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Experiment No: 02

Aim:

Identify the problem, PEASE/PAGE description and problem formulation.

**Theory:**

**Part A:**

**Vacuum Cleaner world:**

In the vacuum cleaner problem, the AI agent must be able to perceive its environment make decisions about where to move and determine the best action to take in order to clean the floor.

Possible States:

1. Vacuum Cleaner in Block A

A - Dirty

B - Dirty

A - Clean

B - Dirty

1. Vacuum Cleaner in Block B

A - Dirty

B - Dirty

A - Dirty

B - Clean

Problem formulation:

1. Number of states ⇒
2. Initialize state⇒ can be any one out of 8 states.
3. Action ⇒ Left/ Right/ Clean(Suck)
4. Goal Test ⇒ Block A and B both are clean
5. Path cost ⇒ unit cost

**8 - Puzzle Problem:**

Statement ⇒ 3 x 3 board with 8 numbered tiles and one blank tile.

| 1 | 2 | 3 |
| --- | --- | --- |
| 4 | 5 | 6 |
| 7 | 8 |  |

Problem formulation:

1. No of states =
2. Initial state ⇒ anyone from
3. Action ⇒ Blank tile can be moved up/down/left/right.
4. Goal test ⇒ as specified.
5. Path cost ⇒ unit cost.

| **Agents** | **Performance Measure** | **Environment** | **Actuators** | **Sensors** |
| --- | --- | --- | --- | --- |
| **ATM System** | Dispense cash, process deposits, and perform account inquiries for customers. | Physical location where the ATM machine is located, such as a bank branches | Cash dispenser, Deposit slot, Card Slot and buttons on the ATM machine. | Card reader, keypad, and screen. |
| **Interactive English Tutor** | Assessing a student's English proficiency, provide personalized lesson plans, and track their progress | A computer or mobile device, with internet connection. | Buttons, keyboard | A microphone if the tutor includes speech recognition |
| **Automated Taxi Drivers** | Safely and efficiently navigate to a destination while complying with traffic laws, avoiding accidents, and providing a comfortable and reliable service to passengers. | Road network, including streets, highways and traffic conditions, also people and infrastructures | Steering, acceleration and braking systems | Cameras, LIDAR, radar, GPS, and ultrasonic sensors |
| **Blood testing System** | Analyze a patient's blood sample, identify any abnormal results, and provide accurate and timely results to the healthcare provider. | A laboratory or a point-of-care setting, such as a doctor's office or hospital. | Needles, test tubes, and analyzers. | Spectrophotometers, Centrifuges, and Microscopes. |
| **E- Commerce System** | Provide customers with a convenient, easy-to-use, and secure platform to browse and purchase products online and also ability to handle inventory management, process transactions, and handle customer service inquiries. | Online, accessed through a web browser or mobile application on a computer or mobile device. | Buttons and links on the website or mobile application that allow customers to browse products, add items to their cart, and complete transactions. | The software that tracks customer browsing and purchase behavior, as well as the security measures that protect sensitive customer information such as payment and personal details |
| **Satellite Image Analysis System** | Ability to accurately and efficiently process and interpret satellite images, identify features and patterns of interest, and provide relevant information to users. | The collection and processing of satellite imagery data. | The software and algorithms used to process and analyze the images, as well as the tools used to display and output the results of the analysis. | The satellites and cameras that capture the imagery, as well as the software and algorithms that interpret the images. |