Assignment 1: *Dashboard Application*

This assessment contributes **30%** of the overall marks for the module **DA4310 Data Science**. This is an **individual** assignment. Each student is required to produce a report and a dashboard web application. Each student is required to choose at least **one (1)** dataset. Students may choose more than one dataset provided that the datasets are related to each other.

Dataset can be obtained from but not limited to the following:

- Google Dataset Search
  https://datasetsearch.research.google.com/
- Open collaborative machine learning platform www.openml.org
- Kaggle: Platform for competitions, tutorials, datasets, jobs etc.
  www.kaggle.com

Each student is not allowed to choose the same datasets for this assignment. Students are not allowed to use any datasets that are used during the practical session. Each student is required to inform the lecturer on which datasets are chosen for approval.

In this assignment, student is required to produce a dashboard application. The application should contain meaningful and interactive visualisations. Students are required to pre-process the data before using it for the visualisations. Student also need to consider the aesthetic of the application design. Students are also required to create a user manual on the application.

On the day of submission, students are required to hand in a softcopy version of the report, source codes and presentation slides to the lecturer. The softcopy versions should be submitted on LMS. Students are required to present their work the week after assignment submission.

Weightage
30%

Due Date
11:59 P.M, 26th February 2024 (Monday)

Late Submission
Deliverables received after 11:59 P.M. will result in 10% mark deduction per day.

Deliverables:
Report Softcopy, source codes and Presentation Slides.
Submission through LMS.

Module Lecturer
Norfarrah Muhd Masdi
norfarrah.muhdmasdi@pb.edu.bn

Resource
Students own research
Lecture slides & DSCI portal.

Equipment/Software
Students are required to use their own personal computer and necessary software.

Task Checklist

Please read the following for a detailed explanation regarding what you need to do to complete this assignment. If you have any questions regarding the content, kindly request assistance from your respective module lecturers for further understanding.

Mid Assessment (15%)

You are required to share your report document using Google Docs and your source code via GitHub with the module lecturer starting from 05th February 2024, Monday. The documents will be assessed on 15th February 2024, Wednesday.

1. **Report**

   - Assignment Scope and Relevance.

   - Completion Rate.

   - Report Clarity and Integrity

2. **Source Code**

   - Completion Rate.

   - Functional features.

   - References for any source code that you may have referred to.

Demonstration (25%)

You need to include the following contents in your presentation slides. Your presentation slides should address the following:

a) Overview of Application
b) Demo of the application
c) Data Insights

General Guidelines:
   - Presenters will have **a maximum of 10 minutes** to deliver their presentation.
   - The presentation should address the contents specified in the previous section.
   - Lesser and shorter point is better and fill in the PowerPoint slides with narration, not words.
   - A 10 minutes question-and-answer session will be at the end of the presentation.

Final Submission (60%)

You are required to submit a **softcopy version** of the **report, source code** and **presentation slide via LMS**.

1. **Report**

    The cover page of this report should contain the template provided on the LMS. The contents should follow the following format:

    - Table of content

    - Documentation:

        ➢ **Introduction**

        Introduction on the topic. Determine the problem statements, aims and objectives, and the purpose of the application.

        - **Problem Statements** – Determine the problem statements. The problem statements should be supported by clear and valid evidences.

        - **Aims and Objectives** – Identify the aims of the dashboard application. Determine at least 3 objectives.

        - **Application Overview** – Describe the application and the purpose of the application.

        ➢ **Main Dashboard:**

        Screenshot of each visualisation in the main dashboard. Descriptions of each dashboard. Discuss the importance of each dashboard in achieving the objectives.

        ➢ **User Manual:**

        Brief description of the application's features. Create a step-by-step guide for using the application.

        ➢ **Recommendations:**

        Identify the strength and weakness of your application. Suggest ways to improve your applications to further achieve the objectives.

        ➢ **Conclusion:**

        Summary of important points from your report. Discussion on how the application achieve the aims and objectives.

    - References - Table (uses APA format and contains resources used as references in this report)

2. **Application Minimum Requirements**

The application must contain but not limited to the following:

- Data Preparations
  - ➢ This should contain all data cleaning and transformation techniques applied to the dataset(s).

