**Computer and Information System**

**Coursework Assessment**

**202010**

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| **Course** | ICT-2013 Computational Thinking and Coding. | | |
| **Assessment Method** | Group Project | | |
| **Date of Assessment** | Handout: Week 11  Submission: Week 14 | **Duration / Deadline(s)** | 3 Weeks |
| **Maximum Mark** | 100 | **Percentage of Final Grade** | 25% |

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| **Instructions to Students**   1. This assessment has 8 pages including the cover page. 2. A group must contain 2 to 4 students. 3. Each student is required to submit the project deliverables individually onto Blackboard. |

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| **Academic Honesty Statement**  **In accordance with HCT policy LP201- Academic Honesty**  **• Students are required to refrain from all forms of academic dishonesty as defined and explained in HCT procedures and directions from HCT personnel.**  **• A student found guilty of having committed acts of academic dishonesty may be subject to one or more of the disciplinary measures as outlined in Article 33 of the Student and Academic Regulations.**  إفادة الأمانة الأكاديمية  **وفقًا لسياسة كليات التقنية العليا - LP201 الأمانة الأكاديمية**  **• يُطلب من الطلبة الامتناع عن كافة أشكال سوء الأمانة الأكاديمية، كما هو مبيّن وموضح في السياسات والإجراءات الخاصة بكليات التقنية العليا، والتوجيهات الصادرة من موظفي الكليات.**  **• في حالة ارتكاب الطالب أي شكل من أشكال سوء الأمانة الأكاديمية سوف يتعرض الى واحد أو أكثر من التدابير التأديبية على النحو المبين في المادة 33 من الأنظمة الأكاديمية.** |

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| **Student ID** | **Student Name** | **Student ID** | **Student Name** |
|  | 1. |  | 3. |
|  | 2. |  | 4. |

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| **Question (Section) No.** | **Deliverable Report and Python Code** | **Oral Defense** | **Total** | **%** |
| **Marks Allocated** | 50 | 50 | **100** | **25** |

# Project Objectives

The aim of this project is to provide the students with the opportunity to:

* Work with real-life datasets
* Demonstrate the competencies and skills needed to perform fundamental data analytics
* Write and present a brief executive report of findings and recommendations

# Project Description

You are required to work in a group to analysis real time data using Pandas. In this project you will read the real-life dataset from national or international data source on suitable domain. Set 7 objectives to analyze for the chosen data set using Python Pandas library. Write a well-structured report that contains executive summary and recommendations on your findings.

**Skills to be demonstrated:**

The selected dataset and derived data analytics challenge the student to demonstrate the following skills:

* Ability to read data from external files and store data in a Pandas Data Frame
* Analyze data by Sort data, Filter data, Group data
* Visualize data by appropriate plotting/charting

**Data Sources:**

Students are encouraged to select an appropriate dataset from any of the open data projects including:

* UAE Open Data Project: <https://bayanat.ae>
* USA Open Data Project: https://www.data.gov
* European Open Data Project: <http://data.europa.eu/euodp/en/home>

The dimensions of an appropriate dataset are at least 100 rows by 4 “relevant” columns

# Project Delivarables

### Project Report

Create and submit a well-structured MS Word Report including all jupyter Python code and using the given template. The report must include the following sections: **[CLO4, CLO 5] [Deliverable 1] [50 marks]**

1. **Project introduction [CLO5] [3 marks]**

Describe the project aim and the chosen dataset in terms of source, columns.

1. **Analysis Questions:** **[CLO5] (7 marks)**

You need to define 7 questions for the chosen dataset in order to analyze and visualize its data. These questions **should be relevant**, by providing useful information that may help in taking decisions.

Example of irrelevant questions:

* *How many columns? Show the 6 first rows*, …
* Questions related to reading data, cleaning data are NOT objectives.

Example ofrelevant questions:

* *How many students from Engineering Division got more than 89 marks?*
* *Display the number of students registered by each division using pie chart.*

1. **Data Acquisition and Cleaning [CLO4: 5 marks, CLO5: 3 marks] [8 marks]**

Provide the Python code to read the dataset, clean unnecessary data with clear explanation of why cleaning needed for selected data set and the screenshot of the code.

