

# Lesson 3 Teacher Lesson Plan

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## Level 1 C++ Foundations Input and Decisions

Lesson 3 measures whether students can use C++ to make a simple decision. Students enter values in the terminal, compare those values, and use if and else to print a result.

### Lesson Snapshot

| Item            | Plan                                                                                        |
|-----------------|---------------------------------------------------------------------------------------------|
| Audience        | Middle and high school robotics students                                                    |
| Length          | 60 to 75 minutes                                                                            |
| Prerequisite    | Lessons 1 and 2 or equivalent ability to compile, run, edit variables, and read cout output |
| Big idea        | A program can choose different actions when it checks a condition.                          |
| Student product | A robot readiness checker that uses input and if else logic                                 |

### Learning Objectives

- Use cin to collect simple terminal input.
- Use comparison operators such as >=, <, ==, and !=.
- Explain what a condition means in an if statement.
- Write an if else statement that chooses between two messages.
- Test a program with more than one input value.

### Vocabulary

| Term       | Student Friendly Meaning                                 |
|------------|----------------------------------------------------------|
| input      | Information a user gives to a program.                   |
| cin        | The C++ command used here to read terminal input.        |
| condition  | A true or false question the program checks.             |
| comparison | A check such as greater than, equal to, or not equal to. |
| if         | Run this code when the condition is true.                |
| else       | Run this code when the condition is false.               |

## Timing Guide

| Time         | Activity                                                  |
|--------------|-----------------------------------------------------------|
| 0 to 8 min   | Warm up: predict output from a small variable program.    |
| 8 to 18 min  | Mini lesson: cin, comparisons, true and false conditions. |
| 18 to 30 min | Teacher demo: battery percent checker.                    |
| 30 to 48 min | Guided practice: students test pass and fail cases.       |
| 48 to 65 min | Skill check: robot readiness checker.                     |
| 65 to 75 min | Exit response and quick student conference notes.         |

## Starter Program

```
#include <iostream>

using namespace std;

int main() {
    int batteryPercent = 0;

    cout << "Enter battery percent: ";
    cin >> batteryPercent;

    if (batteryPercent >= 50) {
        cout << "Battery check passed." << endl;
    } else {
        cout << "Charge the battery before driving." << endl;
    }

    return 0;
}
```

## Teaching Notes

- Say condition as a yes or no question: Is the battery percent at least 50?
- Require students to test both branches of the if else statement.
- Keep logical AND as an extension if the class needs more time.
- Use this lesson as a readiness measurement before introducing ESP32 setup and loop.

## Skill Check Criteria

| Skill       | Evidence                                                         |
|-------------|------------------------------------------------------------------|
| Input       | Student reads at least two numeric values with cin.              |
| Decision    | Student uses if and else correctly.                              |
| Comparison  | Student uses >= or another appropriate comparison operator.      |
| Testing     | Student can show one input that passes and one input that fails. |
| Explanation | Student can explain what condition is being checked.             |