**SCHOOL OF COMPUTING (SOC)**

**IT8701 Introduction to Programming for Data Science**

**Self Reflection (CA1)**

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| **Instructions:**   1. Submit this at Polymall “Assignments->CA1->Self-Reflection” folder 2. Name your file “YourModuleLecturerName-YourStudentID-YourName.docx” |

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| **Your Lecturer’s Name** | Chan Chiew Jin |
| **Your Name** | Muhammad Iylia Bin Mohd Hutta |
| **Your Student ID** | P7474841 |
| **Your Class** | NSDDA1/CE/2220/4 |

# QUESTION 1: CHALLENGES - SELF-REFLECTION FOR CA1

Provide a brief reflection of the challenges you have faced in this assignment.

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| The main challenges I faced were data manipulation using Numpy as it is not as simple as using Pandas, which would be more familiar to me as I come from using the Tidyverse in R, which works with data frames. Working solely with arrays and lists was a first for me, which took me some time to get used to. As such, I faced several roadblocks when it came to manipulating data using Numpy so that they could be used to plot charts in Matplotlib.  Data visualization using Matplotlib was also very new to me as I am used to ggplot in R, which, in my opinion, is much more intuitive. As such, after data manipulation, data visualization was another challenge I faced in this assignment as I was getting used to the intricacies of Matplotlib.  I would say that for coding in Python, I realized I was not very knowledgeable in object-oriented programming (OOP), despite R also using the OOP paradigm. This was because my use of R in the past was focused on the Tidyverse, which I felt was much more user-friendly for newbies to programming and more easily picked up and implemented than Python.  Other than coding challenges, the data from HDB was not very clean nor updated for the most part, and I struggled a little with focusing my project with a scope and objective that was feasible within the assignment timeline. |

# QUESTION 2: ACHIEVEMENTS - SELF-REFLECTION FOR CA1

Provide a brief reflection of what you think you have personally achieved in this assignment or the knolwedge or skills you have found satisfaction in learning / acquiring.

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| Firstly, I feel that Python is very powerful and fast when it comes to data manipulation. As a former R-user (or as some in industry call it, useR), I would say that I would love to do data manipulation and analytics in Python, as it will be more easily transferred into more advanced Data Science methods. However, I would prefer to use ggplot in R for data visualisations as I still feel that the Grammar of Graphics is far superior and that the quality of ggplot visualisations are better than any package available in Python. This would mean that I look forward to being a bilingual programmer as my learning progresses.  Next, I feel that I have become more efficient in planning my code and elucidating my coding concepts such that I am able to quickly search up coding solutions on Google and finding solutions to my problems on Stack Overflow and other sites. Truth be told, most of my code inspiration has come from these sites, and more recently, ChatGPT as a coding buddy.  I also feel very satisfied with how familiar I am with Basic Python, Numpy and Matplotlib. My utmost satisfaction is in becoming more comfortable with defining functions in Python for ease of repeatability and cleaner code. This was inspired by the Python programming I do at work in automating report generation. I implemented this in a portion of my code where I needed to repeat several steps to generate the same type of visualization for similar datasets and I am very satisfied with this achievement.  Overall, I feel the most satisfied that I am very familiar with Python now that I am able to code faster and also already able to apply my learning at work where my projects deal with Python scripts for automation.  In terms of analysing data, I feel that I still have much improvement to do but that my analysis and recommendations are better than where I was a couple months back. Working with real-world data is always messy, as I have also already experienced in my job. As such, being able to focus my analysis and constantly asking myself “So what?” has proven useful when I write my analyses and think about the visualisations I want to create with the datasets. This was also influential in my choice of datasets when doing cross-analyses. Nevertheless, I feel that I can go deeper in terms of digging out the details of datasets and gathering evidence for analyses. I think that I need to work more on this and also in doing it fast enough to meet deadlines. |

# QUESTION 3: SELF-EVALUATION

Grade yourself using the marking rubrics below.

### **How well did I meet the BASIC assignment requirements?**

For each criteria, place a tick ☑ in the column that best matches what you have done for the assignment.

