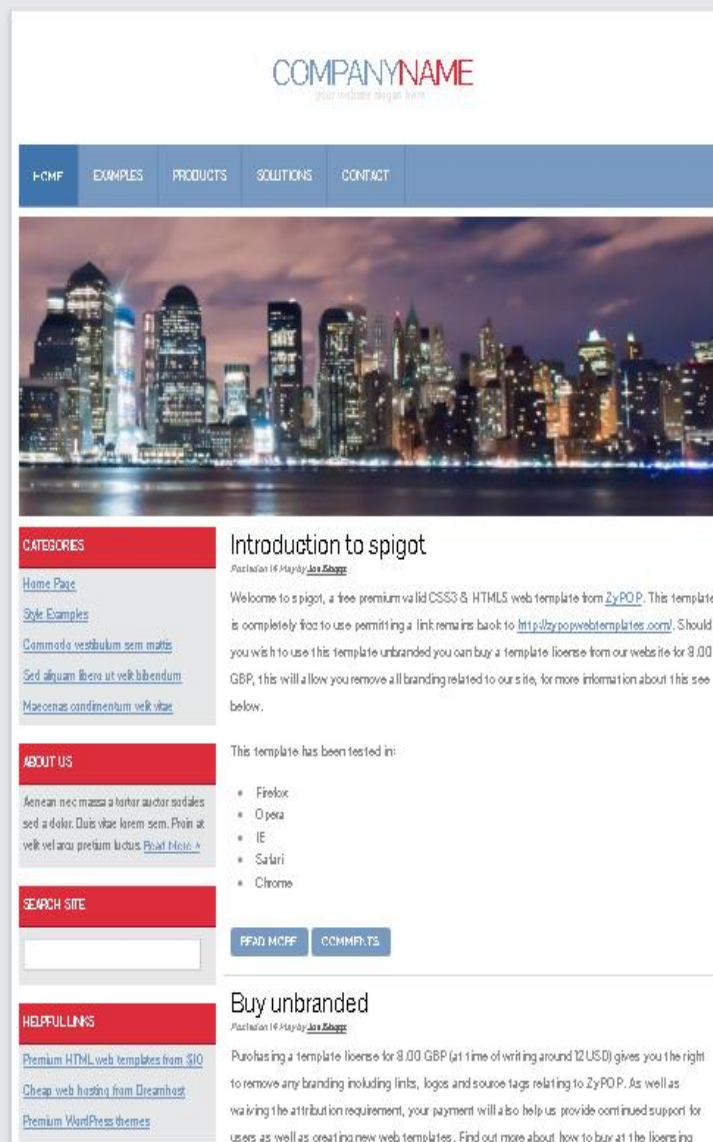
Affix

Back to top

Preview theme

Let's See some Examples of
CSS Templates

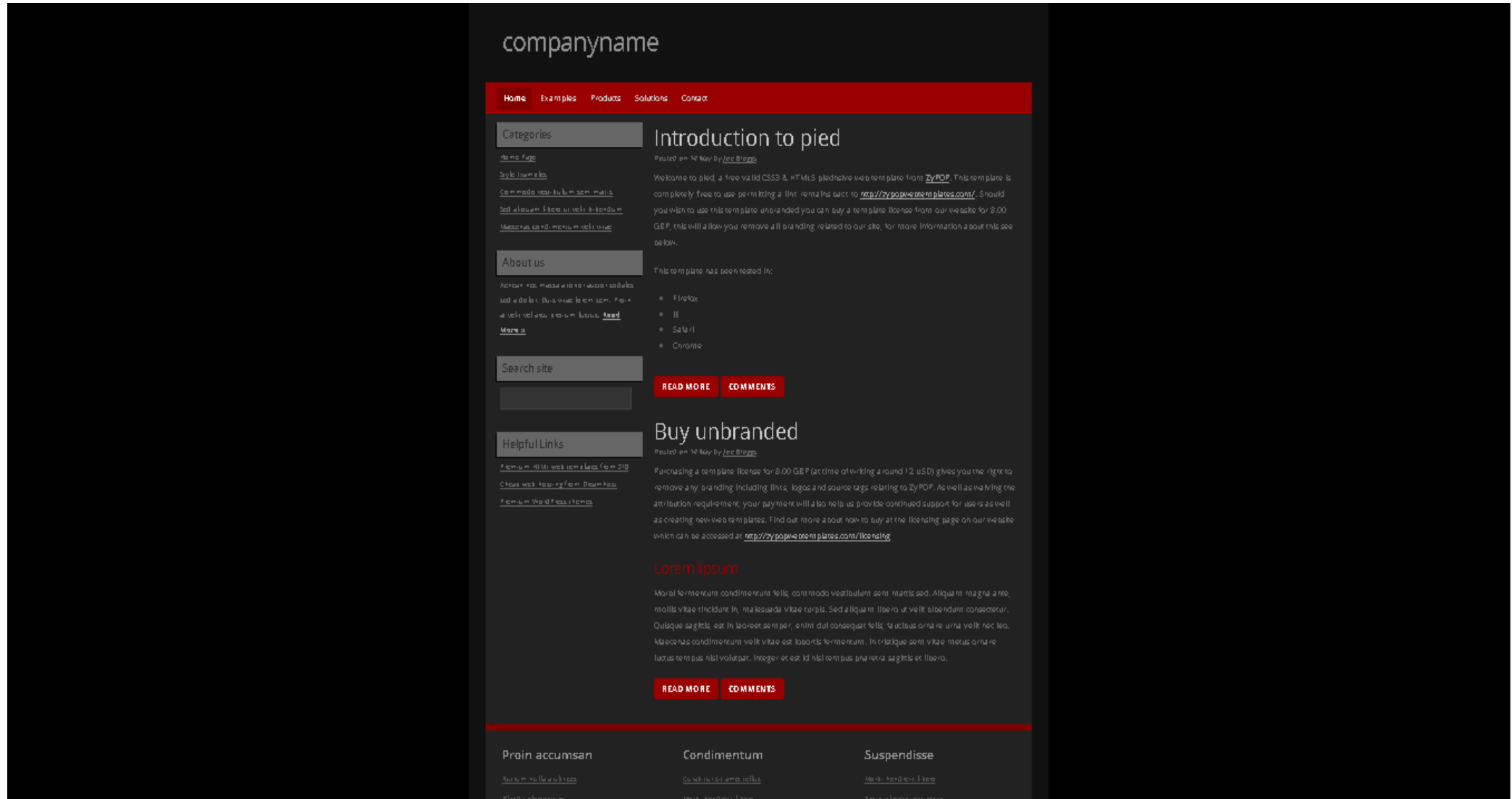
Template 1 :



Template 2 :

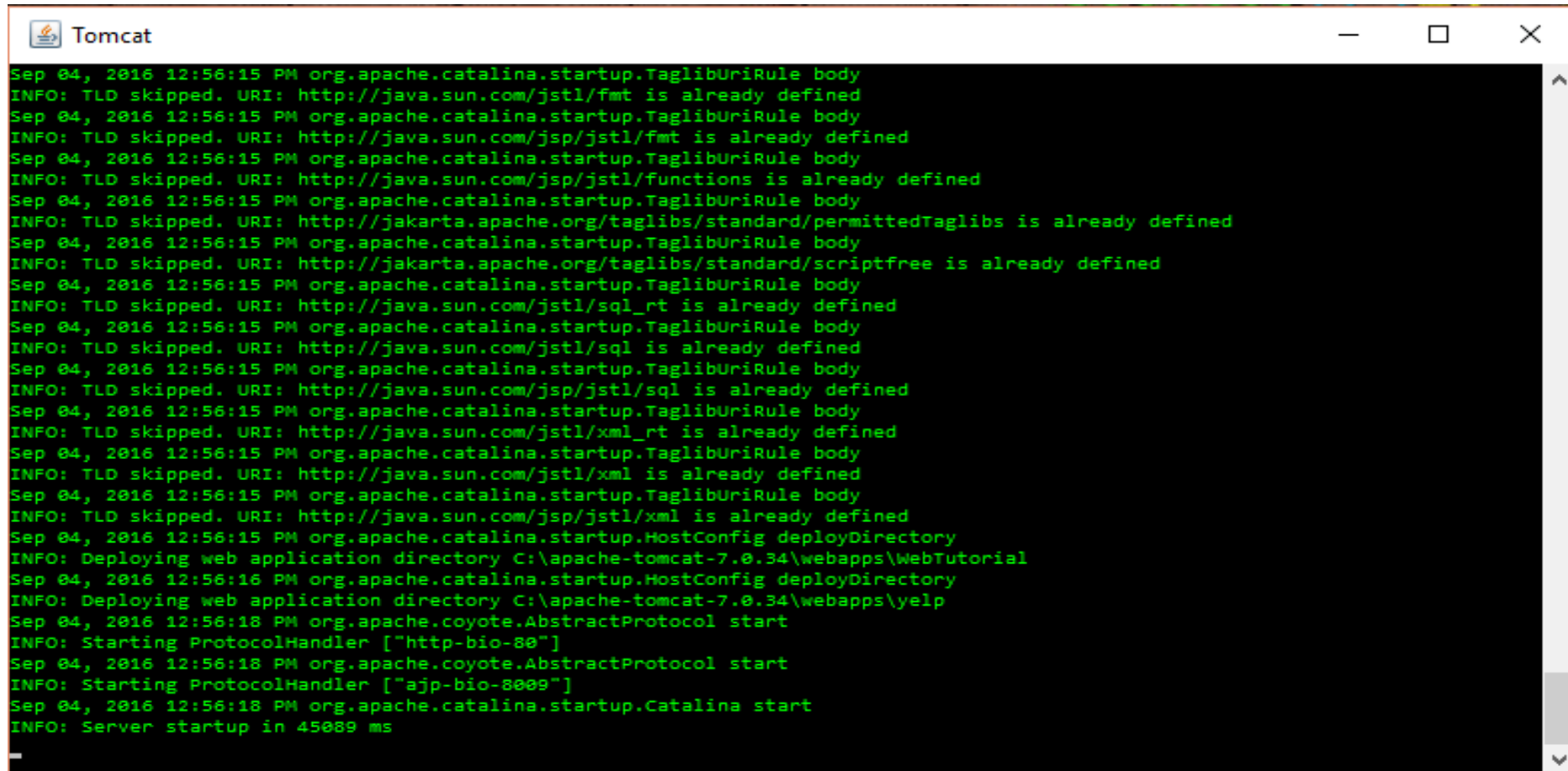


Template 3 :



