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Chapter 1
Exercises (P 31-33):
1.1 [10 pts],
1.7 [8 pts],
1.14 [22 pts]

Chapter 2
[20 pts each]
Exercises (P 62-63): 2.4, 2.5, 2.8

Notes:

1. Please show steps of your solution to a problem if the process to reach your answer is not apparent. You will receive partial credits for them even your final results are not completely correct.

2. Please submit a single PDF to the submission link in Canvas

1.1 Define in your own words: (a) intelligence, (b) artificial intelligence, (c) agent, (d) rationality, (e) logical reasoning.

1.7
To what extent are the following computer systems instances of artificial intelligence:
• Supermarket bar code scanners.
• Voice-activated telephone menus.
• Spelling and grammar correction features in Microsoft Word.
• Internet routing algorithms that respond dynamically to the state of the network.

1.14
Examine the AI literature to discover whether the following tasks can currently be solved by computers:
a. Playing a decent game of table tennis (Ping-Pong).
b. Driving in the center of Cairo, Egypt.
c. Driving in Victorville, California.
d. Buying a week's worth of groceries at the market.
e. Buying a week's worth of groceries on the Web.
f. Playing a decent game of bridge at a competitive level.
g. Discovering and proving new mathematical theorems.
h. Writing an intentionally funny story.
i. Giving competent legal advice in a specialized area of law.

2.4
For each of the following activities, give a PEAS description of the task environment and characterize it in terms of the properties listed in Section 2.3.2.
• Performing a gymnastics floor routine.
• Exploring the subsurface oceans of Titan.
• Playing soccer.
• Shopping for used AI books on the Internet.

• Practicing tennis against a wall.
• Performing a high jump.
• Bidding on an item at an auction.

2.5

Define in your own words the following terms: agent, agent function, agent program, rationality, autonomy, reflex agent, model-based agent, goal-based agent, utility-based agent, learning agent.

2.8
Consider a simple thermostat that turns on a furnace when the temperature is at least 3 degrees below the setting, and turns off a furnace when the temperature is at least 3 degrees above the setting. Is a thermostat an instance of a simple reflex agent, a model-based reflex