

**Portfolio 1 (P1)**

Year 1 (2018/2019), Semester 2

## SCHOOL OF INFOCOMM TECHNOLOGY

Diploma in Information Technology

**Continuous Assessment 2(CA2)**

**Weightage:** 20% of module

**Individual/Team/Both:** Individual

**Format:** Answer all 3 Lab Exercise Questions (50%)

Class Participation (50%)

**Penalty for late submission:**

* + 10% per day.

There are a total of 2 pages (including this page) in this handout.

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| ***WARNING***  ***If a student is found to have submitted work not done by him/her, he/she will not be awarded any marks for this assessment. Disciplinary action will also be taken.***  ***Similar action will be taken for the student who allows other student(s) to copy his/her work.*** |

**1. OBJECTIVE**

This continuous assessment assesses the students’ understanding of work done during Practical Exercise sessions. You are required to submit all 3 questions listed below. Ensure that you have included sufficient comments to explain how your code works.

**2. SUBMISSION DEADLINES**

Submission is due on 4 Jan 2019, 9:00am. Submit your answers to \\ictspace.ict.np.edu.sg\p1

**3. Questions**

1. Integrating an IOT system with a cloud database (10 marks)

Design and develop a security access system using Raspberry Pi, NFC Readers and LED lights which is connected to a remote cloud database such as Firebase.

* Write a program that reads RFID cards using a NFC reader, registers legitimate card-holders and stores that information in a remote cloud database system.
* Write a program that reads RFID cards using a NFC reader. If the card ID is in the cloud database, light up the green LED light for 5 secs, otherwise light up the red LED light for 5 secs.

1. Developing a mobile interface prototype (20 marks)

Open to the attached ONEJourney.ppt file and extract all the images found in this file.

Develop a mobile interface prototype for ICT’s OneJourney app using the online web tool MarvelApp: <https://marvelapp.com/>

You are encouraged to watch the following MarvelApp tutorial videos to learn how to use MarvelApp.

* <https://www.youtube.com/watch?v=Vm1J2wUhNOk>
* <https://www.youtube.com/watch?v=DfFcGdCWBKQ>
* <https://www.youtube.com/watch?v=Kzhpe1O625U>

1. Printing graphs and basic machine learning using Matplotlib, Numpy, Pandas and Scikit (20 marks)

Refer to the attached bmi.csv file, which contains the weights and heights of a random sample to youths in 3 continents, namely Asia, Europe and Africa.

Write Python programs to

* Plot appropriate graphs which best represents the data at hand
* Calculate and print relevant statistical data which best represents the data at hand
* Demonstrate a machine learning algorithm such as Linear Regression to do some basic predictions using the given data.