State the evidence in the “Evidence” so that your lecturer can verify, otherwise you will be asked to show evidence during your assignment interview

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| Criteria | **Fully met** | **Partially met (at least 50%)** | **Below requirements** | **Evidence** |
| My CA1 submission uses at least 3 different datasets from HDB at data.gov.sg | ☑ |  |  |  |
| My CA1 submission included ALL the 4 compulsory charts | ☑ |  |  |  |
| My CA1 submission purely used the Numpy library in my Python codes to perform data manipulation only (i.e. I did not resort to easier ways to achieve the requirements using other libraries such as pandas etc) | ☑ |  |  |  |
| My CA1 submission purely used the Matplotlib library in my Python codes to perform data visualization only (i.e. I did not resort to easier ways to achieve the requirements using other libraries such as seaborn, pygal etc) | ☑ |  |  |  |
| My CA1 submission includes a deck of Powerpoint slides that explain the datasets I used, what was done to process these datasets and summarizes the insights gained from the analysis of the data | ☑ |  |  |  |
| My CA1 submission includes a self-reflection document that outlines my challenges and achievements doing this assignment | ☑ |  |  |  |

### **How high is the quality of my CA1 assignment?**

For each criteria, place a tick ☑ in the column that best matches what you have done for the assignment.

Justify your answer in the “Evidence” column so that your lecturer can verify, otherwise you will be asked to show evidence during your assignment interview.

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| Criteria | **Above Average** | **Average** | **Below average** | **Evidence** |
| I evaluate the **technical complexity** of my assignment as:  \*A technically complex assignment should include many advanced features that are not taught in the class and are not trivial to code | ☑ |  |  |  |
| I evaluate the **code quality** of my assignment as:  \*An assignment with high code quality often includes high usage of reusable functions, demonstrates code efficiency through use of appropriate language constructs (e.g. for loops) and is well-documented. | ☑ |  |  |  |
| I evaluate the **user-friendliness** of my assignment as:  \*A user-friendly application is typically one that provides an easy-to-use user interface (UI) that novice users can understand and navigate with ease. For the purpose of CA1, since there is no /limited UI, please evaluate user-friendliness of your assignment as “How organised is your code and how easily and smoothly another person like your lecturer can run the code on his computer” | ☑ |  |  |  |
| I evaluate the **aesthetics** of my assignment as:  \*An assignment which has a high level of aesthetics for this module’s CA1, should show effort by the student to enhance their graphical outputs with attractive and pleasant layouts and color combinations |  | ☑ |  |  |
| I evaluate the **creativity** of my assignment as:  \*An assignment which demonstrates creativity includes ideas that are novel and not implemented by other students | ☑ |  |  |  |

### **How in-depth and insightful is my data analysis?**

For each criteria, place a tick ☑ in the column that best matches what you have done for the assignment.

Justify your answer in the “Evidence” column so that your lecturer can verify, otherwise you will be asked to show evidence during your assignment interview.

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| Criteria | **Above Average** | **Average** | **Below average** | **Evidence** |
| I evaluate the **completeness** of my data analysis as:  \*A data analysis that has a high level of completeness requires the analyst to perform a lot of drilling-in/ cross-analysis of the data. If you think you performed above average here, you should show evidence that you went ‘very deep” in digging out details and made effort to explore related datasets etc |  | ☑ |  |  |
| I evaluate the **quality** of my analysis as:  \*A data analysis report that is above average is usually prepared by a student who shows high clarity about the goals he wants to achieve through analysing the data. This includes knowing the specific target audience he wants to present the report to and the insights he wants to derive from the analysis. The analyst is able to present a convincing argument and conclusion to what he sets up to find. If you think your data analysis is of high quality, ask yourself if you are you confident that the target party for your analysis would think your analysis is quite interesting and useful to him/her? |  | ☑ |  |  |

### **How much effort did I put in for my self-reflection?**

For each criteria, place a tick ☑ in the column that best matches what you have done for the assignment.

Justify your answer in the “Evidence” column so that your lecturer can verify, otherwise you will be asked to show evidence during your assignment interview.

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| Criteria | **Above Average** | **Average** | **Below average** | **Evidence** |
| I evaluate the effort that I put in to explain the **challenges** that I faced in this self-reflection assignment as: |  | ☑ |  |  |
| I evaluate the effort that I put in to explain the **achievements** that I faced in this self-reflection assignment as: |  | ☑ |  |  |

**-- End of Self-Reflection --**