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TY BTECH DIV B, Batch : C22

AIM: Select a Problem Statement relative to AI

1) Identify the problem
2) PEAS description
3) Problem formulation

PART A)

Write the problem faced in each one of them

1) **AGENT**: Chess playing with a clock
   a. **Performance Measure:**
      i. Win:Lose ratio
      ii. Speed
      iii. Total game time
   b. **Environment:**
      i. Chessboard
      ii. Clock
   c. **Environment Type:**
      i. Fully observable
      ii. Discrete
   d. **Actuator:**
      i. Pausing of the clock
      ii. Movement of chess pieces
   e. **Sensors:**
      i. Movement arm
      ii. Servo Motors
      iii. Location of chess pieces using reed switches.
   f. **Problem**

2) **AGENT**: Driving a car
   a. **Performance Measure:**
      i. Speed
      ii. Time Taken

   iii. Comfort
   iv. Fuel Economy
 b. **Environment:**
   i. Car
   ii. Road
   iii. Traffic
   iv. Signposts
   v. Potholes
 c. **Environment Type:**
   i. Partially Observable
 d. **Actuator:**
   i. Steering Wheel
   ii. Brake
   iii. Accelerator
   iv. Mirror
   v. Gearstick
 e. **Sensors:**
   i. GPS
   ii. Odometer
   iii. Speedometer
   iv. Fuel tank capacity meter
 f. **Problem**

3) **AGENT**: Interactive English tutor
 a. **Performance Measure:**
   i. Language Improvement
   ii. Increase in test score
   iii. Number of errors made per paragraph
 b. **Environment:**
   i. Classroom
   ii. Table
   iii. Chair
   iv. Students
   v. Whiteboard
   vi. Books
 c. **Environment Type:**
   i. Deterministic
 d. **Actuator:**
   i. Writing on whiteboard
   ii. Opening and reading the books

          iii. Checking of test papers
- **e. Sensors:**
  - **i.** Eyes
  - **ii.** Ears
  - **iii.** Books
  - **iv.** Test Papers
- **f. Problem**

4) **AGENT**: Part picking robot
- **a. Performance Measure:**
  - **i.** % Efficiency of the robot
- **b. Environment:**
  - **i.** Parts
  - **ii.** Conveyer belt
- **c. Environment Type:**
  - **i.** Collaborative
- **d. Actuator:**
  - **i.** Picking up the parts
  - **ii.** Sorting the parts
- **e. Sensors:**
  - **i.** Camera
  - **ii.** Robot Arm
  - **iii.** Distance Sensor
  - **iv.** Servo motors
- **f. Problem**

5) **AGENT**: Satellite Image Analysis System
- **a. Performance Measure:**
  - **i.** % Correct Analysis
  - **ii.** Time taken
- **b. Environment:**
  - **i.** Camera
- **c. Environment Type:**
  - **i.** Dynamic
- **d. Actuator:**
  - **i.** Capturing of Images
  - **ii.** Movement of the satellite
- **e. Sensors:**
  - **i.** Camera
  - **ii.** Color Sensor

      f. Problem

6) **AGENT**: Medical Diagnosis System
    a. Performance Measure:
        i. % of correct diagnosis
        ii. Time taken
        iii. Systems correctly found
        iv. Number of lawsuits
        v. Cost
    b. Environment:
        i. Patient
        ii. Hospital
    c. Environment Type:
        i. Deterministic
    d. Actuator:
        i. Asking questions
        ii. Recommending further tests
        iii. Printing reports
        iv. Dispensing medicines
    e. Sensors:
        i. Camera
        ii. Microphone
        iii. Speaker
        iv. Printer
    f. Problem

7) **AGENT**: Refinery Controller
    a. Performance Measure:
        i. % Efficiency
        ii. Speed
    b. Environment:
        i. Refinery workers
        ii. Machines
    c. Environment Type:
        i. Collaborative
    d. Actuator:
        i. Turn on/off systems
        ii. Adjust temperatures
        iii. Adjust pressures
    e. Sensors:

          i. Temperature sensor

          ii. Pressure sensor

          iii. Proximity sensor

    f. Problem

8) **AGENT**: Pokey playing

    a. Performance Measure:

          i. Rounds won

          ii. Number of correct moves

    b. Environment:

          i. Cards

          ii. Humans

    c. Environment Type:

          i. Discrete

    d. Actuator:

          i. Dealing the cards

          ii. Playing the cards

    e. Sensors:

          i. Camera

          ii. Color sensor

          iii. Servo motor

          iv. Movement Arm

    f. Problem

9) **AGENT**: Chatbot

    a. Performance Measure:

          i. Time taken

          ii. Grammatical accuracy

    b. Environment:

          i. Chatbot

          ii. Human

    c. Environment Type:

          i. Continuous

    d. Actuator:

          i. Displaying the questions

          ii. Taking responses

    e. Sensors:

          i. Keyboard

          ii. Screen

    f. Problem

10) **AGENT**: Soccer playing robot
   a. **Performance Measure:**
      i. Number of goals scored
      ii. Number of goals saved
      iii. Number of penalties
      iv. Number of games won
   b. **Environment:**
      i. Soccer field
      ii. Goal posts
      iii. Goat net
      iv. Humans (Other players)
   c. **Environment Type:**
      i. Continuous
   d. **Actuator:**
      i. Movement of the ball
   e. **Sensors:**
      i. Servo motors
      ii. Proximity sensors
   f. **Problem**

11) **AGENT**: Recommender system
   a. **Performance Measure:**
      i. % Efficiency
   b. **Environment:**
      i. Dataset
      ii. Input variables
   c. **Environment Type:**
      i. **Continuous**
   d. **Actuator:**
      i. Creating the algorithm
      ii. Using the algorithm
   e. **Sensors:**
      i. Keyboard
      ii. Screen
   f. **Problem**