**Sotiris Ntouskas**

**SWE5002**

**Data Structure and Algorithms***.*

**Assessment 002 (50%)**

***Due date*:** **25/05/21**

**Subject: Produce a software artefact that implements the required data structures for a given scenario.**

**Learning Outcomes Assessed:**

L0 2: Appraise and implement a software design that incorporates data structures.

For this assessment you will work individually.

You will need to hand in (upload on the e-learning platform and on Turnitin) a report, develop the proposed solution and demonstrate your work in class.

**Important Note: Please be aware that any suspicion of copying or plagiarism will be fully investigated and punished. No extension will be given. If you face difficulties that are beyond your control, it is your responsibility to contact the course coordinator promptly.**

**Description (choose one problem only):**

**Problem 1:** Consider a network of wireless sensors. Some of the sensors act as routers (can send data and receive commands) while others act as end devices (they can only receive commands). User can connect to any of these sensors (no matter of its type). Find if from a given sensors you can reach (by sending data) to another sensor in your network.

A sample wireless network to work with is given in a txt file.

**Problem 2:** Find and/or Edit file names in a directory hierarchy. If no starting point is specified, `root' is assumed.

Design and implement a solution that will address this problem. Your approach should minimize the expected number of queries. Sample folder hierarchy will be given in a txt file.

**Deliverables:**

1. Report (1200 words +-10%)
2. Python Code

**The Report should include:**

* Student’s information, Your full name, program title and user identification (e.g. zz009), word count
* Table of contents
* Introduction
* Definition of terms
* Presentation of the case study / problem addressed
* Identification of needed data structures for the scenario and rationale
* Presentation of Solution
* References

Bear in mind that in the report you must discuss your selection of data structures within a short report outlining alternative approaches and providing justification for the path taken

**References and citation**

Written work should be referenced using the standard University of Bolton referencing style– see:

<https://www.bolton.ac.uk/library/Study-Skills/Referencing/Home.aspx>

**Level HE5** - It is expected that the Reference List will contain between **ten and fifteen sources**. As a MINIMUM the Reference List should include **two refereed academic journals and four academic books**

**Assessment Criteria**

Relevance 15%

Knowledge 20%

Argument/Analysis 20%

Structure 10 %

Presentation 15%

Written English 10%

Research/Referencing 10%

***Successful submission:***

**You have to submit the report/essay both on Turnitin and on the NYC e-learning platform**.

(1) Students submit their report/essay on Turnitin

(2) Software artefacts (code) are only submitted on the NYC e-learning platform.

**\*Note:** For the “Guidelines for the Preparation and Submission of Written Assessments”, additional information concerning Assessments and Assessment criteria please refer to the module handbook.