Example:

- Before we begin, make sure that Apache Tomcat are running

A screenshot of a Windows console window titled "Tomcat". The window displays a series of log messages in green text on a black background. The logs show the startup process of Apache Tomcat, including the initialization of various JSTL and JSP tag libraries, the deployment of web applications (WebTutorial and yelp), and the starting of the Coyote and AJP protocol handlers. The final message indicates that the server startup completed in 45089 ms.

```
Sep 04, 2016 12:56:15 PM org.apache.catalina.startup.TaglibUriRule body
INFO: TLD skipped. URI: http://java.sun.com/jstl/fmt is already defined
Sep 04, 2016 12:56:15 PM org.apache.catalina.startup.TaglibUriRule body
INFO: TLD skipped. URI: http://java.sun.com/jsp/jstl/fmt is already defined
Sep 04, 2016 12:56:15 PM org.apache.catalina.startup.TaglibUriRule body
INFO: TLD skipped. URI: http://java.sun.com/jsp/jstl/functions is already defined
Sep 04, 2016 12:56:15 PM org.apache.catalina.startup.TaglibUriRule body
INFO: TLD skipped. URI: http://jakarta.apache.org/taglibs/standard/permittedTaglibs is already defined
Sep 04, 2016 12:56:15 PM org.apache.catalina.startup.TaglibUriRule body
INFO: TLD skipped. URI: http://jakarta.apache.org/taglibs/standard/scriptfree is already defined
Sep 04, 2016 12:56:15 PM org.apache.catalina.startup.TaglibUriRule body
INFO: TLD skipped. URI: http://java.sun.com/jstl/sql_rt is already defined
Sep 04, 2016 12:56:15 PM org.apache.catalina.startup.TaglibUriRule body
INFO: TLD skipped. URI: http://java.sun.com/jstl/sql is already defined
Sep 04, 2016 12:56:15 PM org.apache.catalina.startup.TaglibUriRule body
INFO: TLD skipped. URI: http://java.sun.com/jsp/jstl/sql is already defined
Sep 04, 2016 12:56:15 PM org.apache.catalina.startup.TaglibUriRule body
INFO: TLD skipped. URI: http://java.sun.com/jstl/xml_rt is already defined
Sep 04, 2016 12:56:15 PM org.apache.catalina.startup.TaglibUriRule body
INFO: TLD skipped. URI: http://java.sun.com/jstl/xml is already defined
Sep 04, 2016 12:56:15 PM org.apache.catalina.startup.TaglibUriRule body
INFO: TLD skipped. URI: http://java.sun.com/jsp/jstl/xml is already defined
Sep 04, 2016 12:56:15 PM org.apache.catalina.startup.HostConfig deployDirectory
INFO: Deploying web application directory C:\apache-tomcat-7.0.34\webapps\WebTutorial
Sep 04, 2016 12:56:16 PM org.apache.catalina.startup.HostConfig deployDirectory
INFO: Deploying web application directory C:\apache-tomcat-7.0.34\webapps\yelp
Sep 04, 2016 12:56:18 PM org.apache.coyote.AbstractProtocol start
INFO: Starting ProtocolHandler ["http-bio-80"]
Sep 04, 2016 12:56:18 PM org.apache.coyote.AbstractProtocol start
INFO: Starting ProtocolHandler ["ajp-bio-8009"]
Sep 04, 2016 12:56:18 PM org.apache.catalina.startup.Catalina start
INFO: Server startup in 45089 ms
```

Web Application Home Page:

- welcome-file-list in web.xml : The **welcome-file-list** element of **web-app**, is used to define a list of welcome files. A **welcome file** is the file that is invoked automatically by the server, if you don't specify any file name.

By default server looks for the welcome file in following order:

1. welcome-file-list in web.xml
2. index.html
3. index.htm
4. index.jsp

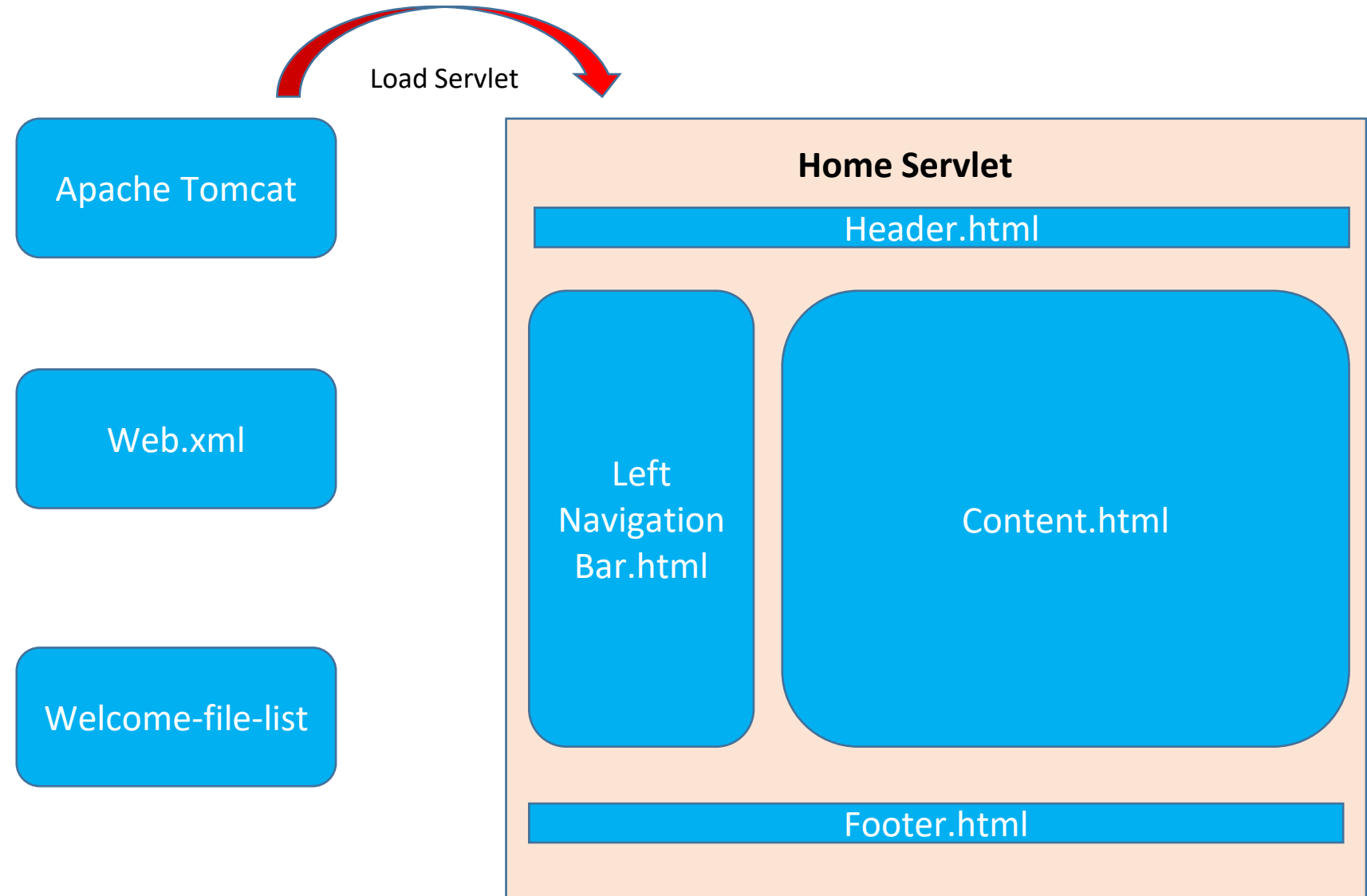
If none of these files are found, server renders 404 error.

- To learn more on welcome-file-list, visit:
<http://www.javatpoint.com/welcome-file-list>

How Apache Tomcat loads web App Homepage ?

- **Home** servlet is added in **welcome-file-list** of **web.xml**.
- We have 4 Important HTML pages in our Game Speed Web Application.
- **Header.html** - >It Contains Game Speed Application Logo, Search Box and Top Navigation Bar.
- **Footer.html**->It Contains Copyright Information of the Game Speed Application.
- **LeftNavigationBar.html** -> It contains Different Product Categories available in Game Speed Application (Consoles, Games, Tablets, Accessories).
- **Content.html** -> It Contains Products Available in Game Speed Application, you have the options of Buying and reviewing Product.
- These html pages are printed using the **utilities** function in the **Home** Servlet.

