


SMART PARKING

Hardware Components:

1. Ultrasonic Distance Sensors
2. Arduino board (e.g., Arduino Uno or ESP8266)
3. IoT Module (e.g., ESP8266 or ESP32)
4. LED indicators
5. Breadboard and jumper wires

Software Components:

1. Arduino IDE
 2. HTML, CSS, JavaScript for the web interface
 3. MQTT for communication between Arduino and IoT module
 4. A server or cloud service to host the web interface
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Python Code for a Simulated Smart Parking System:


python

Copy code

```
class ParkingLot:
    def init(self, total_spots):
        self.total_spots = total_spots
        self.available_spots = total_spots

    def occupy_spot(self):
        if self.available_spots > 0:
            self.available_spots -= 1
            return True
        else:
            return False

    def vacate_spot(self):
        if self.available_spots < self.total_spots:
            self.available_spots += 1
            return True
        else:
```



```
return False
```

```
def get_status(self):  
    return f"Total spots: {self.total_spots}, Available spots:  
{self.available_spots}"
```

```
def main():  
    parking_lot = ParkingLot(total_spots=10)
```


```
    while True:  
        print("\nSmart Parking System")  
        print("1. Park a vehicle")  
        print("2. Remove a vehicle")  
        print("3. Check parking status")  
        print("4. Exit")
```

```
    choice = input("Enter your choice: ")
```

```
    if choice == '1':  
        if parking_lot.occupy_spot():  
            print("Vehicle parked successfully.")  
        else:
```

```
print("Parking lot is full.")
    elif choice == '2':
        if parking_lot.vacate_spot():
            print("Vehicle removed successfully.")
        else:
            print("Parking lot is already empty.")
    elif choice == '3':
        print(parking_lot.get_status())
    elif choice == '4':
        break
    else:
        print("Invalid choice. Please try again.")
```

```
if name == "main":
    main()
```



Debug Log Output:

```
PROBLEMS  OUTPUT  TERMINAL  DEBUG CONSOLE

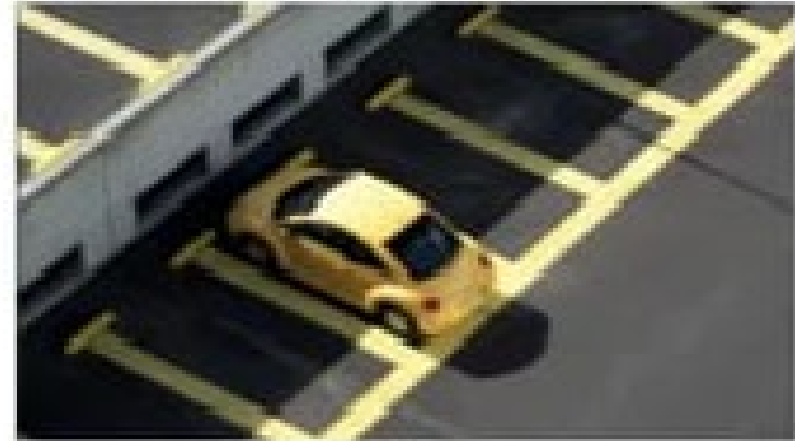
Reading: 260
Empty spaces on floor: 0 17
Empty spaces on floor: 1 17
Empty spaces on floor: 2 17
Reading: 260
Empty spaces on floor: 0 17
Empty spaces on floor: 1 17
Empty spaces on floor: 2 17
Reading: 78
Empty spaces on floor: 0 17
Empty spaces on floor: 1 17
Empty spaces on floor: 2 16
Reading: 59
Empty spaces on floor: 0 17
Empty spaces on floor: 1 17
Empty spaces on floor: 2 16
Reading: 260
Empty spaces on floor: 0 17
Empty spaces on floor: 1 17
Empty spaces on floor: 2 17
```

OUTPUT-spot is empty



Parking Lot: Swargate
Free spaces on floor 0: 17
Free spaces on floor 1: 17
Free spaces on floor 2: 16

OUTPUT-spot is full



Parking Lot: Swargate
Free spaces on floor 0: 17
Free spaces on floor 1: 17
Free spaces on floor 2: 16