1. **Exploratory Analysis [CLO4: 7 marks, CLO5: 7 marks] [14 marks]**

Provide the Python code that performs the data analytics for each of the 7 questions, the usage of conditions, sorting, grouping, and statistical commands, is mandatory . Provide Screenshot of coding with results for each objective with a clear explanation on the data analysis.

1. **Data Visualization [CLO4: 6 marks, CLO5: 3 marks] [9 marks]**

Provide the Python code that use 3 types of Python chart, with suitable titles and colors to visualize the data for suitable analysis. Provide Screenshot of code that shows the data visualization..

1. **Executive Summary [CLO5] [7 marks]**

Write an executive summary that provides a clear snapshot of the project and highlights all the key findings and give a clear recommendation with justifications.

1. **References [CLO5] [2 Marks]**

Include all the external references that you might have used. APA/MLA referencing style may be used

### Oral Defense

**Individual Presentation (20 Marks)**

Present your project’s key findings and recommendations with a well-structured presentation with good visualization to a live panel while explaining the process employed to perform your data analytics.

Your presentation content must have:

Title, Introduction, Main explanations on project, Individual contributions, Conclusion.

**Individual Follow-up Questions (30 Marks)**

You will need to demonstrate your knowledge of the topics on CLO4 and CLO5, by responding with correct answers to at least 3 questions asked.

# Project Marks Distribution

### Group-based ASSESSMENT [50%]

1. Report in a Word / PDF format using the given template including the Python code and screen shots of the output. [50 Marks] [CLO4, CLO5]

### Individual-based ASSESSMENT [50%]

1. **Oral Communication**: PPT Presentation. [CLO4, CLO5] [20 Marks]
2. **Follow-up Questions and Discussion** [CLO4, CLO5] [30 Marks]