How Apache tomcat loads the web App Homepage (Diagram) :



Home Servlet:

```
public class Home extends HttpServlet {  
    protected void doGet(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {  
        response.setContentType("text/html");  
        PrintWriter pw = response.getWriter();  
  
        Utilities utility = new Utilities(request,pw);  
        utility.printHtml("Header.html");  
        utility.printHtml("LeftNavigationBar.html");  
        utility.printHtml("Content.html");  
        utility.printHtml("Footer.html");  
    }  
}
```

Left NavigationBar.html :

```
<div id="sidebar">
  <ul>
    <li>
      <h2>Consoles</h2>
      <ul>
        <li id="first"><a href="ConsoleList?maker=microsoft">Microsoft</a>
        </li>
        <li><a href="ConsoleList?maker=sony">Sony</a></li>
        <li><a href="ConsoleList?maker=nintendo">Nintendo</a></li>
      </ul>
    </li>
    <li>
      <h2>Games</h2>
      <ul>
        <li id="first"><a href="GamesList?maker=electronicArts">Electronic
          Arts</a></li>
        <li><a href="GamesList?maker=activision">Activision</a></li>
        <li><a href="GamesList?maker=takeTwoInteractive">Take-Two
          Interactive</a></li>
      </ul>
    </li>
    <li>
      ....
    </li>
  </ul>
</div>
```

The href attribute specifies the URL of the page the link goes to.

ConsoleList Servlet :

```
public class ConsoleList extends HttpServlet {  
    ...  
    PrintWriter pw = response.getWriter();  
    String name = null;  
    String CategoryName = request.getParameter("maker");  
    HashMap<String, Console> hm = new HashMap<String, Console>();  
    if(CategoryName==null){  
        ...  
        if(CategoryName.equals("sony")){  
            hm.putAll(ConsoleHashMap.sony);  
            name = ConsoleHashMap.string_sony;  
        }  
        else if(CategoryName.equals("nintendo")){  
            hm.putAll(ConsoleHashMap.nintendo);  
            name = ConsoleHashMap.string_nintendo; }  
    }  
    ...  
}
```


Content.html :

```
<div id="content">
```

```
....
```

```
<div class="post">
```

```
<div class="entry">
```

```
<table id="bestseller">
```

```
<tr>
```

```
<td><div id="shop_item">
```

```
<h3>XBox One</h3>
```

```
<strong>399.99$</strong>
```

```
<ul>
```

```
<li id="item">
```

```
</li>
```

```
<li><a class="btnreview" href="#">Buy Now</a></li>
```

```
<!--<li><a class="btnbuy"
```

```
href="AccessoryList?maker=microsoft&console=xboxone">View
```

```
Accessories</a></li>-->
```

```
<li><a class="btnreview" href="#">Reviews</a></li>
```

```
</ul>
```

```
</div>
```

```
</td>
```

```
</tr>
```

```
</table>
```

```
</div>
```

```
</div>
```

```
</div>
```

```
....
```

Header.html :

```
<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css">
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.2.1/jquery.min.js"></script>
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"></script>
<script>
<!-- jquery script -->
$(document).ready(function(){

    $('#myCarousel').carousel({
    interval: 3000
    })

    $('.carousel .item').each(function(){
    var next = $(this).next();
    if (!next.length) {
    next = $(this).siblings(':first');
    }
    next.children(':first-child').clone().appendTo($(this));
    });
    });
```

Utilities Servlet:

```
public class Utilities extends HttpServlet{

...

    public void printHtml(String file) {
        String result = HtmlToString(file);
        if (file == "Header.html") {
            if (session.getAttribute("username")!=null){
                String username = session.getAttribute("username").toString();
                username = Character.toUpperCase(username.charAt(0)) + username.substring(1);
                result = result
                    + "<li><a>Hello, "+username+"</a></li>"
                    + "<li><a href='Account'>Account</a></li>"
                    + "<li><a href='Logout'>Logout</a></li>";
            }
            else
                result = result + "<li><a href='Login'>Login</a></li>";
            result = result
                + "<li><a href='Cart'>Cart("+CartCount()+")</a></li></ul></div></div><div id='page'>";
            pw.print(result);
        } else
            pw.print(result);
    }

...

}
```

Registration Servlet : How Customer Accounts are Stored in Hash Map ?

```
public class Registration extends HttpServlet {
    String username = request.getParameter("username");
    String password = request.getParameter("password");

    ...

    HashMap<String, User> hm=new HashMap<String, User>();
    try
    {
        FileInputStream fileInputStream = new FileInputStream(new File(TOMCAT_HOME+"\\webapps\\Tutorial_1\\UserDetails.txt"));
        ObjectInputStream objectInputStream = new ObjectInputStream(fileInputStream);

        hm= (HashMap)objectInputStream.readObject();
    }
    if(hm.containsKey(username))
    { error_msg = "Username already exist as " + usertype;}
    else{
        User user = new User(username,password,usertype);
        hm.put(username, user);

        FileOutputStream fileOutputStream = new FileOutputStream(TOMCAT_HOME+"\\webapps\\Tutorial_1\\UserDetails.txt");
        ObjectOutputStream objectOutputStream = new ObjectOutputStream(fileOutputStream);
        objectOutputStream.writeObject(hm);
        objectOutputStream.flush();
        objectOutputStream.close();
        fileOutputStream.close();

    }
    displayRegistration(request, response, pw, true);
    ...
}
```

Utilities Servlet : How customer orders are stored in hash map ?

```
public void storePayment(int orderId,String orderName,double orderPrice,String userAddress,String creditCardNo){

HashMap<Integer, ArrayList<OrderPayment>> orderPayments= new HashMap<Integer, ArrayList<OrderPayment>>();

    try
    {
        FileInputStream fileInputStream = new FileInputStream(new File(TOMCAT_HOME+"\\webapps\\Tutorial_1\\PaymentDetails.txt"));
        ObjectInputStream objectInputStream = new ObjectInputStream(fileInputStream);

        orderPayments = (HashMap)objectInputStream.readObject();
    }
    if(!orderPayments.containsKey(orderId)){
        ArrayList<OrderPayment> arr = new ArrayList<OrderPayment>();
        orderPayments.put(orderId, arr);
    }
    ArrayList<OrderPayment> listOrderPayment = orderPayments.get(orderId);
    OrderPayment orderpayment = new OrderPayment(orderId,username(),orderName,orderPrice,userAddress,creditCardNo);
        listOrderPayment.add(orderpayment);

    try
    {
        FileOutputStream fileOutputStream = new FileOutputStream(new File(TOMCAT_HOME+"\\webapps\\Tutorial_1\\PaymentDetails.txt"));
        ObjectOutputStream objectOutputStream = new ObjectOutputStream(fileOutputStream);
        objectOutputStream.writeObject(orderPayments);
        objectOutputStream.flush();
        objectOutputStream.close();
        fileOutputStream.close();
    }

    ...

}
```

How ProductCatalog.xml get loaded ?

Web.xml

```
<servlet>
  <servlet-name>Startup</servlet-name>
  <servlet-class>Startup</servlet-class>
  <load-on-startup>1</load-on-startup>
</servlet>
```

Startup Servlet

```
public class Startup extends HttpServlet
{
    public void init() throws ServletException
    {
        SaxParserDataStore.addHashMap();
    }
}
```

SaxParserDataStore Servlet

```
public static void addHashMap() {
    String TOMCAT_HOME = System.getProperty("catalina.home");
    new SaxParserDataStore(TOMCAT_HOME+"\\webapps\\Tutorial_1\\ProductCatalog.xml");
}
```

SaxParserDataStore Servlet:

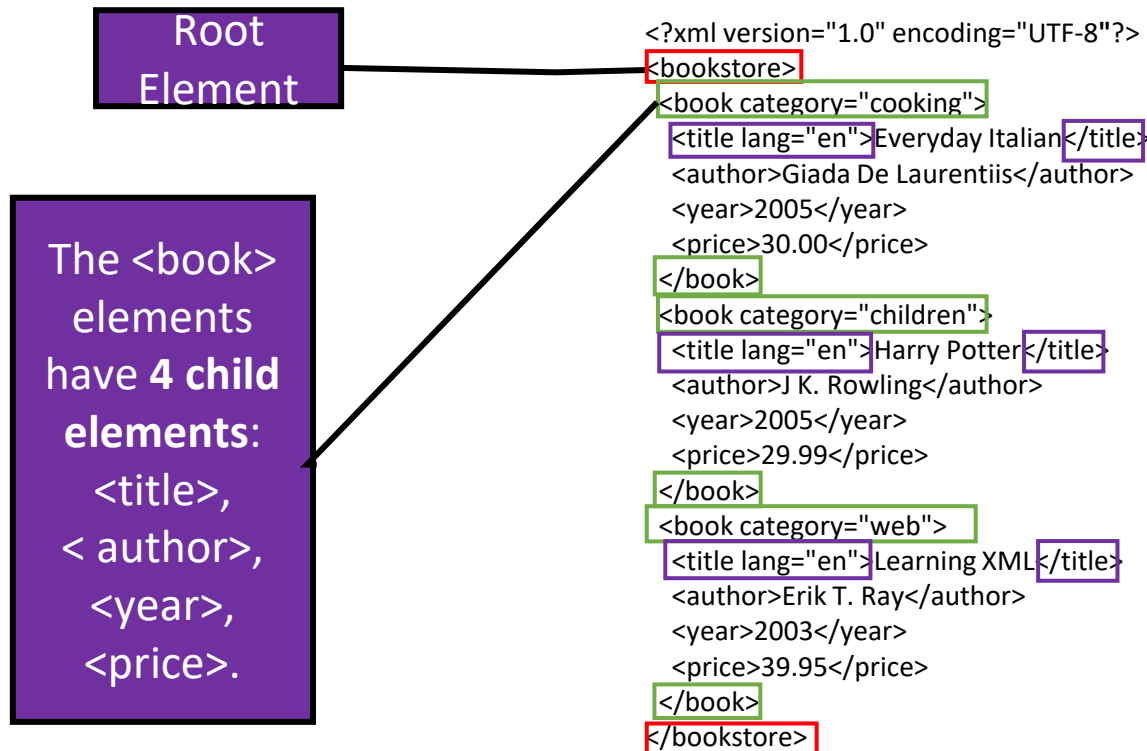
```
public class SaxParserDataStore extends DefaultHandler {  
  
    ...  
  
    Console console;  
  
    Game game;  
  
    Tablet tablet;  
  
    Accessory accessory;  
  
    static HashMap<String,Console> consoles;  
  
    static HashMap<String,Game> games;  
  
    static HashMap<String,Tablet> tablets;  
  
    static HashMap<String,Accessory> accessories;  
  
    public SaxParserDataStore(String consoleXmlFileName) {  
        this.consoleXmlFileName = consoleXmlFileName;  
  
        consoles = new HashMap<String, Console>();  
  
        games=new  HashMap<String, Game>();  
  
        tablets=new HashMap<String, Tablet>();  
  
        accessories=new HashMap<String, Accessory>();  
  
        accessoryHashMap=new HashMap<String,String>();  
  
        parseDocument();  
  
    } ... }
```

What is XML?

