
JP COLLEGE OF ENGINEERING (9512)

SMART PUBLIC RESTROOM

PROJECT ID :Proj_21928_Team_1

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Phase _4 :

Program :

```
# Import necessary libraries import time import random
```

```
# Simulated sensors and actuators class
```

```
RestroomSensors:
```

```
def __init__(self):
```

```
self.occupancy = False self.temperature = 25
```

```
# Initial temperature in Celsius self.
```

```
humidity = 50
```

```
# Initial humidity in percentage self.
```

```
toilet_paper_level = 100
```

```
# Initial toilet paper level (percentage) self.
```

```
hand_sanitizer_level = 100
```

```
# Initial hand sanitizer level (percentage)
```

```
def simulate(self):
```

```
self.occupancy = random.
```

```
choice([True, False]) self.
```

```
temperature = random.uniform(20, 30) self.
```

```
humidity = random.
```

```
uniform(40, 60)
```

```
self.toilet_paper_level -= random.
```

```
uniform(0.5, 2)
```

```
self.hand_sanitizer_level -= random.
```

```
uniform(0.5, 2) class RestroomActuators:
```

```
def __init__(self):
```

```
self.lights = False
```

```
self.fan = False def control_lights(self, on):
```

```
self.lights = on def control_fan(self, on):
```

```
self.fan = on
```

```
# Main loop for the smart restroom system def main():
```

```
sensors = RestroomSensors() actuators =  
RestroomActuators() while True:
```

```
# Simulate sensor data sensors.simulate()
```

```
# Monitor restroom conditions if sensors.occupancy:
```

```
    if sensors.temperature > 28:  
        actuators.control_fan(True) else: actuators.
```

```
        control_fan(False) if sensors.
```

```
        humidity > 60: actuators.control_fan(True) else:  
        actuators.control_fan(False) else:  
        actuators.control_fan(False)
```

```
# Check resource levels if sensors.
```

```
    toilet_paper_level < 10: print("Low toilet paper! Refill  
needed.") if sensors.
```

```
    hand_sanitizer_level < 10:
```

```
        print("Low hand sanitizer! Refill needed.")
```

```
# Display restroom status print("Restroom Status:")  
print(f"Occupancy:
```

```
{sensors.occupancy}")
```

```
print(f"Temperature:
```

```
{sensors.temperature}°C")
```

```
print(f"Humidity:
```

```
{sensors.humidity}%")
```

```
print(f"Toilet Paper Level:
```

```
{sensors.toilet_paper_level}%")
```

```
print(f"Hand Sanitizer Level:
```

```
{sensors.hand_sanitizer_level}%")
```

```
print(f"Lights: {'On' if actuators.lights else 'Off'}")
```

```
print(f"Fan: {'On' if actuators.fan else 'Off'}")
```

```
print("\n") time.sleep(5)
```

```
# Simulate a 5-second interval if __name__ ==  
"__main__":
```

```
main()
```

