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TE COMPS

AIML EXP 1

Theory:

What is an Agent?

An agent can be anything that perceive its environment through sensors and act upon that environment through actuators. An Agent runs in the cycle of **perceiving**, **thinking**, and **acting**.

1. **Performance Measure:** Performance measure is the unit to define the success of an agent. Performance varies with agents based on their different precept.

2. **Environment**: Environment is the surrounding of an agent at every instant. It keeps changing with time if the agent is set in motion.

3. **Actuator**: Actuator is a part of the agent that delivers the output of an action to the environment.

4. **Sensor**: Sensors are the receptive parts of an agent which takes in the input for the agent.

PEAS for self-driving car:

Performance: measure safe, fast, legal, comfortable trip.

Environments: are the roads, pedestrians, the destination, curves and turns.

Activators: are steering, accelerator, break, display

Sensors: are camera, speedometer, odometer, GPS, etc.

Code:

```python
import pygame
pygame.init()
window = pygame.display.set_mode((1200,400))
track = pygame.image.load('track6.png')
car = pygame.image.load('tesla.png')
car = pygame.transform.scale(car, (30,60))
car_x = 155
car_y = 300
cam_x_offset = 0
cam_y_offset = 0
focal_dis = 25
drive = True
direction = 'up'
clock = pygame.time.Clock()
while drive:
    for event in pygame.event.get():
        if event.type == pygame.QUIT:
            drive = False
    clock.tick(60)
    cam_x = car_x + cam_x_offset + 15
    cam_y = car_y + cam_y_offset + 15
    up_px = window.get_at((cam_x, cam_y - focal_dis))[0]
    down_px = window.get_at((cam_x, cam_y + focal_dis))[0]
    right_px = window.get_at((cam_x + focal_dis, cam_y))[0]
    print(up_px,right_px, down_px)

    #change direction
    if direction =='up' and up_px!=255 and right_px == 255:
        direction = 'right'
        cam_x_offset = 30
        car= pygame.transform.rotate(car, -90)

    elif direction =='right' and right_px != 255 and down_px == 255:
        direction = 'down'
        car_x = car_x + 30
        cam_x_offset = 0
        cam_y_offset = 30
        car = pygame.transform.rotate(car, -90)

    elif direction=='down' and down_px != 255 and right_px == 255:
        direction='right'
        car_y = car_y + 30
        cam_y_offset = 0
        cam_x_offset = 30
        car = pygame.transform.rotate(car, 90)
```

```
    elif direction =='right' and right_px != 255 and up_px == 255:
        direction = 'up'
        car_x = car_x + 30
        cam_x_offset = 0
        cam_y_offset = 0
        car = pygame.transform.rotate(car, 90)

    #driving
    if direction == 'up' and up_px == 255:
        car_y=car_y - 3

    elif direction == 'right' and right_px==255:
        car_x = car_x + 3

    elif direction == 'down' and down_px == 255:
        car_y=car_y + 3

    window.blit(track, (0,0))
    window.blit(car, (car_x,car_y))
    pygame.draw.circle((window), (0,255,0), (cam_x, cam_y), 5, 5)
    pygame.display.update()
```
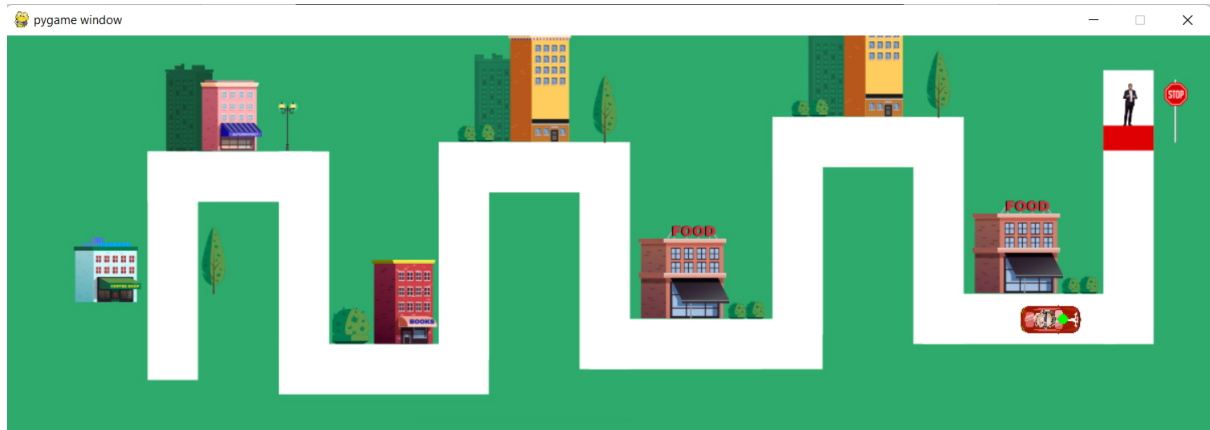
OUTPUT:

Conclusion:

I learnt to develop a simple intelligent agent. I learnt about the agent's task environment. (Performance Environment Actuators Sensors).

Agents are basically a solution to a problem that does the work with self-learning and acting rationally. They perceive from the environment through their sensors and according to agent program.