UML Activity Diagram Creation, Comparison with Lucid GPT-Generated Diagram, and Use of ChatGPT for Modeling a New Use Case

Objective of the Experiment:

The objective of this experiment is to evaluate students' ability to manually create UML Activity Diagrams based on use case features and to compare the quality and accuracy of their manually created diagram with one automatically generated using the LucidChart GPT tool. Additionally, it aims to assess the effectiveness of ChatGPT in supporting creative ideation for modeling new use cases.

Description of the Use Case Features:

Create an Activity Diagram for the process of scheduling a new appointment for a specific animal within a veterinary clinic system, considering the following features:

- Upon arriving at the clinic, the pet owner must identify themselves. If they are not registered, the receptionist must register both the client's personal information and their pet's details.

- When consulting a client, a list of all animals they own is presented along with their personal information. If the animal for which the client wants to schedule an appointment is not registered, the receptionist must register it.

- Once an animal is selected, the receptionist can view all the animal's treatments, whether ongoing or already completed.

- From the list of treatments, the receptionist can select one, which will display all consultations already carried out during that treatment. If the treatment is still ongoing, a new consultation may be scheduled.

- If it is the animal's first consultation, a new treatment must be created first, including the start date, the animal and owner's identification, and a description of the animal's symptoms. If it is not the first consultation, the corresponding treatment must be selected before scheduling the consultation.

- After selecting the client, the animal, and the appropriate treatment, the receptionist can then schedule the appointment. Each new consultation must include the client's desired date and time.

Experiment Instructions:

Step 1: UML Activity Diagram Creation

- Based on the features described in section (a), manually create a UML Activity Diagram.
- You may use any drawing tool of your choice (pen and paper, UML modeling software, etc.).

Step 2: Reference Diagram Presentation and Comparison

- Discuss the diagrams created by the students and compare them with a reference ("solution") diagram.

Step 3: Automatic Diagram Generation

- After completing the manual diagram, use the **Lucid GPT tool** to automatically generate a UML Activity Diagram.
- To do this, provide Lucid GPT with the same information described in section (a).

Step 4: Comparison

- Compare the manually created diagram with the one generated by Lucid GPT.
- Analyze the differences in terms of structure, accuracy, clarity, and completeness.
- Determine whether the automatically generated diagram captures all the elements and flows described in the use case.

Step 5: New Use Case Modeling

- Use **ChatGPT as a partner** to model a new use case within the veterinary clinic system.
- The new use case should integrate with the existing system and introduce an innovative aspect.
- You may base this new use case on criteria such as **accessibility, sustainability, portability, unpredictability, user engagement, comfort**, etc.

Deliverables:

- Manually created diagram (photo or file from modeling tool).
- Automatically generated diagram (from LucidGPT).
- Prompt(s) used to generate the Activity Diagram in LucidGPT (and in ChatGPT).
- Complete the **follow-up questionnaire**.
- After completing the experiment, students must fill out the **follow-up form**.