İSTANBUL TECHNICAL UNIVERSITY
Department of Computer Engineering
***BIL103E – Introduction to Information Systems – Fall 2015***
*Assignment 3*

**ASSIGNMENT 3**

## Concept

This assignment is about making a web application – in other words, a *dynamic* (changing) *website* using Python 3 and the Bottle web application framework.

The website will be a *rating website* in which users can add or select items and give them ratings. The website will be able to show statistics about the ratings.

## High-level Instructions

**✻ See page 2 for step-by-step instructions. ✻**

- STEP 1 (Week 14: 14 December approximately):
  - Download and run the template file and visit the locally-hosted website with your browser.
  - Make a preliminary design for your website and make the initial CSS and HTML.
  - Add the extra pages to your website using the bottle `route()` function.
- STEP 2 (Week 15: 21 December approximately):
  - Allow your website to get inputs from the user and collect and display them.
  - Ensure you can get your website working on *PythonAnywhere*.
- STEP 4 (Week 13: **28 December 9:30am**):
  - Improve information display, show statistics on inputs, improve the design, and add any other extra features that you have conceived of.
  - Upload this all to the correct folder in *PythonAnywhere* **by the due date and time** so that it can be viewed from the web. Upload early to ensure compatibility with *PythonAnywhere*.
- Ensure the files are in the correct place so that your submission can be marked.

## Submission Notes

- All steps of this assignment will be evaluated only after the final submission time (28 December 9:30am) has passed. However, it is recommended that you get the earlier steps done by their respective due dates.
- **By the final due date and time, you need to upload your files to the place specified in the assignment document so that they can be downloaded by our markers.** The correct place for the files is (replacing YOURUSERNAME with your *PythonAnywhere* user name as provided to you at the beginning of the semester):
  - `/home/YOURUSERNAME/mysite/`
- Ensure that your website is visible from the web. It should be accessible via the below address (replacing YOURUSERNAME with your *PythonAnywhere* user name as provided to you at the beginning of the semester):
  - `http://YOURUSERNAME.pythonanywhere.com/assignment3/`
- There is a limit on the maximum size of your website. Files won't be collected while the size of the website exceeds 5MB.

- **To have your assignment counted against your grades, attend your demonstration session**, which will be announced in a separate schedule and will be after the due date of the assignment.
- Check the separate evaluation form to see on what basis your markers will be grading you.
  - Use all of the Python techniques shown in the evaluation form.
  - Use all of the advanced HTML and HTTP techniques shown in the evaluation form.
- Have fun.

**✻ Keep your eye on the separate evaluation form, for the marks. ✻**

## Step 1

*Finish by approximately 14 December.*

### Run the template and load in browser

Alongside this PDF was distributed a template file, `bottle_app.py`. Download that to your computer, using a terminal set the terminal's current directory to the directory to which you downloaded the file, and run it like this:

```
python3 bottle_app.py
```

It will print something a little like this:

```
Bottle v0.12.0 server starting up (using WSGIRefServer())...
Listening on http://127.0.0.1:8080/
Hit Ctrl-C to quit.
```

Open the address `http://127.0.0.1:8080/assignment3/` in your browser.

You should see the following web-paged being served by Bottle:

```
This is going to be an awesome website, when it is finished.
```

To quit Bottle go back to the terminal in which you ran python3 and press `<Ctrl-C>` (the Ctrl key together with the C key).

Try making a change to the source file `bottle_app.py` (e.g. change some of the text) then rerun the program and then go back to your browser and reload the address. The change should be visible.

Note: you can also directly run this `bottle_app.py` file in *PythonAnywhere*. See the instructions from step 2 below for how to do this.

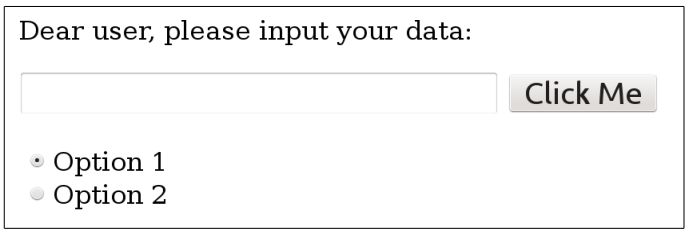
### Make a preliminary design

In this assignment you are going to be making a *dynamic* website, one that changes the contents of pages over time. In particular, it will receive input from users and use that to build its content.

