

DT094G Scripting and Systemadministration in Linux

Laboratory assignment — Python

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Introduction

This laboratory assignment is divided into three parts

- Python review
- Extending a subnet calculator
- Divide a program into two modules

1 Examination

This laboratory assignment is examined by submitting your solutions along with a laboratory report where you present your solutions. Your code must be well structured and commented.

Your code must follow PEP8 - Style Guide for Python Code [1] (exceptions are given on line length).

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2 Aim

After completion of this laboratory assignment you will have shown that you

- can create Python scripts that solves simpler tasks,
- are able to use Python for bitwise operations,
- are able to structure your Python code in functions,
- can write Python programmes that adheres to the PEP8 style guide lines,
- are able to divide a Python program into smaller modules, and
- are able to import and use Python modules that are placed in your local Python path.

3 Reading instructions

Before starting this laboration, you should have attended/watched both lectures on Python, and the coding example lecture.

Familiarize yourself briefly with PEP 8 Style guide [1], and the parts from Python Doc that is covered in the lectures [3]. There are also numerous guides online that covers how to work with bitwise operators in Python, for example [2].

4 Tasks

4.1 Python Review

Download the document “Pythonkramaren” from the Moodle platform, and solve the following tasks

- 22,32,42,52

Once you have solved these, go to Codingbat.com and solve the following problems.

- Array_count9
- make_ends
- round_sum
- centered_average

4.2 Extending a subnet calculator

Download the python program ‘subnet_calculator.py’ from Moodle. This program takes an ip address with its corresponding subnet mask, and returns the network ID.

Your task is to finish the method ‘get_network_broadcast’.

This method should return the network broadcast address based on the given ip address and subnet mask.

Optional task

Finish the method `'get_number_of_hosts'`, which should return the how many usable host addresses that can be used in the given subnet.

4.3 Divide the program

In this task you should now place the class `'IP'` into a separate file named `'DT094G_IP.py'`, and place this into your Python path.

Then make an import of this class into your `'subnet_calculator.py'` program, and run your program.

5 Submissions

Before submitting, make sure that your solutions follow the criteria given in Section 1. To pass this laboratory assignment, you must submit a laboratory report and an archive file containing your commented python code. As always, your report must be submitted in *PDF-format*.

References

- [1] *PEP 8 Style Guide for Python Code*. 2023. URL: <https://peps.python.org/pep-0008/>.
- [2] *Python Bitwise Operators*. 2023. URL: https://www.w3schools.com/python/gloss_python_bitwise_operators.asp.
- [3] *The Python Tutorial*. 2016. URL: <https://docs.python.org/3/tutorial/index.html>.