CHAPTER 1

TinyBlog: A Simple Teapot Web Interface

1.1 Previous Week Solution

You can load the solution of the previous week using the following snippet:

```
Gofer new
   smalltalkhubUser: 'PharoMooc' project: 'TinyBlog';
   package: 'ConfigurationOfTinyBlog';
   load.
#ConfigurationOfTinyBlog asClass loadWeek2Correction
```

After a loading a package, you shall run the unit tests to ensure that the loaded code is correctly working. Open the TestRunner (World menu > Test Runner), find the 'TinyBlog-Tests' package and run all unit tests of the `TBBlogTest` class by clicking on the 'Run Selected' button. All tests should be green. One alternative is to press the green icon on the side of the class `TBBlogTest`.

Open a code browser to look at the code of both classes `TBBlog` and `TBBlogTest`. You can now complete you own implementation if needed. Before continuing, do not forget to commit a new version in your repository on Smalltalkhub or SS3 if you modified your code.

1.2 A Web Interface for TinyBlog with Teapot

This week, we will create a first simple web interface for TinyBlog with Teapot (http://smalltalkhub.com/#!/~zeroflag/Teapot). We will implement a more complete version with Seaside next week.

1.3 The TBTeapotWebApp Class

Create a new class named TBTeapotWebApp:

```
Object subclass: #TBTeapotWebApp
   instanceVariableNames: 'teapot'
   classVariableNames: 'Server'
   package: 'TinyBlog-Teapot'
```

The variable teapot will refer to a little Teapot HTTP server. Here we use a different implementation of the Singleton Design Pattern by using a class variable named Server. We use a Singleton to avoid to have two servers listening to the same port.

Add the instance method initialize to initialize the instance variable teapot:

```
TBTeapotWebApp >> initialize
   super initialize.
   teapot := Teapot configure: {
      #port -> 8081.
      #debugMode -> true }.
```

The Home Page

The homePage method defined inside in the 'html' protocol should return the HTML code of the home page of our web application as a String. Let's start with a simple version:

```
TBTeapotWebApp >> homePage
   ^ '<html><body><h1>TinyBlog Web App</h1></body></html>'
```

Declare Routes

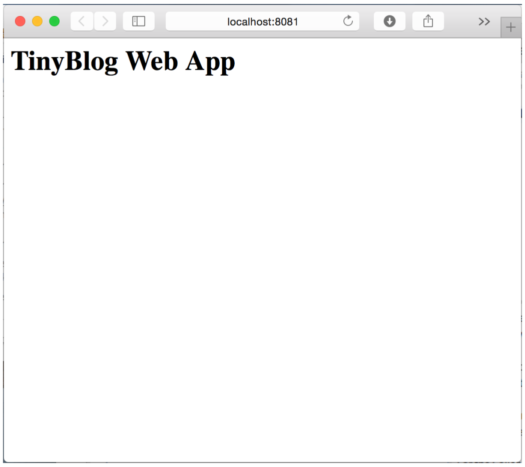
Add a start method to declare to the teapot object the URLs it must answer to. So far, we only add the route / accessed via a GET Http method:

```
TBTeapotWebApp >> start
   teapot
      GET: '/' -> [ self homePage ];
      start
```

Stop the Application

Add also a method stop to stop the application.

```
TBTeapotWebApp >> stop
   teapot stop
```



TinyBlog Web App

Figure 1.1 A first page served by our application.

Starting the application

Add two class-side methods `start` and `stop` to start and stop the web application in the protocol 'start/stop'. These two methods use the class variable `Server` to implement a Singleton.

```
TBTeapotWebApp class >> start
   Server ifNil: [ Server := self new start ]

TBTeapotWebApp class >> stop
   Server ifNotNil: [ Server stop. Server := nil ]
```

1.4 Test your Application

Execute the following snippet to start your application:

```
TBTeapotWebApp start
```

In a web browser, try to access the application with this URL: http://localhost:8081/. You should see the text: ”TinyBlog Web App” as in Figure 1.1.

1.5 Display the List of All Visible Posts

Modify now the code of the `homePage` method to display the list of all visible posts in the current blog. Remember these posts can be obtained with: `TBBlog current allVisibleBlogPosts`. We implement that functionality by adding three methods and modifying the `homePage` method.

```
TBTeapotWebApp >> allPosts
   ^ TBBlog current allVisibleBlogPosts
```

Since we need to generate a long String that contains the HTML code of the home page, we decided to use a Stream in the `homePage` method. We also factored out the HTML generation of the HTML page header and footer in two different methods: `renderPageHeaderOn:` and `renderPageFooterOn:`.

```
TBTeapotWebApp >> homePage
   ^ String streamContents: [ :s |
         self renderPageHeaderOn: s.
         s << '<h1>TinyBlog Web App</h1>'.
         s << '<ul>'.
         self allPosts do: [ :aPost |
            s << ('<li>', aPost title, '</li>') ].
         s << '</ul>'.
         self renderPageFooterOn: s.
      ]
```

