Practice 3: IR Remote Robot Control

Objective

In this practice, students will control a robot using an IR remote controller. The robot will respond to directional buttons to move and allow the user to adjust the motor speed using the '*' and '#' buttons. Students will reuse the movement functions created in Practice 1.

Required Movement Functions

```
void move_forward(int speed);
void move_backward(int speed);
void turn_left(int speed);
void turn_right(int speed);
void stop_robot();
```

Task: Control Robot Using IR Remote

Use an IR receiver module connected to the ESP32 or Arduino. The robot must respond to the following IR remote buttons:

Remote Button	Robot Action
UP	move_forward(speed)
DOWN	move_backward(speed)
LEFT	turn_left(speed)
RIGHT	turn_right(speed)
OK	stop_robot()

Speed Control

The robot speed can be adjusted using the remote:

Button	Function
*	Decrease speed by 5
#	Increase speed by 5

Speed Constraints

Initial speed = 50
Minimum speed = 0

Maximum speed = 100
Speed must always stay within this range.

Implementation Requirements

1. Initialize the IR receiver.
2. Detect the button code from the remote.
3. Map each button code to the correct robot function.
4. Implement speed adjustment logic with limits (0–100).
5. Print the current speed value in the Serial Monitor.

Example Behavior

Initial speed = 50
Press UP → Robot moves forward at speed 50
Press # → speed becomes 55
Press UP → Robot moves forward at speed 55
Press LEFT → Robot turns left
Press OK → Robot stops
Press * → speed becomes 50