✔ **Done:** Receive a grade

Due: Monday, 8 September 2025, 11:55 PM

This assignment has two parts, the team submission, and your individual peer assessment. All components must be submitted by end of u
This assessment accounts for 20% of your final module mark.

Only one submission is required from each team with a limit of 1,000 words for the analytical report. This word count applies onl the main content of your work excluding the following: images, list of references, table of contents, appendices, etc. All artefacts produced as part of this submission should be stored in your e-portfolio, due for submission in Unit 12.

Assignment Brief: Airbnb Business Analysis Using a Data Science Approach

Background

Since 2008, guests and hosts have used Airbnb to expand on travelling possibilities and present more unique, personalised ways of experiencing the world. The Airbnb dataset (**AB_NYC_2019.csv**) along with its description can be accessed through **Kaggle**. This dataset describes the listing activity and metrics in NYC, NY for 2019, including host information, geographical availability, and key metrics to supp predictions and insights.

This assignment is designed to assess your ability to apply machine learning approaches to analyse Airbnb business trends. Each team w assigned one of three machine learning tracks, ensuring diverse perspectives in data exploration and decision-making.

Each group will conduct an independent analysis based on their assigned approach and then contribute to a comparative discussion on th effectiveness of each method.

Track	Machine Learning Approach	Focus Areas
Track 1	Classical ML (Regression & Clustering)	Price prediction, demand trends, customer segmentation
Track 2	Deep Learning (Neural Networks, CNNs)	Image-based analysis, text-based sentiment analysis, demand forecastin
Track 3	Advanced ML (Self-Supervised Learning, NAS)	Anomaly detection, outlier detection, emerging trend identification

Task 1 (Business Analytic Question)

Each group must propose a business-oriented question relevant to Airbnb. The question should be practical and valuable to Airbnb's strat planning. An example might be: "How do seasonal fluctuations affect Airbnb pricing strategies in different neighbourhoods?"

Task 2 (Data Analysis – Based on Track Selection)

Each group must apply their assigned machine learning approach to analyse the dataset.

Track-Specific Expectations:

- Track 1 (Classical ML – Regression & Clustering): Apply regression models for pricing prediction and clustering techniques for custo segmentation.
- Track 2 (Deep Learning – Neural Networks, CNNs): Utilise deep learning models for image-based property analysis or text-based sentiment classification.
- Track 3 (Advanced ML – Self-Supervised Learning, NAS): Use self-supervised techniques to identify anomalies in pricing patterns ar apply Neural Architecture Search (NAS) to optimise model performance.

Task 3 (Analytical Report & Comparative Discussion)

- Prepare an analytical report (1000 words max).
- Include data visualisations and explanations tailored to Airbnb's executive team.
- Explain how the chosen machine learning approach influenced results.
- Compare results across tracks in a group discussion session.

Please note: Appendices should not be used to extend the core report as reports should stand alone, complete, and concise, without the appendices. They should only be used if required, and only for supplementary and/ or supporting information. One key part of the exercise this module is the need to be to be able to express ideas succinctly, concisely and with necessary brevity.

Summary of Assessment Requirements and Associated Grading Criteria

(to be reviewed alongside the criteria grid in the Module Resources page)

Project Report	Component
Substantive question	5% (Knowledge and Understanding)
Rational/arguments presented for the business question	5% (Criticality)
Expected business impact	5% (Application of Knowledge and Understanding)
Methodology (EDA, data pre-processing, data analysis & machine learning)	40% (Knowledge and Understanding – 10%, Application of Knowledge and Understanding – 10%, Criticality – 20%)
Visualisations of results	40% (Knowledge and Understanding – 10%, Application of Knowledge and Understanding – 10%, Structure and Presentation – 20%)
Overall presentation style	5% (Structure and Presentation)

Learning Outcomes

- Understand the applicability and challenges associated with different datasets for the use of machine learning algorithms.
- Systematically develop and implement the skills required to be effective member of a development team in a virtual professional environment, adopting real-life perspectives on team roles and organisation.

