

Exercises: Web Fundamentals Introduction

Problems for exercises and homework for the [“Java Web Development Basics” course @ SoftUni](https://judge.softuni.org/Contests/300). Submit your solutions in the SoftUni judge system at <https://judge.softuni.org/Contests/300>.

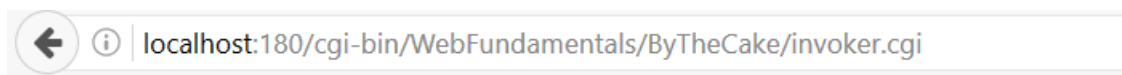
In this homework you are supposed to **write java programs** that are run by a web server. You will learn how to create **HTML** content and how to use basic **HTTP GET** and **POST** methods. Moreover, you will have to store data in different data structures and write simple algorithms.

Before you begin make sure you have followed the tutorial “” on how to configure Apache Web Server.

1. By The Cake: First web site

Create a web site called **ByTheCake**. Write a java program that prints h1 header “By The Cake” and h2 header “Enjoy our awesome cakes”. Put a horizontal line afterwards. Invoke a CGI script that calls your java program.

Example



By the Cake

Enjoy our awesome cakes

Hint

Don't forget to invoke your bash.

Windows:

```
#! C:\cygwin64\bin\bash.exe
```

Linux:

```
#! /bin/sh
```

Then invoke your {program}.class

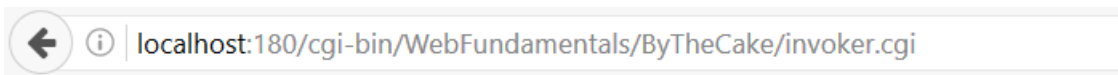
```
java -cp ./ CakeWebSite
```

2. By The Cake: Add menu

Extend your web site. Leave a blank row after the horizontal line. Add a menu as an **unordered list**. It should have four menu items. The Home item should have an ordered list with two list items. See the example below.

Example

- Home
 - Our cakes
 - Our stores
- Add cake
- Browse cakes
- About us



By the Cake

Enjoy our awesome cakes

- Home
 - 1. Our cakes
 - 2. Our stores
- Add cake
- Browse cakes
- About us

3. By The Cake: Add paragraph

Extend your web site. Add h2 header called "Home". It should have two sections. Each section has a h3 header, a paragraph and an image.

Section one should be with header “Our cakes”, paragraph with text “Cake is a form of sweet dessert that is typically baked. In its oldest forms, cakes were modifications of breads, but cakes now cover a wide range of preparations that can be simple or elaborate, and that share features with other desserts such as pastries, meringues, custards, and pies” and a random cake image.

Section two should be with header “Our stores”, paragraph with text “Our stores are located in 21 cities all over the world. Come and see what we have for you.” and a random cake store image.

Example

Home

Our cakes

Cake is a form of sweet dessert that is typically baked. In its oldest forms, cakes were modifications of breads, but cakes now cover a wide range of preparations that can be simple or elaborate, and that share features with other desserts such as pastries, meringues, custards, and pies



Our stores

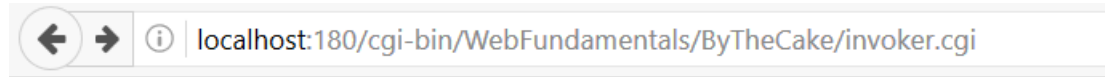
Our stores are located in 21 cities all over the world. Come and see what we have for you



4. By The Cake: Add links

Extend your web site. Add links for the menu we have. The Home item should reference **your current CGI script**. The Add cake should reference to **add_cake.cgi**. Browse cakes should reference to **browse_cakes.cgi**.

Examples



By the Cake

Enjoy our awesome cakes

- [Home](#)
 1. Our cakes
 2. Our stores
- [Add cake](#)
- [Browse cakes](#)
- About us

5. By The Cake: Add fragments

Extend your web site. Add a fragment to **h3 Our cakes** with name "**cakes**". Add another fragment to **h3 Our stores** with name "**stores**". The menu item "**Our cakes**" should reference "**cakes**". The menu item "**Our stores**" should reference "**stores**".

Examples

← ⓘ localhost:180/cgi-bin/WebFundamentals/ByTheCake/invoker.cgi

By the Cake

Enjoy our awesome cakes

- [Home](#)
 1. [Our cakes](#)
 2. [Our stores](#)
- [Add cake](#)
- [Browse cakes](#)
- About us

Our cakes

Cake is a form of sweet dessert that is typically baked. In it cakes now cover a wide range of preparations that can be served as desserts such as pastries, meringues, custards, and pies



6. By The Cake: Add footer

Extend your web site. Add footer which says ©All Rights Reserved. There should be a horizontal line above the footer. Center the text.

Examples



©All Rights Reserved.

Hint

Use `<footer></footer>` tag

To center the text of your paragraph use CSS. Consider the *text-align* property.