- XML stands for EXtensible Markup Language.
- XML was designed to store and transport data.
- XML was designed to be self-descriptive.
- XML is used in many aspects of web development.
- XML is often used to separate data from presentation.
- To Learn More on How to Use XML , Visit : http://www.w3schools.com/xml/xml_usedfor.asp

XML Document :

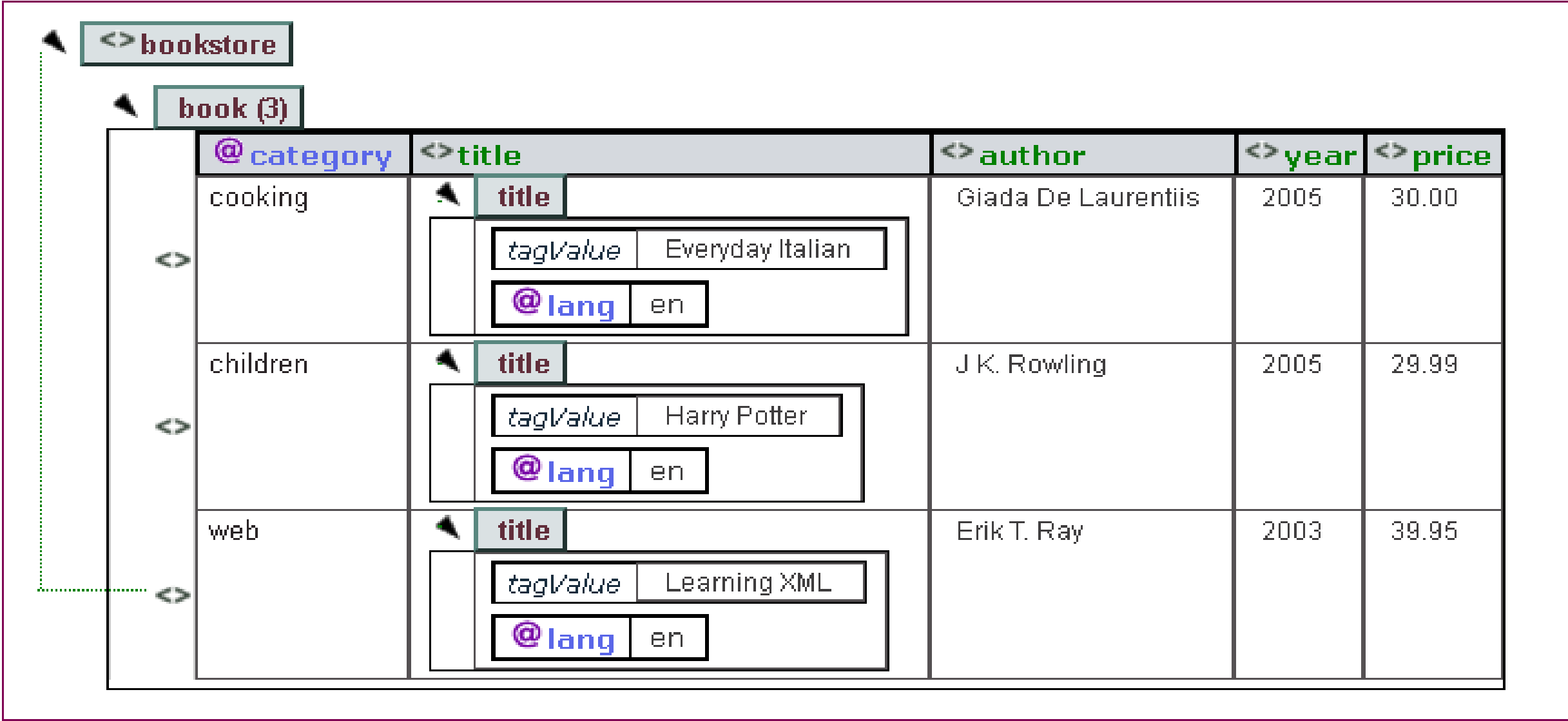
- XML documents form a tree structure that starts at "the root" and branches to "the leaves".



XML Tree Structure:

An XML tree starts at a **root element** and branches from the root to **child elements**.

Let us Seen an Example of XML Tree Structure of XML Shown Before :



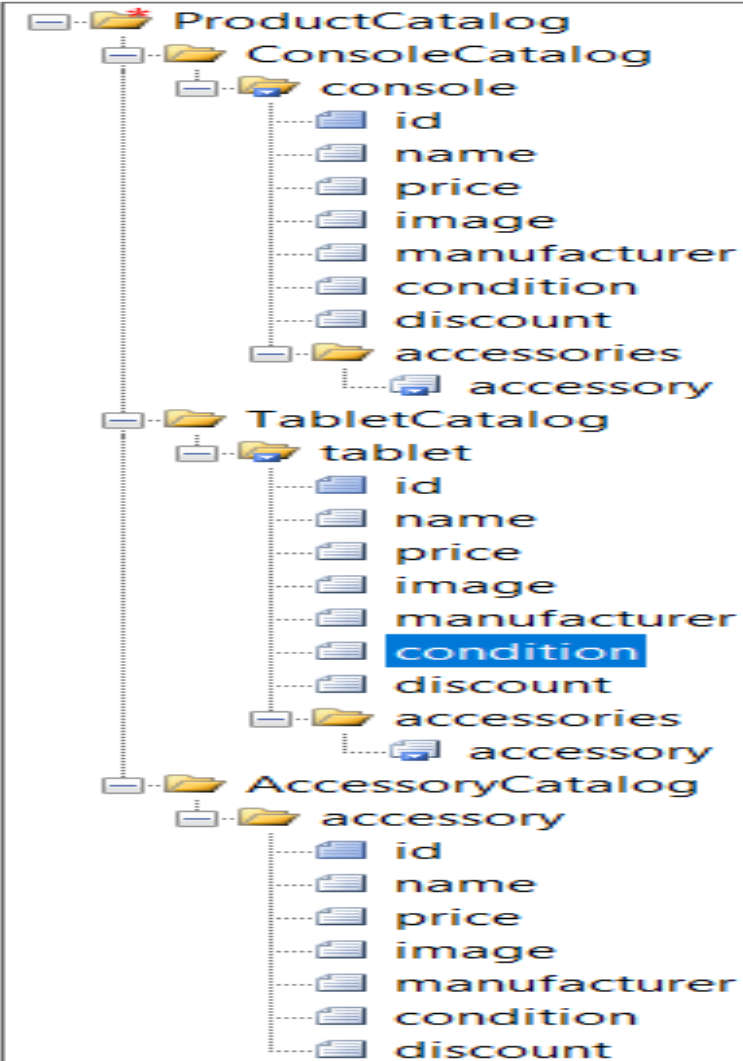
To Learn More about XML Tree , Visit: http://www.w3schools.com/xml/xml_tree.asp

XML Structure for ProductCatalog.xml :

XML Source

XML maps in this workbook:

ProductCatalog_Map



ProductCatalog.xml :

<ProductCatalog>

<ConsoleCatalog>

```
<console id="xboxone">
  <name>Xbox One</name>
  <price>399.99</price>
  <image>xbox1.jpg</image>
  <manufacturer>Microsoft</manufacturer>
  <condition>New</condition>
  <discount>10.0</discount>
  <accessories>
    <accessory>xboxone_wc</accessory>
    <accessory>xboxone_sh</accessory>
  </accessories>
</console>
<console id="ps4">
  <name>PS4</name>
  <price>349.99</price>
  <image>PS4-console-bundle.jpg</image>
  <manufacturer>Sony</manufacturer>
  <condition>New</condition>
  <discount>10.0</discount>
  <accessories>
    <accessory>ps4_wc</accessory>
  </accessories>
</console>
```

</ConsoleCatalog>

XML Document Tree Structure for ProductCatalog.xml :

<> ProductCatalog

<> ConsoleCatalog

console (2)