Turnitin Originality Check

Before submitting your assignment, it is important to check the originality of your work by submitting your assignment to **Turnitin**.

By submitting your assignment to this tool you will receive an originality report which can be used to check that you have not included othe authors work without correct citation. It is important to note that submitting your work to the Turnitin Originality Check tool does not count a submission of your final work. You must still submit your assignment below.

Academic Integrity and Plagiarism

We take academic integrity very seriously. Academic integrity means acting with fairness and honesty, giving credit to others where you referring to their ideas or research and respecting the work of others. Plagiarism is defined as: 'Using or copying the work of others (wheth written, printed or in any other form) without proper acknowledgement'. Before you finalise your assignment take time to check that all you statements are backed up with supporting evidence, that all sources you use - whether referring to their ideas, quoting directly or paraphra are correctly referenced in the text. Correct use of referencing acknowledges the academic whose work has informed yours, enables the r to find the sources you have used and demonstrates your ability to find and analyse relevant information.

Failure to properly acknowledge the work of others is an academic offence and may result in your work incurring a penalty or, in the most s cases, you being removed from the course for academic dishonesty.

If you are unsure about referencing or plagiarism there are useful resources available in the Study Skills Hub which is accessible from the on the left hand side. If you are still experiencing difficulties with academic integrity then you can **contact the Study Skills Team** for individualised support.

Please note, a word count penalty applies to this assessment.

If your assessment exceeds the word count limit or range by more than 10% then your awarded grade will be reduced by 10% grade point more information please see your **student handbook**.

Not meeting the word count

There is no grade reduction applied if your assignment does not meet the word count range or limit, but to maximise your opportunity to ac the highest grade possible, you should aim to meet the word count or range as closely as possible.

Submission Instructions

- Submit your saved document below before the end of Unit 6.
- After the deadline, the submission page will be locked.
- Use Cite them Right Harvard referencing for all citations and references (see Study Skills Hub for guide).

Submission status

Group	Group 2
Attempt number	This is attempt 1.
Submission status	Submitted for grading
Grading status	Graded
Time remaining	Assignment was submitted 7 hours 43 mins early
Last modified	Monday, 8 September 2025, 4:11 PM
File submissions	**Unit 6 Team Project Report - Group 2.pdf** 8 September 2025, 4:11 PM
Submission comments	**Comments (0)**

Feedback

Grade	76 % (Distinction)
Graded on	Monday, 15 September 2025, 6:10 PM
Graded by	 Steph Paladini
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Thank you for your submission of the team group component of AS1.

Here you had to propose an insightful question using the Airbnb dataset, such as analyzing booking patterns across different areas and identifying potential reason

Utilising your data analytics skills you had then to address the question previously formulated, through the use of EDA, data preprocessing, statistical analysis, visualization, and clustering.

Finally, you had to prepare a concise analytical report with visualizations, easily understandable by Airbnb executives, limited to 2 pages (1000 words equivalent). S Python code as an appendix.

Feedback comments

Your group have contributed an excellent assignment.

Here you have the breakdown by individual components.

Substantive question	The question is well-chosen and it makes business sense. It could have been further expanded with other implications considered.
Rational/arguments presented for the business question	See above. The rationale is solid, although it could have been proabably been elaborated even more in a coherent strategy. More academic references would have strenghtened this area substantially, though.
Expected business impact	Impact analysis has room for improvement.
Methodology (EDA, data pre-processing, data analysis & machine learning)	You've demonstrated a good grasp of data analysis. EDA is solid and the algorithms overall correctly chosen and adopted with room for growth.
Visualisations of results	Very good. You made the most of the visualisation libraries and especially the geographic charts are well presented and add value to the analysis.
Overall presentation style	The report is well-structured, with good sections, solid narrative and correct pacing. Emphasis on specfici points could have been improved.

Keep up the good job!