- Minimum of 2 pages of visualisations
  - ➢ Main Dashboard which must contain at least 6 visualisations
  - ➢ Other visualisations (at least 6 visualisations)

- Interactive Dashboard:
  - ➢ All visualisations must have filter functions where the visualisation changes based on the user input.

- Libraries List:
  - ➢ This should contain all libraries used/installed within the application.

- Application Design:
  - ➢ The application must be well-designed and can be easily accessed with proper colour scheme, layout and usability factors.
  - ➢ Marks will be rewarded for aesthetics of the application
  - ➢ Templates are allowed but templates must be cited and referenced.

Assessment Rules

1. Plagiarism is a serious academic offence. You will be penalized heavily if caught plagiarizing. You must take necessary steps in ensuring your work is plagiarism-free. **For severe cases of plagiarism, grade 'F' (Fail) will be awarded. Zero marks will be recorded for your first attempt. The same applies to collusion.**

2. The use **of AI-tools** or any other type of automated assistance is strictly prohibited in completing the assignment. You will be penalized heavily if caught. You must take necessary steps in ensuring your work is AI-free. If caught, you may receive **grade 'F' (Fail)** and disciplinary actions may be taken.

3. If you have problems in completing the assessment due to illness, you must **REPORT** to the lecturer immediately. Last minute notification will not be entertained unless student presents a medical report, which is issued and endorsed by any government health centres.

4. You may consult with the module lecturer if you are not clear with the assignment by approaching via e-mail on initial. Module lecturer has the right not to entertain any questions except for questions in regards to a submission within three (3) working days before the assignment's deadline.

5. In the event you are unable to complete the assessment or submit partially completed assessment, the following actions will be taken:

   a. For **significantly incomplete** assessments or **non-submission**, you will be automatically awarded with grade 'F' (Fail). You will be asked to complete the assessment however as a **second attempt**. Marks will be capped at 50%.

   b. For submission of **partially completed** assessment, marks will be awarded as per work submitted. Should marks fall below the passing grade, you will be referred to case 4a above.

6. It is your responsibility to check the LMS regularly for any new updates or announcement. Do not simply rely on your friends to get updates.

7. Rules may be updated from time to time. Any updates will be posted on the LMS.

Report Writing Instructions

- Presentation of report including spelling, grammar, syntax and style will be marked.

- Please remember that your report should be formatted according to the **APA Style Referencing guide** and follow all rules stated in the criteria section.

- Your report must be a word processing document including cover page, table of content, references and appendices.

- Cover page must include the module code, module name, title of the assignment, semester and academic session, student's full name, student ID code, programme title, submission date, module lecturer full name and Politeknik Brunei logo only.

- Use of **12-POINT FONT**, the **ARIAL** or **TIMES NEW ROMAN** font, single or **1.5** spaces, and **PAGINATE**.

- Penalty of marks will be applied if it does not follow this specific format. Kindly note that the cover page must be pasted on top of the folder.

- Assessment must be submitted by the due date and time shown. **Late assessment will be penalized to 10% deduction of the total possible marks for the assessment for every day after the deadline.** Where the assessment is submitted more than one week late, a mark of zero shall be awarded.

- **It is the student's responsibility to ensure no aspect of their work is plagiarized or the result of other unfair means.**

Deliverables

The list below is the deliverable you MUST submit. In the case that deliverables received on the submission date after 11:59 P.M., marks will be deducted by 10% each day and will continue to reduce accordingly. Where the assessment is submitted more than one-week late will result in automatic failure and will be given a second attempt for this assignment with barring marks.

- Report Document (in PDF format)

- Source code – in python script format (.py)

- Presentation Slides (in PDF format – 1 slide per page)

Important Note:

1. Document should be renamed according to the format:

   DSCI-AS1-StudentId-Name.pdf, Example: DSCI-AS1-19FTT2020-NORFARRAH MUHD MASDI.pdf

2. Only one (1) PDF file is needed for PBLMS online submission.

3. Students are advised to check on the document before submission. A penalty of up to 30% marks deduction for submission of corrupted files.