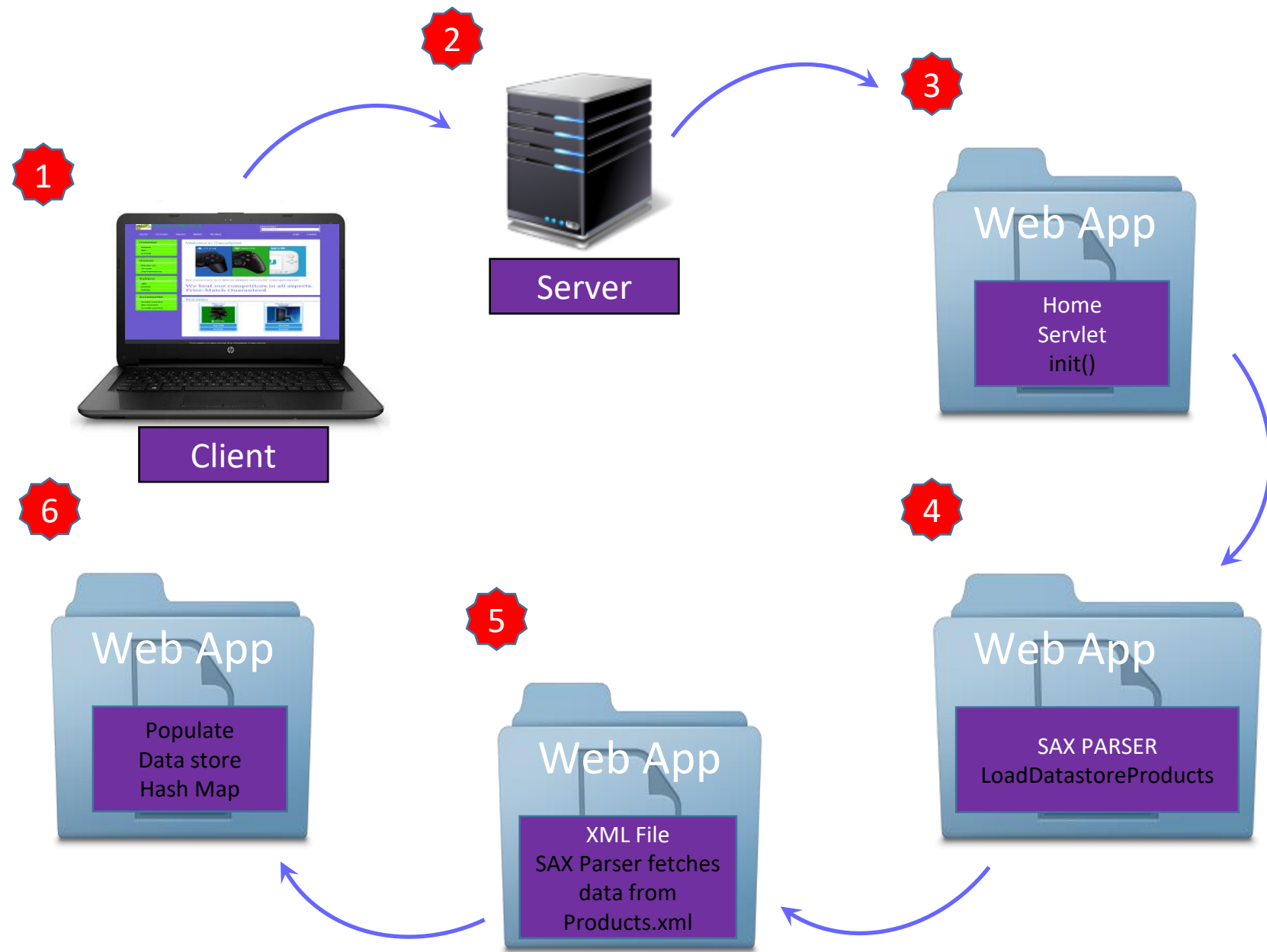
@id	<>name	<>price	<>image	<>manufacturer	<>condition	<>discount	<>accessories
xboxone	Xbox One	399.99	xbox1.jpg	Microsoft	New	10.0	<p>accessories</p> <p>accessory (2)</p> <ul style="list-style-type: none">xboxone_wcxboxone_sh
ps4	PS4	349.99	PS4-console-bundle.jpg	Sony	New	10.0	<p>accessories</p> <p>accessory ps4_wc</p>

<> TabletCatalog

tablet (2)

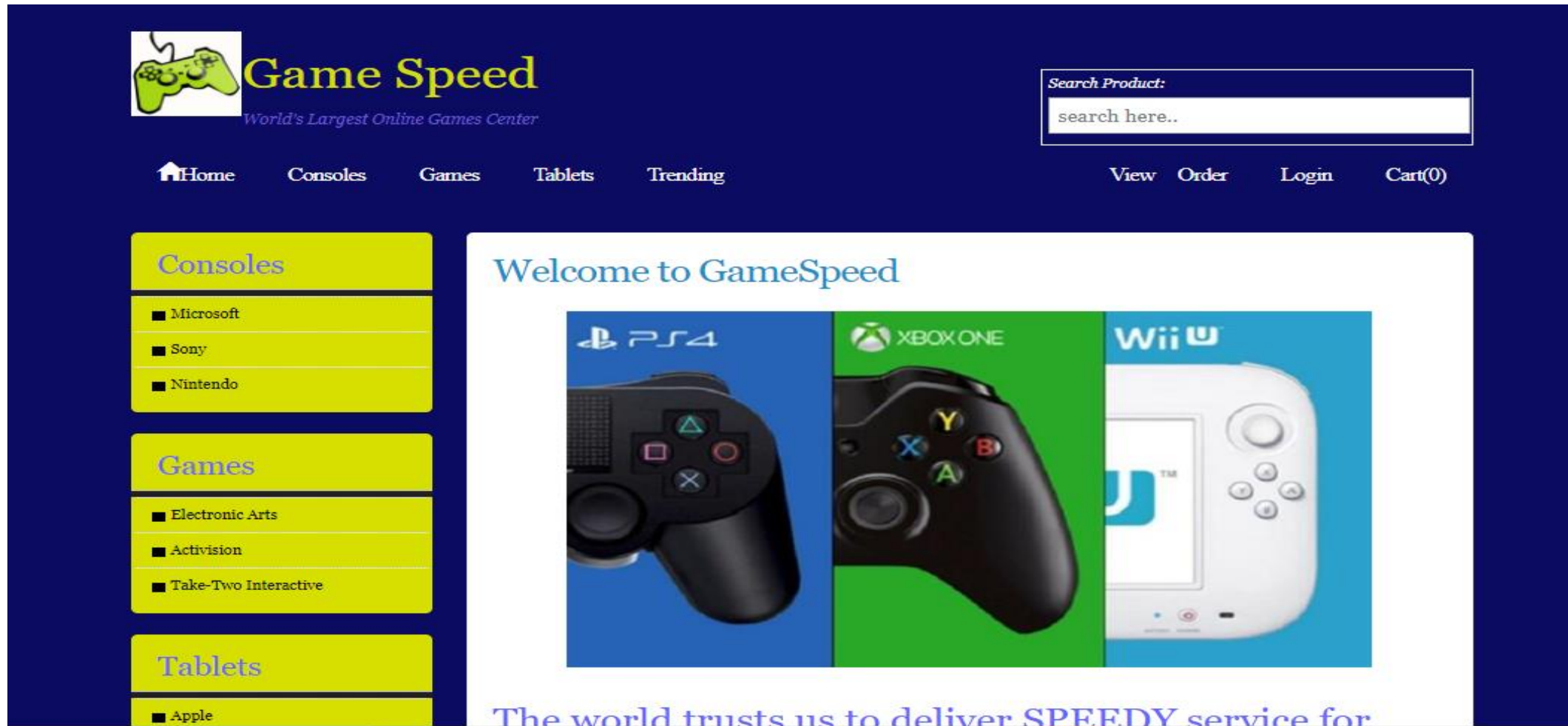
@id	<>name	<>price	<>image	<>manufacturer	<>condition	<>discount	<>accessories
ipad	ipad	189.99	ipad.jpg	Apple	Used	40.0	<p>accessories</p> <p>accessory ipad-ep</p>
Surface	Surface	299.99	surface.jpg	Microsoft	New	15.0	<p>accessories</p> <p>accessory (2)</p> <ul style="list-style-type: none">surf_spkrsurf_hp

How Product Data Gets Populated:

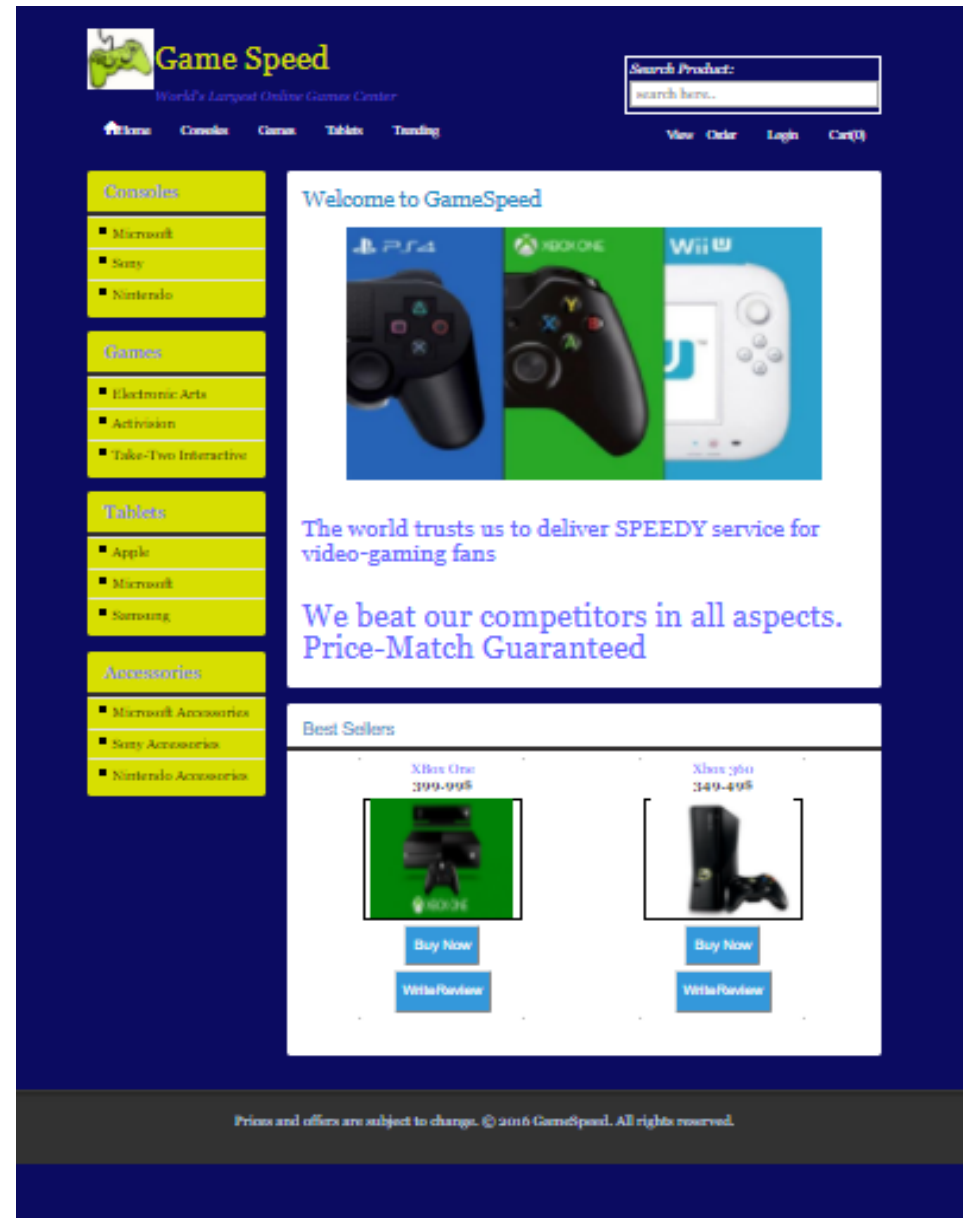


Example – Startup Page:

- Open your browser and type in 'http://localhost:8080/Tutorial_1'

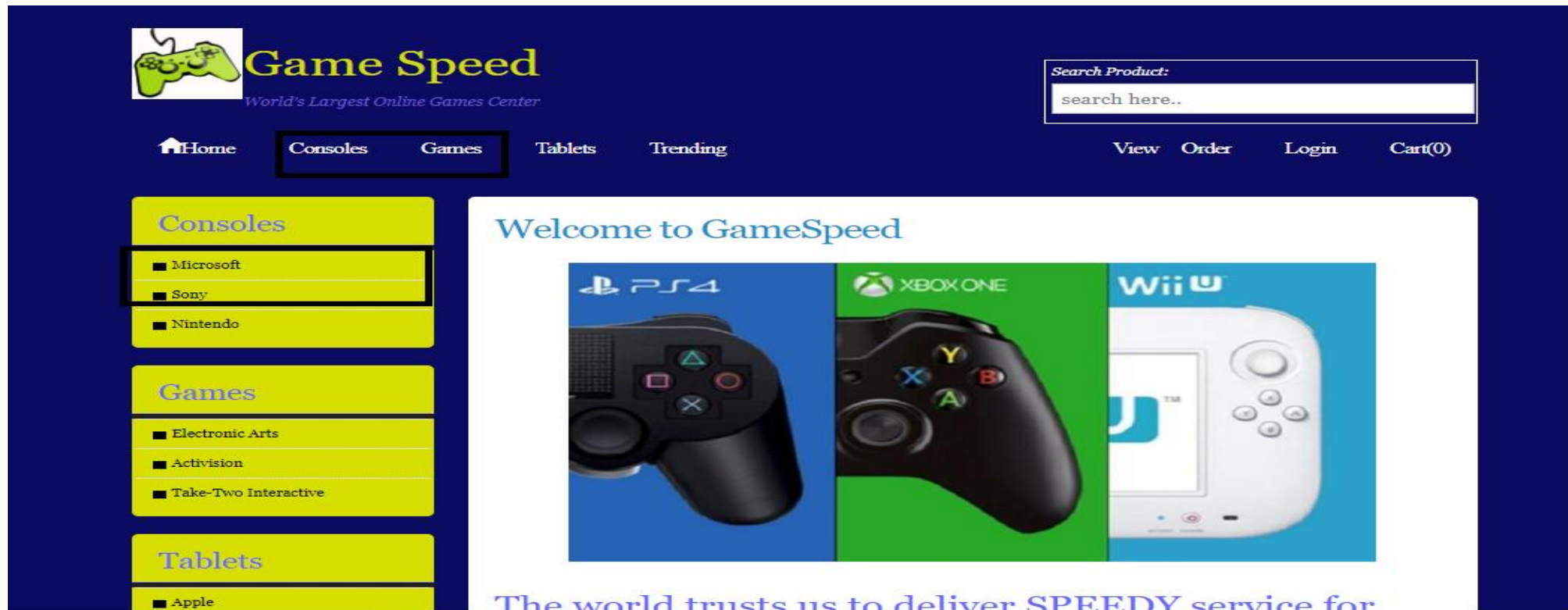


Example – Page Layout:



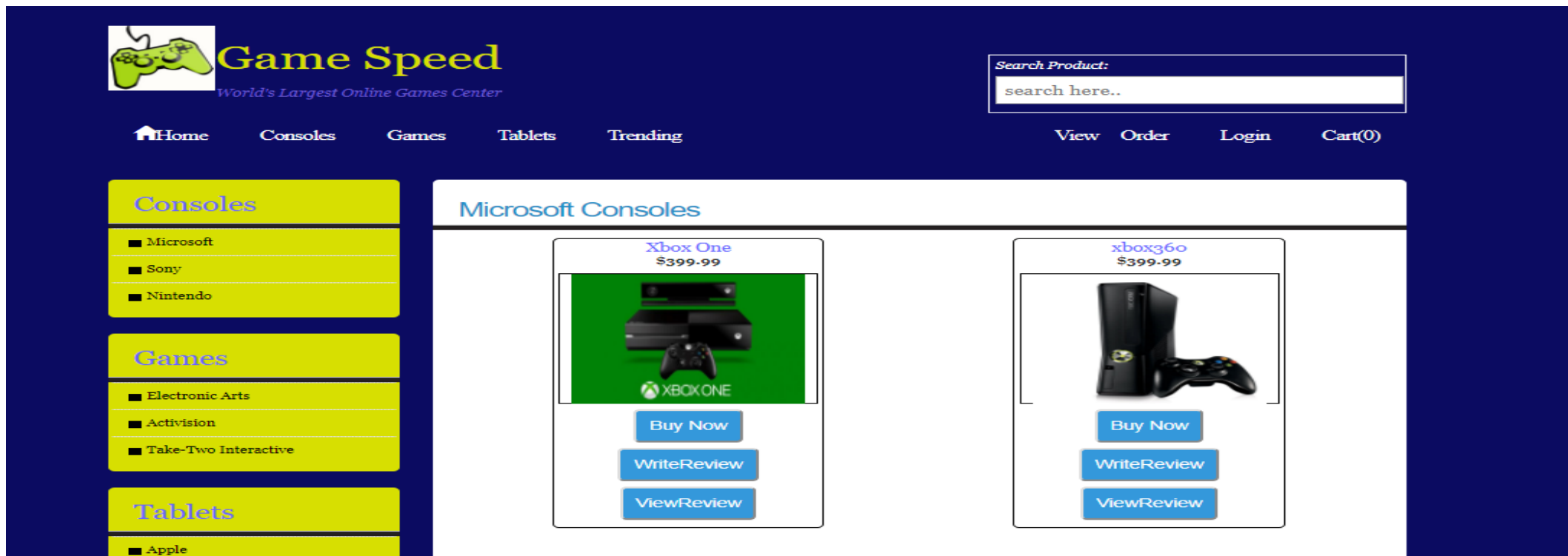
Example – Navigation Bar:

- Click on the products available in the navigation bar
- You can also select the products from the left navigation bar



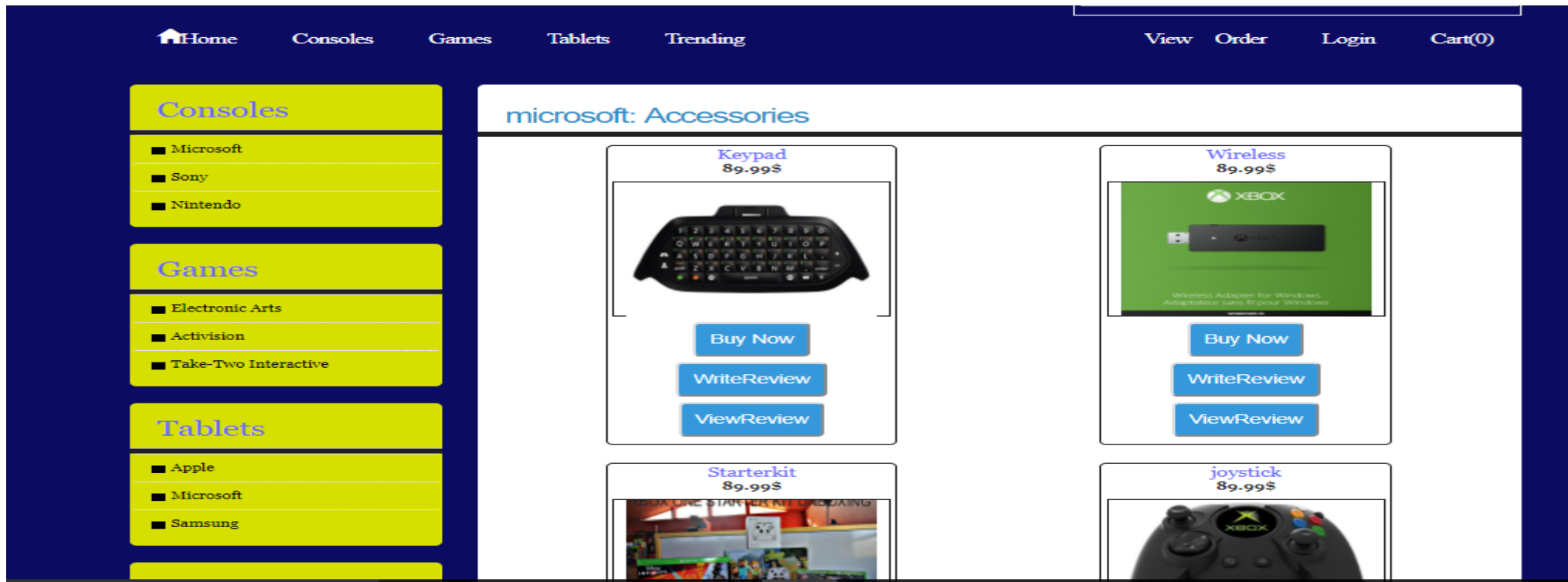
Example – Products Catalog:

- Clicking on a product type will take you to the product page.
- You have different options available such as buy a product , write reviews for the product.



Example – Accessories:

- Clicking on a Accessories link will take you to the Accessories page.
- You have different options available such as buy Accessories and review them.



Example – Place Order:

- Click on 'Buy Now' button on the products page to purchase the product
- This should take you to a new page (Cart Servlet) where you can purchase the product and all the accessories associated with it will be displayed in the carousel
- Click on 'Check Out' to place the order for the selected product.



Carousel:

Consoles

■ Microsoft

■ Sony

■ Nintendo

Games

■ Electronic Arts

■ Activision

■ Take-Two Interactive

Tablets

■ Apple

■ Microsoft

■ Samsung


Accessories

Cart(1)

1.	Xbox One	: 399.99
	Total	399.99
		CheckOut

Xbox One Accessories

Wireless adpter
89.99\$




[Buy Now](#)

[WriteReview](#)

[ViewReview](#)

Controller
89.99\$



[Buy Now](#)

[WriteReview](#)

[ViewReview](#)

Customize Carousel:

Consoles

■ Microsoft

■ Sony

■ Nintendo

Games

■ Electronic Arts

■ Activision

■ Take-Two Interactive

Tablets

■ Apple

■ Microsoft

■ Samsung

Accessories


Cart(1)

1.	Xbox One	: 399.99
	Total	399.99
		<div>CheckOut</div>

Xbox One Accessories

Wireless adapter

89.99\$




Buy Now

WriteReview

ViewReview

Controller

89.99\$



Buy Now

WriteReview

ViewReview

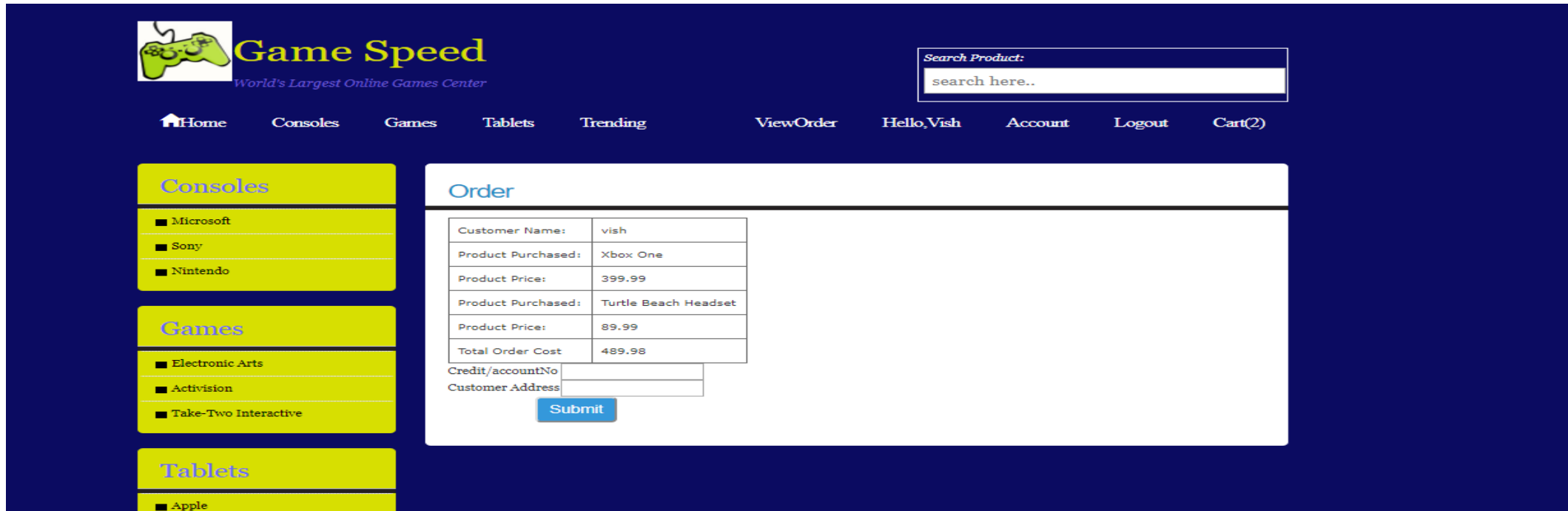
Customize Carousel:

```
pw.print("<div class='item active'><div class='col-md-6' style = 'background-color: #58acfa;border :1px solid #cfd1d3'>");
}
else
{
pw.print("<div class='item'><div class='col-md-6' style = 'background-color: #58acfa ;border :1px solid #cfd1d3' >");
}

rint("<a class='left carousel-control' href='#"+myCarousel+"' data-slide='prev' style = 'width : 10% ;background-color:#D7e4ef; opacity :1'>"+
"<span class='glyphicon glyphicon-chevron-left' style = 'color :red'></span>"+
"<span class='sr-only'>Previous</span>"+
"</a>");
rint("<a class='right carousel-control' href='#"+myCarousel+"' data-slide='next' style = 'width : 10% ;background-color:#D7e4ef; opacity :1'>"+
"<span class='glyphicon glyphicon-chevron-right' style = 'color :red'></span>"+
```

Example – Purchase Order:

- Enter the Credit card Number or Account Number of the Customer.
- Enter the Customer address.
- Click on 'Submit' to place the order for the selected product.



The screenshot shows the Game Speed website with a dark blue background. The header includes the Game Speed logo (a green game controller) and the tagline "World's Largest Online Games Center". A search bar is located in the top right corner. The navigation menu includes links for Home, Consoles, Games, Tablets, Trending, ViewOrder, Hello,Vish, Account, Logout, and Cart(2). The left sidebar features three categories: Consoles (Microsoft, Sony, Nintendo), Games (Electronic Arts, Activision, Take-Two Interactive), and Tablets (Apple). The main content area displays the "Order" form, which contains a table with order details and input fields for customer information.

Game Speed
World's Largest Online Games Center

Search Product:
search here..

Home Consoles Games Tablets Trending ViewOrder Hello,Vish Account Logout Cart(2)

Consoles

- Microsoft
- Sony
- Nintendo

Games

- Electronic Arts
- Activision
- Take-Two Interactive

Tablets

- Apple

Order

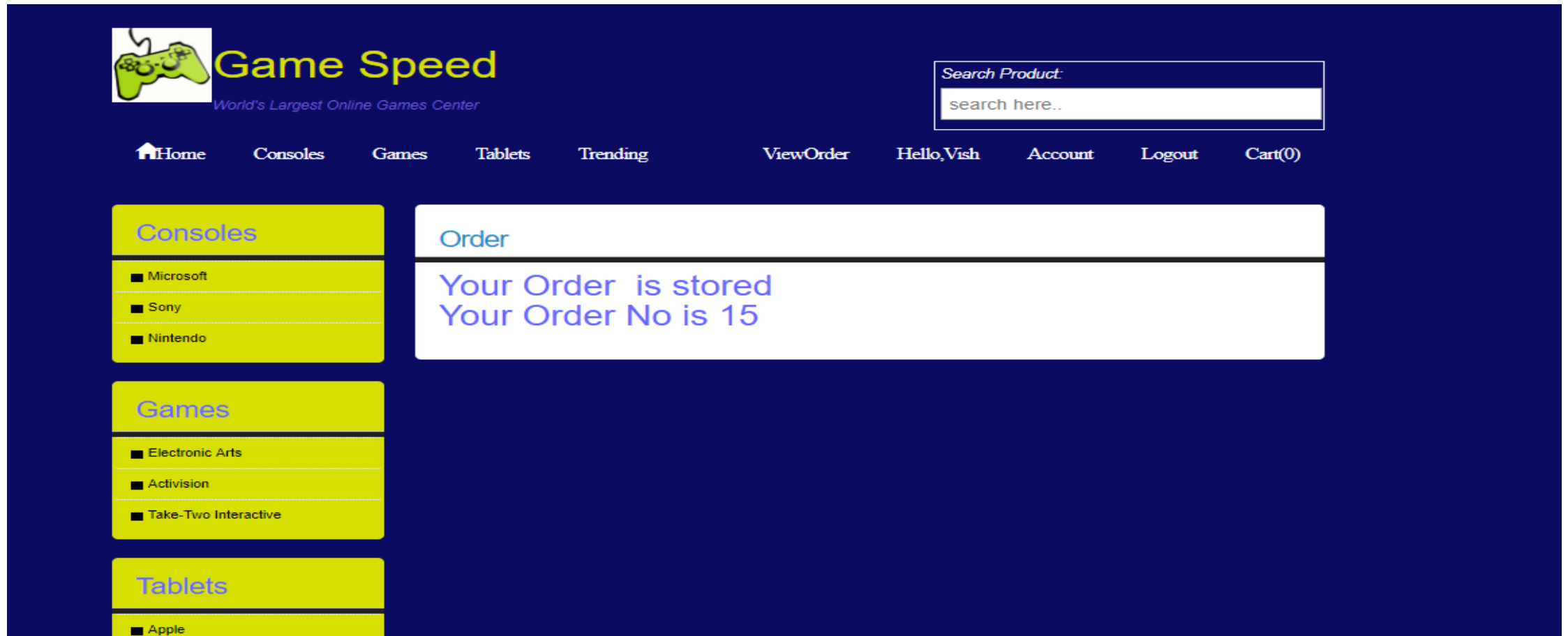
Customer Name:	vish
Product Purchased:	Xbox One
Product Price:	399.99
Product Purchased:	Turtle Beach Headset
Product Price:	89.99
Total Order Cost	489.98

