ASSESSMENT 3	ROBOTIC PROCESS AUTOMATION AND AI IN THE CLOUD
ASSESSMENT TYPE	INDIVIDUAL
MARKS	40%
DUE DATE	11:59PM WEDNESDAY, 11TH JUNE 2025.

Q1. Build a Chatbot (15 Marks)

You are an RPA consultant specialising in the design of Conversational Agents, you have been engaged by Tourism Australia to consult on potential automation opportunities. One of your tasks is to design and build a chatbot application which can act as a virtual companion to tourists in Australia.

a) Describe 5 functionalities related to tourism that can be fulfilled through a chatbot. (2 marks)

b) Tourism Australia will be looking to collect data from the interaction of the tourists and the chatbot, and is seeking your advice in terms of the ethical considerations, what is some advice you will offer? (3 marks)

c) Choose one of the functionality that you have elaborated above then design and implement a chatbot flow using Dialogflow CX to fulfil this; outline your thought processes and the conversation design. Demonstrate techniques that you have learnt in class. (6 marks)

d) Record a demonstration introducing the bot and the sample flow that you have built. (less than 2 minutes) (4 marks)

You can upload the video on Microsoft Stream add the link in the report. Please make sure you give access to your teaching team.

Q2. Evaluating Cloud Security (10 Marks)

You are a security analyst working for a consulting firm that specializes in cloud security audits and post-incident analysis. Your manager has asked you to investigate a recent public security failure involving cloud-based infrastructure. Your findings will help the firm prepare guidelines for clients to avoid similar incidents.

Using a real-world example of a cloud or hybrid cloud security failure or breach reported in the last 5 years.

a) Briefly summarise the incident:
   - What happened?
   - Who was affected?
   - What data or systems were compromised?
   - What was the root cause? (3 marks)

b) Explain the cloud-based components involved (e.g., services used, configurations, deployment models). Provide a visual diagram if applicable. Discuss whether this was a SaaS, PaaS, or IaaS scenario and the shared responsibility breakdown. (3 marks)

c) Based on your analysis, describe 3 – 5 concrete steps that should have been taken to prevent this incident. Your answer should reference tools or features available in major cloud platforms. (4 marks)

Q3. Using Large Language Models (5 Marks)

You are a Data Analyst in the digital operations team at a major telecommunications provider. The company receives thousands of customer complaints and queries through email and live chat daily. Your task is to prototype an automation system using Large Language Models (LLMs) to classify and triage these messages in real time, helping the customer support team prioritise and route them effectively.

The proposed approach is to use an LLM to extract customer issue categories, assess urgency, and recommend the best support team or escalation path.

The following is a prompt template sourced from a cloud vendor which suggests how this could be done (referred from *https://www.databricks.com/blog/actioning-customer-reviews-scale-databricks-sql-ai-functions*).

"A customer left a review. We follow up with anyone who appears unhappy. Extract all entities mentioned. For each entity:

- classify sentiment as ["POSITIVE", "NEUTRAL", "NEGATIVE"]
- whether customer requires a follow-up: Y or N
- reason for requiring follow-up

Return JSON ONLY. No other text outside the JSON. JSON format:

```
{
entities: [{"entity_name": <entity name>,
        "entity_type": <entity type>,
        "entity_sentiment": <entity sentiment>,
        "followup": <Y or N for follow-up>,
        "followup_reason": <reason for follow-up>
        }]
    }
```

Review: <review text>"

You can use sample texts from telecom forums or simulate customer complaints to test the model. E.g.

- "I've been charged twice for the same service. This is really frustrating and I want a refund."
- "My NBN connection has been down since last night. I work from home and can't wait on the line forever."
- "Why can't I log into my app even after resetting the password three times?"

a) Critically evaluate the given prompt template and come up with a template which models the requirement. Choose 2 – 3 realistic customer complaints or queries and run them through a suitable open-source or API based LLM. Present the resulting JSON output. (2 marks)

b) Compare the model's classifications to those generated by a rule-based baseline or simple zero-shot classifier from Hugging Face. Discuss consistency, errors, and any bias observed. (2 marks)

c) Suggest improvements to the prompt or recommend whether this approach is ready for limited or production use. Consider concerns like hallucinations, data protection, and escalation risk. (1 mark)

Q4. Evaluating Cloud Based Technology (10 Marks)

You are part of a university led innovation team exploring the adoption of AI-powered educational assistants to support students in coursework and research. As part of a pilot study, your task is to evaluate the feasibility of integrating Google's NotebookLM (https://notebooklm.google/) or a similar AI based note taking assistant into the university's learning ecosystem. Use the free evaluation access provided by NotebookLM.

a) Identify and describe the key functionalities that align with common academic activities offered by NotebookLM in a university setting. (2 Marks)

b) Using a real or simulated academic scenario (e.g., preparing for an exam, writing a research summary, analyzing lecture notes), demonstrate how each identified feature of NotebookLM can be used by a student, researcher or lecturer. (5 Marks)

c) Critically analyse each capability based on

   i. Accuracy and relevance of the AI-generated output
   ii. Usefulness in academic workflows
   iii. Limitations or concerns for instance bias or hallucination, provide evidence to support your conclusions. (3 Marks)

Ensure that your analysis is thorough and includes evidence based reflections. Log any experiment results in a GitHub repository and include the reference in your report.

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Task	D	C	B	A
Q1. Build a Chatbot (15 Marks)	Minimal attempt at chatbot design and implementation. Functionalities, ethical considerations, and flow design are unclear or incomplete. Demonstration video is missing or ineffective.	Basic attempt at chatbot design, with limited functionalities, ethical considerations, and chatbot flow. Demonstration video is included but lacks clarity or depth.	Good chatbot design with mostly clear functionalities and ethical considerations. Chatbot flow is logical with some minor issues. Demonstration video is clear and reasonably effective.	Comprehensive chatbot design with well explained functionalities and ethical considerations. Chatbot flow is detailed and demonstrates strong thought processes. Demonstration video is clear and effective.
Q2. Evaluating Cloud Security (10 Marks)	Incomplete or vague case summary; unclear or incorrect analysis of cloud platform; no or weak recommendation.	Basic summary of incident, limited explanation of cloud elements, generic recommendations.	Clear and relevant summary, accurate cloud service breakdown, practical prevention suggestions.	Comprehensive real-world case summary, strong insight on governance, actionable, cloud native security recommendations.
Q3. Large Language Models for Analysis (5 Marks)	Minimal results from the model and incorrect or incomplete validation. Critical analysis is weak or missing.	Basic results from the model with limited validation. Critical analysis is present but lacks depth or clarity.	Good results from the model with relevant validation. Critical analysis is reasonable but could be more detailed.	Comprehensive results from the model with thorough validation. Critical analysis is detailed and well-supported, with clear and actionable recommendations.

Q4. Evaluating Cloud Based Technology (10 Marks)	Provides a basic description of NotebookLM with some mention of functionalities. At least one demonstration is attempted. Some attempt at evaluation is made, though lacking depth. A GitHub link is included, even if minimally populated.	Describes key functionalities with reasonable clarity. Demonstration includes relevant academic examples. Evaluation includes some discussion of strengths/weaknesses with minor evidence. GitHub link shows some structure.	Clear and relevant description of NotebookLM's features in an academic context. Demonstration is scenario-based and mostly complete. Evaluation includes thoughtful analysis with supporting evidence. GitHub repository is well organised.	Comprehensive exploration of features tailored to university use. Demonstrations are rich in context and clearly presented. Evaluation is critical, balanced, and evidence based. GitHub log is complete and well-structured with clear documentation.