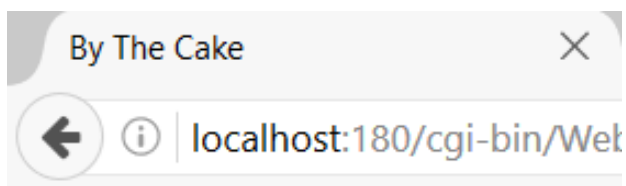
7. By The Cake: Add head

Extend your web site. Now it is time to add some meta data. We need to set the following properties:

- Title: "By The Cake"
- Charset: UTF8
- Description: "Buy the cake in By The Cake"
- Keywords: "Cakes, Buy"
- Author: Your name

The meta data will help search engines to recognize your web site as a best match.

Examples



By the C

Enjoy our

Hint

Use `<head></head>` tag

8. By The Cake: Add stores info

Extend your web site. Add preformatted text above the footer and below the last picture. Change the background color to #f94f80. The text should contain information about the stores as follows:

City: HongKong Address: ChoCoLad 18 Phone: +78952804429	City: Salzburg Address: SchokoLeiden 73 Phone: +49241432990
---	---

Examples

City: HongKong	City: Salzburg
Address: ChoCoLad 18	Address: SchokoLeiden 73
Phone: +78952804429	Phone: +49241432990

©All Rights Reserved.

Hint

Use `<pre></pre>` tag

Use CSS only to change the background color

9. By The Cake: Add about info

Extend your web site. Create a **h2 header** with text “About us” followed by a definition list. Put the information just above the store info. The definition list should have two texts with a single definition each.

- ByTheCake EOOD
 - Name of the company
- {Your Name}
 - Owner

Create a **fragment** that will lead to “About us” just like in Exercise 5.

Examples

- [Home](#)
 1. [Our cakes](#)
 2. [Our stores](#)
- [Add cake](#)
- [Browse cakes](#)
- [About us](#)



About us

ByTheCake EOOD

Name of the company

Teodor Dimitrov

Owner

City: HongKong

Address: ChoCoLad 18

Phone: +78952804429

City: Salzburg

Address: Schoko

Phone: +492414

10. By The Cake: Emphasize the words

Extend your web site. Find the words “sweet desert, cake, store” and make them **bold** and *italic*.

Examples

Our cakes

Cake is a form of *sweet dessert* that is typically baked. In its oldest form cakes now cover a wide range of preparations that can be simple or elaborate desserts such as pastries, meringues, custards, and pies





11. ** By The Cake: add_cake.cgi

Extend your web site. Create a CGI script called **add_cake.cgi**. Write another program which will be responsible for adding cakes functionality. It should have a simple form to add cakes. **Create a Cake class**. Each cake should have name and price. When you click the submit button a new cake should be created and saved in a list. The newly created cake should be printed below the form. **“name”** and **“price”** are the parameters of the request.

In order to work create a functionality which processes POST requests.

Examples

  localhost:180/cgi-bin/WebFundamentals/ByTheCake/add_cake.cgi

Name: Price:

name: Chocolate Cake

price: 10.99

Hint




Don't forget to add CGI parameters during invocation of your java program.

`-Dcgi.query_string=$QUERY_STRING`

`-Dcgi.request_method=$REQUEST_METHOD`

12. By The Cake: Write data

Extend your web site. The submitted data should be appended on a new row split by comma in a file called **database.csv**. Add a link to go back to your main page.

   localhost:180/cgi-bin/WebFundamentals/ByTheCake/add_cake.cgi

[Back to home](#)

Name: Price:

name: Chocolate Cake

price: 10.99

13. ** By The Cake: browse_cakes.cgi

Extend your web site. Create a new program that should print a single form **with GET method**. See the example below. It will be used to search cakes by name. Cakes should be searched from **database.csv** and printed below the form.

Add a functionality to go back to your main page.

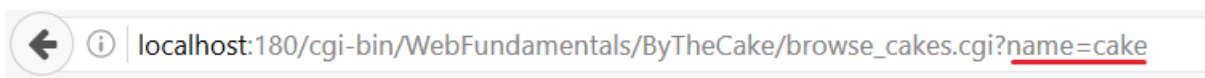
You will need a third CGI script called **browse_cakes.cgi** to invoke your program.

Examples

database.csv

Chocolate cake,10.99

Banana cake,8.59



[Back to home](#)

cake	Search
------	--------

Name: Chocolate cake Price: 10.99

Name: Banana cake Price: 8.59

14. **Calculator

Write a Java program that prints a form with three inputs on the browser followed by a single button. Input 1 and input 3 should receive numbers. Input 2 should receive a mathematical sign. When you press the button the result of the equation should appear. See the example below. There are four possible operations: add, subtract, multiply and divide (+, -, *, /). If none of the above is entered, print an error "Invalid Sign".

Use GET method.

Examples

localhost:180/cgi-bin/WebFundamentals/Calculator/calculator.cgi?num1=2&sign=*&num2=4

2 * 4 =?

Calculate

Result: 8

localhost:180/cgi-bin/WebFundamentals/Calculator/calculator.cgi?num1=2&sign=%3A&num2=4

2 : 4 =?

Calculate

Invalid Sign

15. **Log in form

Write a java program that prints a form with two inputs on the browser followed by a single button. Inputs should receive username and password. When you click the button a messages saying “Hi {username}, your password is {password}” should appear.

Use POST method.

Examples

localhost:180/cgi-bin/WebFundamentals/Login/login.cgi

Username: root

Password: 1234

Login

Hi root, your password is 1234