Republic of the Philippines
Laguna State Polytechnic University
Province of Laguna

Machine Problem No. 1			
Topic:	**Topic 1.1: Introduction to Knowledge Representation**	**Week No.**	1-2
Course Code:	**CSST101**	**Term:**	1st Semester
Course Title:	**Advance Representation and Reasoning**	**Academic Year:**	2024-2025
Student Name		**Section**	
Due date	**September 02, 2024**	**Points**	

Machine Problem No. 1: Exploring the Role of Knowledge Representation in AI.

Objective:
Understand the importance of knowledge representation in Artificial Intelligence (AI) and explore how it enables AI systems to reason, learn, and make decisions.

Instructions:

1. **Research and Comprehend:**
   - **Introduction to AI**
     - Start by researching the basic concepts of Artificial Intelligence (AI), focusing on how AI systems work.
     - Understand the role of knowledge in AI, including why it is crucial for AI systems to represent and manipulate knowledge effectively.

   - **Overview of Knowledge Representation**
     - Explore what knowledge representation means in the context of AI.
     - Identify at least three forms of knowledge representation (e.g., semantic networks, frames, ontologies, logic-based representations).
     - Investigate how these forms of representation help AI systems to process information, reason, and make decisions.

2. **Hands-On Exploration:**
   - **Case Study Selection**
     - Choose a real-world AI application (e.g., a medical diagnosis system, a recommendation engine, or an autonomous vehicle).
     - Investigate how knowledge is represented within this application. Focus on the type of knowledge representation used and its effectiveness in solving problems.

- **Representation Creation**
  - Select a simple problem related to your chosen AI application.
  - Create a knowledge representation model (e.g., a semantic network or a logical framework) to address this problem.
  - Use diagrams or visual aids to illustrate how the knowledge is structured and how the AI system would utilize it.

3. **Presentation Development:**
   - **Slide 1: Introduction to AI and Knowledge Representation**
     - Provide an overview of AI and the critical role knowledge representation plays in AI systems.
   - **Slide 2: Types of Knowledge Representation**
     - Describe the three forms of knowledge representation you researched. Include examples of each and discuss their applications in AI.
   - **Slide 3: Case Study Overview**
     - Present the AI application you selected. Explain how knowledge is represented in this application and the challenges it addresses.
   - **Slide 4: Your Knowledge Representation Model**
     - Present the model you created for the simple problem. Explain how the model works and how it helps the AI system solve the problem.
   - **Slide 5: Conclusion**
     - Summarize the importance of effective knowledge representation in AI and reflect on what you learned from the activity.
4. **Extension Activity (Optional):**
   - **Research an Emerging Form of Knowledge Representation**
     - Investigate a newer or emerging form of knowledge representation in AI, such as probabilistic graphical models.
     - Prepare a brief report or additional slide discussing its potential impact on future AI systems.

Note: Ensure that your research is based on credible sources and that your knowledge representation model is clearly illustrated and well-explained.

Submission Instruction:

- Create Github Repository of the Subject (e.g. CSST101-CS3D),
- Submission format (Reference: https://github.com/leeroyvincent/MIT-504-DEPATILLO)
- Create PowerPoint Presentation based on the 3. Presentation Development, and export to video with 5-10 seconds transition per slide. Also include the content in Github using Markdown Language .md
- Filename Format: [SECTION-BERNARDINO-MP1] **2D-BERNARDINO-MP1**

Inability to follow this instruction will be deducted 5 points each for filename format and late submission per day. Also, cheating and plagiarism will be penalized.

Rubric for Machine Problem No. 1: Exploring the Role of Knowledge Representation in AI

Criteria	Excellent (10 points)	Good (8 points)	Fair (5 points)	Poor (2 points)
Research and understanding of AI	Comprehensive understanding of AI and the role of knowledge representation.	Good understanding with minor gaps.	Basic understanding with some inaccuracies.	Poor or incomplete understanding.
Overview of Knowledge Representation	Thorough exploration of three forms of knowledge representation with clear examples.	Adequate exploration with some examples.	Limited exploration with unclear examples.	Minimal or incorrect exploration of knowledge representation.
Case Study Selection and Analysis	Well-chosen AI application with clear analysis of knowledge representation and its effectiveness.	Appropriate application chosen with some analysis.	Basic application chosen with limited analysis.	Poorly chosen application with little to no analysis.
Creation of Knowledge Representation Model	Clear, accurate, and well-illustrated model that effectively addresses the problem.	Good model with minor inaccuracies or unclear illustrations.	Basic model with significant errors or poor illustrations.	Inaccurate or poorly constructed model.
Presentation Quality	Well-organized, visually appealing, and professional presentation with clear explanations.	Organized presentation with minor issues in visual appeal or clarity.	Somewhat organized but lacks visual appeal or clarity.	Disorganized presentation with poor visuals and unclear content.