# Rubric

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|  |  | **Absent (F)** | **Insufficient**  **(1-59.49%)**  **(F)** | **Emerging**  **(60-69.49%)**  **(D/D+/C-)** | **Satisfactory (70-76.49%)**  **(C/C+)** | **Competent (77-86.49%)**  **(B-/B/B+)** | **Mastering (87-100%)**  **(A-/A)** |
| **Group Grading [50%]** | **CLO4 (Python Code) [18 %]** |  |  |  |  |  |  |
|  | Data did not read from the selected sources using Python code | Used Python code to read data from source with some syntax errors. | Used Python code to read data from the correct source but did not clean the data. | Used Python code to data is read from the correct source. Some of the data cleaning is done. | Used Python code to data is read from the correct source (include the sheet name). Data cleaning done with clear explanation |
|  | Python code for Data analysis is not done or does not meet the objectives | Python code for Data analysis are done for few objectives, code has some errors or output is not as expected. | Python code for Data analysis are done for some objectives, did not use all the techniques required. | Python code for Data analysis are done for most of the objectives but did not use all the techniques required. | Python code for Data analysis are done for all of the objectives and use all the techniques required. All the code working correctly, produces the correct results with no errors |
|  | Did not produce Python code to display charts are inappropriate and incorrect. | Produced Python code for chart where some are visually misleading for inappropriate conclusions. | Produced Python code for chart which produce expected result, but missing the titles, appropriate color. | Produced Python code for chart with some minor errors, titles, appropriate color. | Produced Python code for all required charts are produced correctly with appropriate color, title, x-axis and y-axis. |
| **CLO 5 (Report including justification for Python Code) [ 32 %]** |  | 1 – 3 objectives are defined; some are not relevant to selected data set.  No justification given for cleaning the data.  The performance analysis is not focused on objectives and does not given findings/ results of analysis.  No explanation given for data visualization.  A weak executive summary that does not provide a focused on the key findings.  Writing is unclear and/or disorganized. Thoughts are not expressed in a logical manner. Many typos and grammar mistakes.  Student does not use proper structure, format, referencing, as stated in the project description. | Few objectives are defined, some are not relevant to selected data set.  Given explanations for data cleaning without any justification.  The performance done for few of the objectives and produces analysis on finding/ results without any screen shots.  Given explanations for data visualization without any justification.  The executive summary discussed few of the key findings, some parts of explanations are week.  Writing is clear in some part and/or organized. Thoughts are expressed in a logical manner in some parts. Some typos and grammar mistakes.  Found some errors in report structure, format, referencing, as stated in the project description | Some objectives are defined, some objectives are redundant.  Given explanations for data cleaning with some minor justification.  The performance done for most of the objectives and produces analysis on finding/ results with few screen shots.  Given explanations for data visualization with some minor justification.  The executive summary discussed most of the key findings, did not given any recommendation.  Writing is mostly clear. Thoughts are expressed in logical manner. Very few typos and grammar mistakes.  Found few errors in report structure, format, referencing, as stated in the project description. | Most of the objectives are well defined and stated clearly.  Given explanations for data cleaning with some justification.  The performance analysis is focused on given objectives and produced the clear analysis on finding/ results with most of screen shots.  Given explanations for data visualization with some justification.  The executive summary discussed all the key findings. Given some recommendations based on the key findings.  Writing is mostly clear, concise, and well organized with good sentence/paragraph construction. Thoughts are expressed in a coherent and logical manner. No typo and grammar errors.  Student uses proper structure, format, referencing, as stated in the project description | All the objectives are well defined and stated clearly.  Given clear explanations and justification for data cleaning.  The performance analysis is well focused on given objectives and produced the excellent analysis on finding/ results with all the screen shots.  Given clear explanations and justification for data visualizarion.  An executive summary that provides a clear snapshot of the project and highlights all the key findings and given a clear recommendation.  Writing is clear, concise, and well organized with excellent sentence/paragraph construction. Pays special attention to ensuring that the work product is as professionally prepared as possible.  Student uses proper structure & format used, including APA referencing, as stated in the project description. |
| **Individual Grading [50%]** | **Oral Communication [20%][CLO4, CLO5]** |  | * Communicates with a limited sense of audience and purpose (No eye contact, no body language, and no poise) * Communicates information and ideas with limited clarity * Uses language with limited accuracy and effectiveness * Tension and nervousness are obvious; has trouble recovering from mistakes * Did not use tools such as PowerPoint for presentation, open report and explained. | Some but not all of the following:   * Communicates with a clear sense of audience and purpose (Eye contact, body language, and poise) * Communicates information and ideas with considerable clarity * Uses Language with considerable accuracy and effectiveness * Makes minor mistakes, but quickly recovers from them; displays little or no tensions * Presentation content is confusing, many spelling mistakes. No graphics / visual elements used. | Most but not all of the following:   * Communicates with a clear sense of audience and purpose (Eye contact, body language, and poise) * Communicates information and ideas with considerable clarity * Uses language with considerable accuracy and effectiveness * Makes minor mistakes, but quickly recovers from them; displays little or no tensions * Presentation Content has very few inaccuracies, few spelling mistakes. Used graphics / visual elements used. Minimal effort made to make slides appealing. | All of the following:   * Communicates with a clear sense of audience and purpose (Eye contact, body language, and poise) * Communicates information and ideas with considerable clarity * Uses language with considerable accuracy and effectiveness * Makes minor mistakes, but quickly recovers from them; displays little or no tensions * Presentation Content mostly accurate, no spelling mistakes. Used graphics / visual elements used. Mostly clear and appealing. | All of the following:   * Communicates with a strong sense of audience and purpose (holds attention with the use if direct eye contact, seldom looking at notes) * Communicates information and ideas with a high degree of clarity * Uses Language with a high degree of accuracy and effectiveness * Student displays relaxed, self-confident, with no mistakes * Presentation Content is accurate. Very good use of graphics / visual elements used. Information is clear and concise on each slide. Visually appealing/ engaging. |
| **Follow-up questions and discussion [30%] [CLO4, 5]** |  | * Unable to answer questions from the examining board | * Able to answer some   but not all questions  from the examining board | * Able to answer most but not all questions from the examining board | * Able to answer all   questions from the examining board | * Able to answer all   questions and  demonstrate a complete understanding of the study |