

Robotics From Scratch

Lesson 2

This session:

- **Comparators:** Check if numbers, strings, or variables are equal, larger, smaller, etc.
- **Logical Operators:** Combine simple questions into bigger ones with **and**, **or**, and **not**.
- **If Statements:** Make code "think" and act differently, depending on what is happening.

Comparators – Make Decisions With Code

You use comparators to tell a program *how* two items relate to each other.

Symbol	English Name
>	Greater than
<	Less than
≥	Greater than or equal to
≤	Less than or equal to
==	Equal to
!=	Not equal to

Logical Operators – Combine Questions

Make decisions using more than one condition:

- **and** All conditions must be true.
- **or** At least one must be true.
- **not** Reverses a result.

If Statements – Let Code Make Choices

One Option

```
if number == 5:
    print("Equal!")
```

Two Options

```
if guess == "bob":
    print("Correct!")
else:
    print("Incorrect!")
```

Multiple Options

```
if n > 0:
    print("Positive")
elif n < 0:
    print("Negative")
else:
    print("Zero")
```

You can use input to collect choices and numbers from the user:

```
print("a) Add")
print("b) Subtract")
sel = input("Choose a or b: ")
```

```
if sel == 'a':
    # Add numbers
elif sel == 'b':
    # Subtract numbers
else:
    print("Pick a valid option")
```

Try It At Home

- Expand the calculator to include multiplication and division.
- Write a program that checks if a number is divisible by both 3 and 5.
- Write a program that can tell if an entered number is even or odd (Hint: %)

Looking Ahead: Lesson 3

Loops and Basic Data Structures

1. Using **for** and **while** loops to repeat instructions
2. Common loop patterns: counting, going through lists
3. Control keywords: **break** and **continue**
4. Working with lists, dictionaries, tuples, and sets