Note that the message << is a different name for the message `nextPutAll:` that adds a collection of elements to a stream.

```
TBTeapotWebApp >> renderPageHeaderOn: aStream
   aStream << '<html><body>'

TBTeapotWebApp >> renderPageFooterOn: aStream
   aStream << '</body></html>'
```

Test your application in a web browser, you should now see a list of post titles as in Figure 1.2. If this is not the case make sure that your blog contains some post. You can use the message `createDemoPosts` to add some generic blog posts.

```
TBBlog createDemoPosts
```

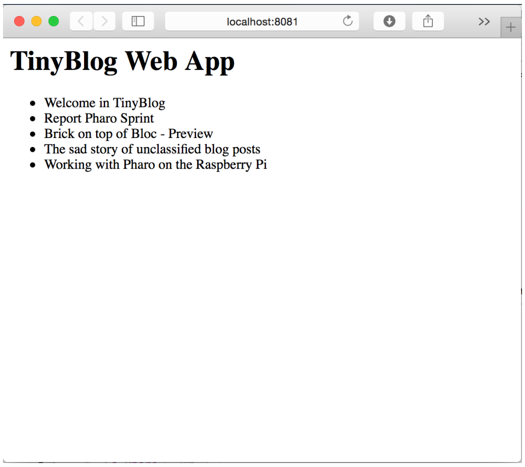
1.6 Details of a Post

Add a New Web Page

We would like that the following URL http://localhost:8081/post/1 displays the whole post number 1.

To start, let us think about the worst case and define what should happen in case of errors. We define the method `errorPage`.

```
TBTeapotWebApp >> errorPage
   ^ String streamContents: [ :s |
      self renderPageHeaderOn: s.
      s << '<p>Oups, an error occurred</p>'.
      self renderPageFooterOn: s ]
```


localhost:8081

TinyBlog Web App

- Welcome in TinyBlog
- Report Pharo Sprint
- Brick on top of Bloc - Preview
- The sad story of unclassified blog posts
- Working with Pharo on the Raspberry Pi

Figure 1.2 Showing post titles.

Teapot supports patterns such as '<id>' in route definitions. The corresponding value of '<id>' in the incoming URL is then accessible through the `request` object passed as a block parameter. Now we modify the `start` method and introduce a new route into the application to display the content of a post.

```
TBTeapotWebApp >> start
   teapot
      GET: '/' -> [ self homePage ];
      GET: '/post/<id>' -> [ :request | self pageForPostNumber:
    (request at: #id) asNumber ];
      start
```

We now add a new method named `pageForPostNumber:` displaying the whole content of a post:

```
TBTeapotWebApp >> pageForPostNumber: aPostNumber
   | currentPost |
   currentPost := self allPosts at: aPostNumber ifAbsent: [ ^ self
    errorPage ].
   ^ String streamContents: [ :s |
         self renderPageHeaderOn: s.
         s << ('<h1>', currentPost title, '</h1>').
         s << ('<h3>', currentPost date mmddyyyy, '</h3>').
         s << ('<p> Category: ', currentPost category, '</p>').
         s << ('<p>', currentPost text, '</p>').
         self renderPageFooterOn: s ]
```

You can now test your application directly with the following URL: http://localhost:8081/post/1

The parameter of `pageForPostNumber:` is the integer passed in the URL and it is used as an index to retrieve the post to display in the collection of posts. Obviously, this is a fragile solution because if the order of the posts changes in the collection, a given URL will not display the same post as before.

Add Links to Posts

Modify the `homePage` method so that post titles in the list will be links to their own web page.

```
TBTeapotWebApp >> homePage
   ^ String streamContents: [ :s |
         self renderPageHeaderOn: s.
         s << '<h1>TinyBlog Web App</h1>'.
         s << '<ul>'.
         self allPosts withIndexDo: [ :index :aPost |
            s << '<li>';
              << ('<a href="/post/', index asString, '">');
              << aPost title ;
              << '</a></li>' ].
         s << '</ul>'.
         self renderPageFooterOn: s.
      ]
```

Now, the home page of the application displays a list of clickable post titles and if you click on a post title, you will see the content of this post.

1.7 Possible Extensions

This application is a really simple and pedagogical example through which you manipulate collections, streams, etc.

You can improve this web application and implement new functionalities such as:

- adding a return to home page link on a post page,
- adding a new page that displays the list of all post categories,
- adding a new page that displays all posts that belong to one specific category,
- adding CSS styles to make this web application more appealing.