

# Main Function Overview

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The **main.c** file is the **entry point** of the CoffeeTime system, responsible for:

- Initializing **hardware components** (sensors, actuators, display, etc.).
- **Setting up the IR remote receiver** for user commands.
- **Managing the state machine** to control the coffee-making process.

## System Initialization

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Before entering the main loop, the function:

- Calls `setup_machine()`, which initializes all hardware components.
- Sets up the IR receiver using `init_ir_irq_receiver()`, allowing remote control interaction.

```
int main() {  
    setup_machine();  
    init_ir_irq_receiver(IR_SENSOR_GPIO_PIN, &ir_callback);  
}
```

### Key Components Initialized:

- **LCD Display** → User interaction & feedback.
- **IR Sensor** → Remote control input.
- **Sensors** → Temperature, humidity, and ADC readings.
- **Actuators** → LEDs, motors, and buzzer.

## Main Loop

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The system continuously monitors and executes state transitions through the function:

```
while (true) {
  manage_state(); // Delegating control to the current state
  sleep_ms(200);
}
```

**manage\_state()**: Calls the **state machine**, ensuring the correct execution of the **brewing process, scheduling, and user interactions**.

**Loop Execution:** Runs indefinitely, with a **200ms** delay between iterations to optimize processing.

Code Structure

Component	Function
setup_machine()	Initializes hardware components.
init_ir_irq_receiver()	Enables IR remote control support.
manage_state()	Controls the state machine, executing brewing logic.

The **main.c** file serves as the **brain of the system**, ensuring that all components work together seamlessly. It keeps the machine **responsive, automated, and interactive** through the **state machine** and **remote control commands**.