COSC2674/2755 (PIoT) Semester 2, 2018
Assignment 1 Specification

Marks allocated:	30 (worth 15% of the total score)
Deadline:	11:59 pm Melbourne time (Sunday 19th August 2018)
Submit via:	Canvas
Work mode:	Individually or in a group of 2
Submission format:	**.zip** (*No other formats will be accepted*)
Face to Face demo:	Week 6 (Monday 20th August – Friday 24th August 2018)

1   Aim

The aim of this assignment is to write mini IoT applications using Raspberry Pi and Sense HAT in Python language.

Some of the tasks of this assignment would require self-exploration and research, you will not find the answer in lectures notes and/or tutorials.

2   Important

You must adhere to the following requirements:

a. Only Raspberry Pi model 3 should be used

b. You must use Python 3.5 or >3.5 to complete the tasks. Older versions must not be used.

c. Whether working individually or in a group, you must use a version control system of some sorts such as *GitHub, Bitbucket,* etc.

d. You must stick to the standard *style guide for your Python code:* (https://www.python.org/dev/peps/pep-0008/)

e. You must attend a **15 minutes** demo session to get the assignment 1 marked during week 6 (Aug 20- 24, 2018). A schedule and a booking document will be published soon. You must submit the assignment prior to demo. No submission → No demo → No marks.

3 Tasks

Coding Tasks (20 marks)

i.   (10 marks) Testing the humidity every few milliseconds is fun, but not all that useful. Your task is to build a data logger to record the humidity over time to a file, so we know how damp (or not) the air in a lab/room/space is over the course of a week. To complete this task

   -   set up a database (*you can choose the type of database*) with relevant columns for humidity, temperature (*anything else relevant that you can think of*) of the Raspberry Pi

   Write Python code to

   -   set up cron job to pull data from sense-hat at specific time interval,
   -   put into database and
   -   represent the data over a period using a web interface.

   The more detailed and robust your data logger is, the more marks you will get. You need to calibrate the temperature to account for warmer Raspberry Pi over time, dealing with historical data (to avoid overwriting), etc.

ii.   (5 marks) Write some Python code to have your Raspberry Pi push notifications to your phone using [Pushbullet](#) when the room around your Raspberry Pi gets too cool (*you can assume anything less than 20 degrees C is cool*) and reminds you to bring a sweater. The fun part will be to integrate with the Pushbullet API.

iii.   (5 marks) Write Python code to use Bluetooth on your Raspberry Pi to detect nearby devices and greet the person whose device is registered with the Raspberry Pi and display the current temperature. It is entirely up to you, how you will choose to represent the results. But once again, anaemic representation will receive lower marks.

Code Elegance (10 marks)

iv.   (4 marks) General code elegance, clarity and standard

v.   (6 marks) Professional use of version control system and how the code has been developed over time. Low marks for code written over smaller time intervals.

4 Late submission and Extension

a.   A penalty of 10% per day of the total marks will apply for each day late, including both weekend and weekdays.

b.   After five days, you will receive a zero for the whole assignment.

c.   Extension requests should only be emailed to the lecturer (shekhar.kalra@rmit.edu.au)

d.   Look out for the Assignment feedback sessions – these will be held during week(s) 4 and 5. In the meantime please bring questions/doubts to weekly consultation sessions held by the head tutor on Fridays and/or post in the discussion board Assignment 1 folder.

5 Plagiarism

All assignments will be checked with plagiarism-detection software; any student found to have plagiarised would be subject to disciplinary action. Plagiarism includes

- submitting work that is not your own or submitting text that is not your own
- allowing others to copy your work via email, printouts, social media etc.
- posting assignment questions (in full or partial) on external technical forums
- copying work from/of previous/current semester students
- sending or passing your work to your friends
- posting assignment questions on technical forums to get them solved

A disciplinary action can lead to

- a meeting with the disciplinary committee
- a score of zero for the assignment
- a permanent record of copying in your personal university records and/or
- expulsion from the university, in some severe cases

All plagiarism will be penalised. There are no exceptions and no excuses. You have been warned.