```
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
#include <Servo.h>

// LCD address (usually 0x27 or 0x3F)
LiquidCrystal_I2C lcd(0x27, 16, 2);

Servo gateServo;

// Pin definitions
int irEntry = 2;   // Entry IR sensor
int irExit  = 3;   // Exit IR sensor
int servoPin = 9;

// Parking slots
int totalSlots = 2;   // Change as per your parking capacity
int availableSlots = 2;

void setup() {
pinMode(irEntry, INPUT);
pinMode(irExit, INPUT);

gateServo.attach(servoPin);
gateServo.write(0);   // Gate closed position

lcd.init();
lcd.backlight();

lcd.setCursor(0, 0);
lcd.print("Smart Parking");
lcd.setCursor(0, 1);
lcd.print("System Ready");
delay(2000);
lcd.clear();
}

void loop() {

// ENTRY SENSOR LOGIC
if (digitalRead(irEntry) == LOW) {   // Car detected
  if (availableSlots > 0) {
    availableSlots--;
    openGate();
    updateLCD();
    delay(2000);
  } else {
    lcd.clear();
    lcd.setCursor(0, 0);
    lcd.print("Parking Full");
    lcd.setCursor(0, 1);
    lcd.print("No Space!");
    delay(2000);
    updateLCD();
```

```
  }
}

// EXIT SENSOR LOGIC
if (digitalRead(irExit) == LOW) {   // Car exiting
  if (availableSlots < totalSlots) {
    availableSlots++;
    openGate();
    updateLCD();
    delay(2000);
  }
}
}

// Function to open & close gate
void openGate() {
gateServo.write(90);   // Open gate
delay(2000);
gateServo.write(0);    // Close gate
}

// Function to update LCD
void updateLCD() {
lcd.clear();
lcd.setCursor(0, 0);
lcd.print("Slots Available");
lcd.setCursor(0, 1);
lcd.print(availableSlots);
}
```