4. No hardcopy submission is required for this assignment.

5. In the event of technical error in submission, the module lecturer will contact you to resubmit. The corrected version MUST be submitted within one (01) day. Students are encouraged to keep a copy for resubmission ready.

6. Although the submission date is on **26th February 2023**, students are strongly advised to consult your lecturer on weekly basis to keep you on the right track and detect any errors so amendments and corrections can be made at early stage before furthering the work.

   Lecturer is there to guide students, not to provide the solution. Some of the contents require for this assignment will not be available in the early lectures so students are expected to use their own time to do research in advance and to make sure they are on schedule.

Assignment Consultation

Assignment consultation is compulsory for each group. Students must schedule a consultation date and time with the module lecturer. It is recommended for the students to schedule a consultation no later than Week four (4). The following dates are recommended for the consultation:

1. 12th February 2024
2. 13th February 2024

Important Note:

1. Students are expected to demonstrate satisfactory progress during the consultation. In instances where there is minimal progress, additional consultation sessions will be required to address any challenges or concerns.
2. Prior to attending the consultations, students are to prepare their questions before attending the consultation.
3. Failure to schedule and attend the consultation will including missing the additional consultation result in a 5% deduction from their overall marks.

Grading Criteria
Table below is the guideline on how this assessment will be graded.

Task	100%	Guide to score full marks
Mid Assessment (15%)		
Assignment scope and Relevance	3	Report addressed important aspect of the assignment.
Report Completion Rate	2	40% and above completion rate.
Report Clarity and Integrity	2	Structures, content quality and reliable references.
Functional Features	4	Features are implemented correctly and effectively.
Application Completion Rate	2	40% and above completion rate.
Source Code Integrity	2	Attributions and citations of source code.
Demonstration (25%)		
Presentation	5	Excellent presentation skills including communicating ideas, voice projection and body language.

Code Explanation	4	Able to explain the process and code used to develop the applications.
User Interface Design and Experience	3	Show a well-designed user interface that enhances user experience.
Execution and Functionality	5	Demonstrate dashboard functionalities with effective insights.
Data Insights	3	Ability to produce meaningful insights.
Questions and Answers	5	Ability to answer questions with accuracy.
Report (30%)		
Report Structure	1	Proper cover page as instructed in this assignment brief. Includes: table of content, proper font, font size, spacing and page numbering.
Introduction	5	- Introduction on the topic - Problem Statements – Determine the problem statements. The problem statements should be supported by clear and valid evidences. - Aims – Identify the aims of the dashboard application. Only one aim required. - Objectives – Determine at least 3 valid and measurable objectives. - Application Overview – Describe the application and the purpose of the application.
Main Dashboard	7	- Screenshot of each visualisation in the main dashboard. At least 6 visualisations should be included in the main dashboard. - Descriptions of each dashboard. - Discuss the importance of each dashboard in achieving the objectives.
User Manual	8	- Brief description of the application's unique features. - Create a step-by-step guide for using the application (only unique features to avoid repetition). - Include screenshots wherever necessary.
Recommendations	5	- Identify at least 2 strengths of your application. - Identify at least 2 weakness of your application.

		• Suggest ways to improve your applications to further achieve the objectives.
Conclusions	3	• Summary of important points from your report. • Discussion on how the application achieve the aims and objectives.
Reference	1	Proper indication on the text/paragraph where a concept, explanation or solution are taken or reference from. A table of references following APA standard referencing.
Application Implementation (30%)		
Data Preparation	5	• Suitable data preparation technique used on the dataset. • Data preparation's steps are done correctly.
Data Visualisation	20	• Data visualisations are done properly • Suitable visualisation is used to present the data. • Visualisation conveys correct information. • Different types of visualisations are used. • Visualisation's aesthetic (visualisations are labelled properly, consistent format and clear title) • At least 2 different types of user interactions used. • All visualisations changed based on user input.
Application Design	5	• The overall interface design promotes readability, completeness, great visual presentation and quality work done. • Correct flow between pages and between visualisations.

- End of File –