Assignment 8

The problem is to design an agent capable of solving the following task. The agent should be designed in a manner consistent with the guidelines provided in the lecture notes.

The agent should be able to perform the following tasks:

1. Observe the environment and detect any changes.
2. Decide on an action to take based on the observation.
3. Execute the action and observe the result.
4. Update the decision-making process based on the result.

The agent should be designed to be robust to changes in the environment and capable of handling unexpected situations.

Lecture notes and guidelines provided in the course materials should be referred to for further details.

Sample solution:

- The agent should be designed to be adaptable to different environments.
- The decision-making process should be based on a combination of sensory input and previous experiences.
- The agent should be capable of learning from its mistakes and improving its performance over time.

Sample code:

```python
import random

class Agent:
    def __init__(self):
        self.observation = 0
        self.decision = 0
        self.action = 0
        self.result = 0
        self.learning_rate = 0.1

    def observe(self):
        self.observation = random.randint(1, 10)
        print(f"Observation: {self.observation}")

    def decide(self):
        self.decision = random.randint(1, 2)
        print(f"Decision: {self.decision}")

    def execute(self):
        self.action = random.randint(1, 3)
        print(f"Action: {self.action}")
        self.result = self.action * self.decision
        print(f"Result: {self.result}")

    def learn(self):
        self.learning_rate = 0.1
        self.decision = self.decision + self.learning_rate
        print(f"Learning rate: {self.learning_rate}")

    def update(self):
        self.observation = self.result
        print(f"Updated observation: {self.observation}")

    def main(self):
        for _ in range(10):
            self.observe()
            self.decide()
            self.execute()
            self.learn()
            self.update()

if __name__ == "__main__":
    agent = Agent()
    agent.main()
```

This solution provides a basic framework for an agent capable of performing the required tasks. Further refinements can be made to improve the agent's performance and adaptability.