The concept of the website is a rating website, where users enter topics or things (e.g. ice cream, Fenerbahçe, Python, ITU AVM, staring at the sun, making jokes no-one understands, etc.) and then other users can rate those things. Summaries of the ratings will then be displayed.

**✻ If you have an idea for a slightly different website, please feel free to implement that. ✻**
(make sure to keep the topic different from previous years' assignments)

In this step, think about what pages your website will have, what information the users will need to see and enter, and how they might navigate from page to page. After you learn about HTML forms and HTTP in class you will be able to revisit this step and improve on it. You will be able to allow users to input data through forms like that illustrated below.




Don't worry too much about the design at this point – you will probably change it again later, and as you learn about the possibilities available to you, you will develop your approach.

### Add some pages to your web server

Considering your preliminary design, add the necessary web-pages to your web site by adding them to your bottle application. You do this by creating functions and assigning them to resources (routes) by using the `route()` function.

Ensure that the pages produced are valid HTML 5. You would not be expected to use HTML forms at this point; so skip those bits until next week.

**FOR THIS ASSIGNMENT WE ARE USING PYTHON VERSION 3.4.**
**Do not develop your code for any version less than 3.3.**

## Step 2

*Finish by approximately 21 December.*

### Get and display inputs from your user

In this step, add HTML forms to your web-pages to get the necessary input from the user. Save the data retrieved in this way into "global" variables. You do not need to worry about saving the data to file in this assignment. It is enough that the data persists between loads of your web-pages.

Once the data is saved you can display it to users.

### Get your website working on *PythonAnywhere*

The `bottle_app.py` template supplied with this PDF is also capable of hosting your website on *PythonAnywhere*. As long as you left the relevant lines at the bottom of the file alone, and as long as you previously enabled your web app as per assignments 1 and 2, you should be able to upload your `bottle_app.py` file into the directory `/home/YOURUSERNAME/mysite/` on *PythonAnywhere*, where `YOURUSERNAME` is replaced by your *PythonAnywhere* username.

You now need to reload your web-app by clicking on the "Web" tab from the *PythonAnywhere* dashboard and clicking the "Reload YOURUSERNAME.pythonanywhere.com" button, where YOURUSERNAME is replaced by your *PythonAnywhere* username. Thereafter, you should be able to see your bottle app by navigating to `YOURUSERNAME.pythonanywhere.com` and `YOURUSERNAME.pythonanywhere.com/assignment3/` with your browser.

**Note:** To ensure that your website is compliant with the HTML 5 standard, put the page addresses into the HTML validator at https://html5.validator.nu/.

## Step 2

*Finish by **28 December 9.30 am**.*

### Finalise information display & design

In this step, you will finalise the design of your website so that it matches your intentions as closely as possible. For example, maybe you would like to add a navigation bar.

Do not show just "raw" output from the data you have saved: show it in a fashion convenient to the user, using lists, tables, CSS, and so forth. For example, you might like to consider the layout of the rating headings. For this you will probably need to *iterate* over the data using loops.

Finally, your website should not just regurgitate the raw data input by the users. It should process it. For example, you can calculate and display the average and standard deviation ratings for items, or median, lower quartile, upper quartile, etc. You might like to maintain a list of popular or trending items. The limit here is your imagination.

*If you have any other features of your own invention that you would like to incorporate into your website, do so! Learning works best when you are working towards something you care about.*

Take particular attention also to the evaluation criteria to ensure you at least include functionality relevant to each criterion.

### Upload to *PythonAnywhere*

Finally, upload your `bottle_app.py` file and any other files you need to the `mysite/` directory in your *PythonAnywhere* home directory. Ensure that they are in the correct location to be collected for marking. Ensure that the size of the complete website is less than 5MB. The uploaded files will be marked and will be the subject of your demonstration session (which you should ensure to attend to get your marks).

***If you get the code and output uploaded to PythonAnywhere in the correct location by the due date and time, it will be marked.***