Universität Konstanz

Introduction to Computation for the Social Sciences

Assignment 4

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Please solve the exercises below and commit your solutions to our GitHub Classroom until Nov, 26th midnight. Submit all text in text files (*txt* / *md* / *pdf*). You can score up to 10 points in this assignment. You will get individual feedback in your repository.

Exercise 1: Webserver (3 Points)

a) Setup an *NGINX* webserver for your *BwCloud Scope* instance.

b) Configure the webserver to serve a *static HTML page*[1] whose body exclusively consists of the following text.

```
Hello World!
```

c) In your private repository, navigate to *assignment04* > *solution*. Submit a plain text file named *static.txt* containing the URL at which your static web page saying *Hello World!* is accessible, e.g., *http://192.52.2.196/static*

Exercise 2: Python-enabled Webserver (5 Points)

a) Configure the *NGINX* webserver setup in Exercise 1 to also execute Python code. We suggest you to use *Flask*, *CGI* or *uWSGI* to accomplish the task.

b) Use Python to create a dynamic Web page that:

Reads in a *URL variable*[2] called name, e.g., *http://192.52.2.196/dynamic?name=John*

Customizes the body text of the Web page depending on the URL variable as follows. First, if no variable or an empty string *(name=)* is passed in the URL, the body text should be *'Hello World!'*. Second, if a non-empty string is passed for the variable *'name' (?name=John)*, the body text should be *'Hello <NAME>!'*, e.g., *'Hello John!'*

c) In your private repository, navigate to *assignment04* > *solution*. Submit a plain text file named *dynamic.txt* containing the URL at which your dynamic Web page is accessible, e.g., *http://192.52.2.196/dynamic*. Do not include the query string, i.e. the part of the URL following the */?*.

Exercise 3: Theoretical Questions (2 Points)

Answer the following questions about foundations of programming that were discussed in the lecture.

a) Explain the concept of abstraction in programming and give examples of fundamental types of abstraction.

b) What is the difference between syntax and semantics of a programming language?

[1] https://en.wikipedia.org/wiki/Static_web_page

[2] https://en.wikipedia.org/wiki/Query_string