Credit/accountNo

Customer Address

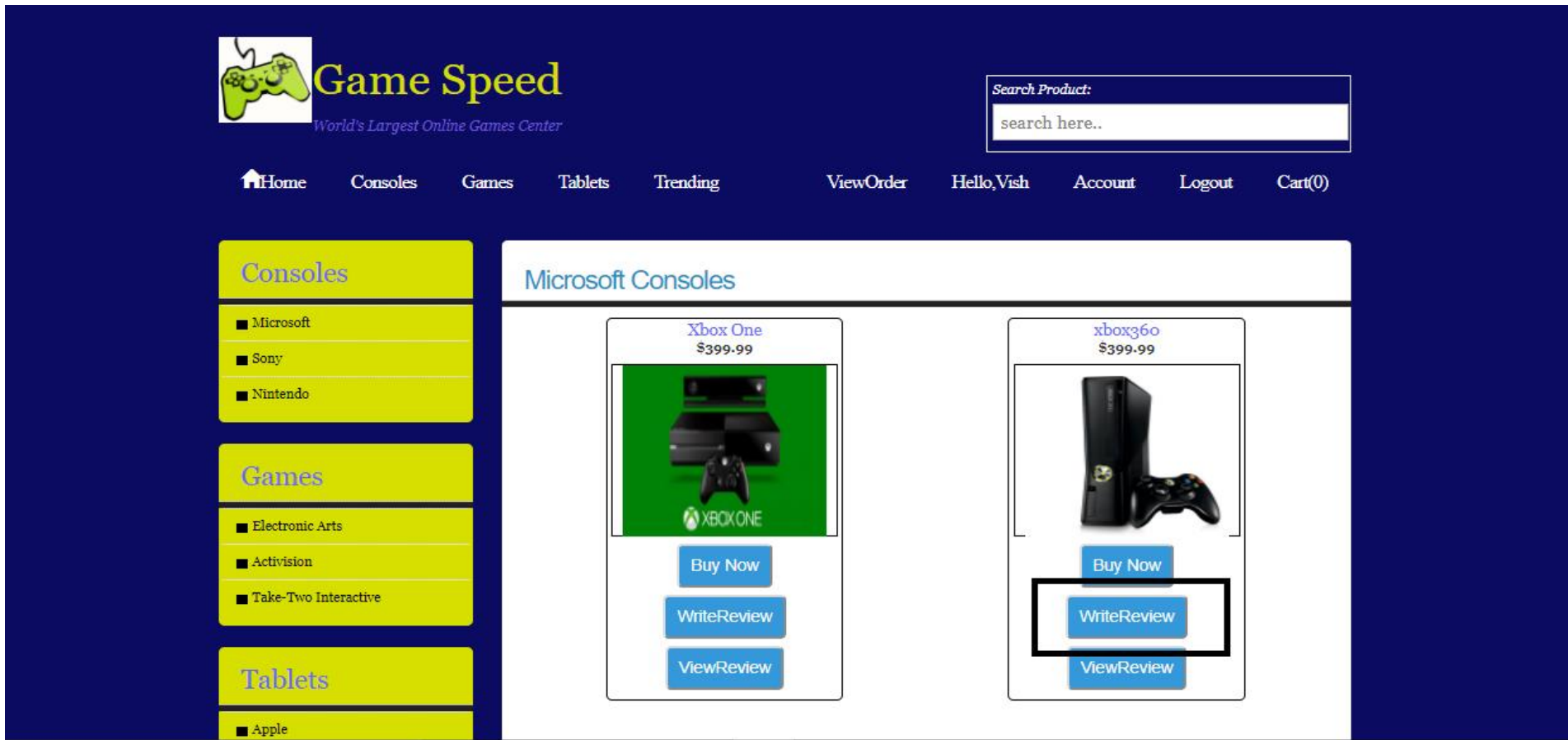
Example – Order Confirmation:

- Order Number is Generated for the Customer Order.
- Customer Order is Stored.




Example – Write Review:

- To write a review for the product, click on 'Reviews' button



Example – Account Tab:

- Account Details of the Customer is Shown.



Game Speed

World's Largest Online Games Center

Search Product:

[Home](#) [Consoles](#) [Games](#) [Tablets](#) [Trending](#) [ViewOrder](#) [Hello,Vish](#) [Account](#) [Logout](#) [Cart\(0\)](#)

Consoles

- Microsoft
- Sony
- Nintendo

Games

- Electronic Arts
- Activision
- Take-Two Interactive

Tablets

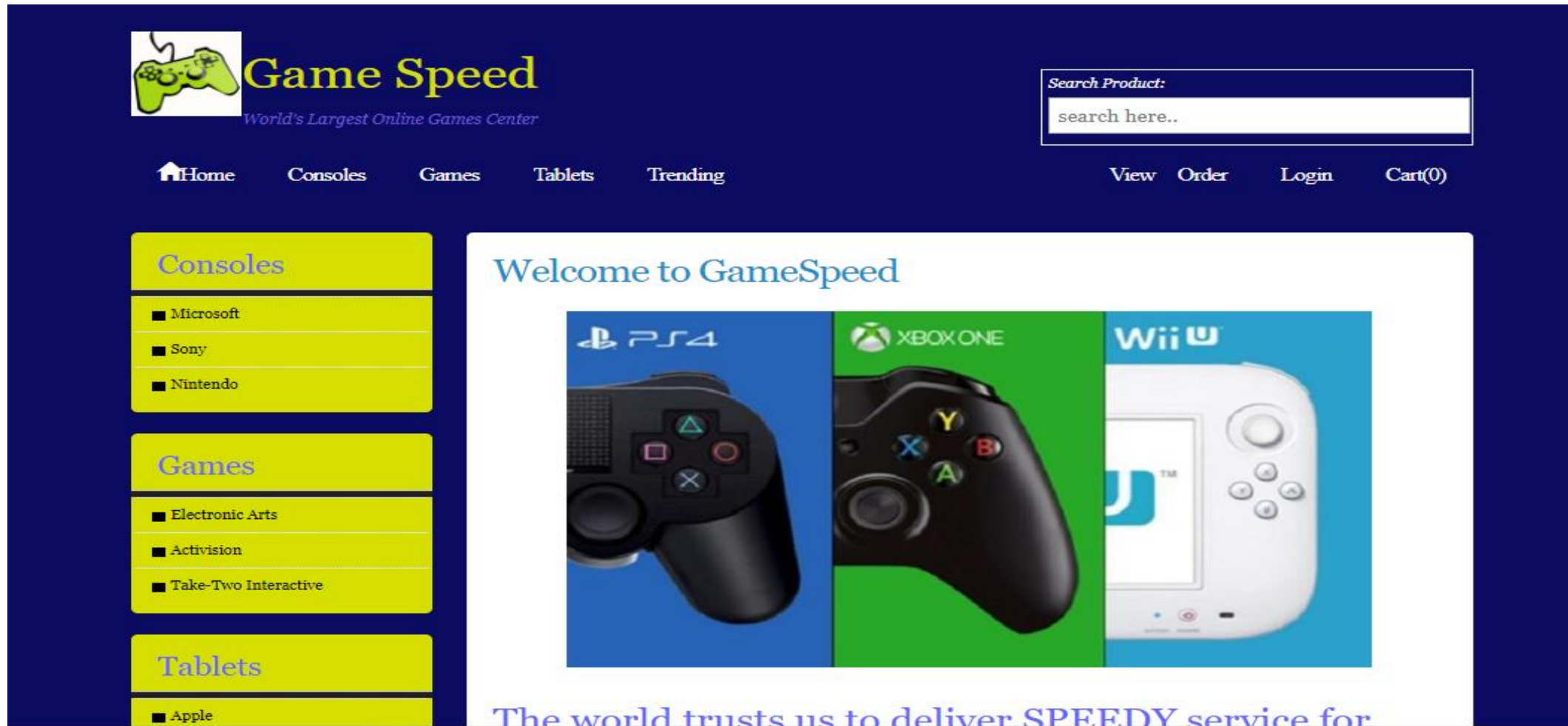
- Apple

Account

User Name:	vish				
User Type:	customer				
	OrderId:	UserName:	productOrdered:	productPrice:	
<input type="radio"/>	15.	vish	Xbox One	Price: 399.99	CancelOrder
<input type="radio"/>	15.	vish	Turtle Beach Headset	Price: 89.99	CancelOrder

Example – Logout:

- User Successfully logged out of the Web Application.



Questions?