



Practice 5: Even or Odd?

Using conditional statements (if/else) and the modulo operator (mod)

Module 2: Flow Control

How does a computer make decisions?

Until now, our programs were "linear": they ran from top to bottom without skipping anything. But the true power of programming lies in **conditions**. If X happens, do this; if not, do that. To find out if a number is even, we will use a mathematical trick: the **Modulo** (the remainder of a division by 2).

Objectives of this practice

- Understand the **If ... else** logical structure.
- Learn to use the **modulo** (*mod*) mathematical operator.
- Use logical comparators (the equals sign =).

Key Concepts

1. The "If / else" Control block

It is a fork in the road.

- **In Snap!:** We use the `if < > else` block.
- **In Pseudocode:** We use the `If (condition) Then ... Else ... EndIf` structure.

2. The Modulo Operator (mod)

Modulo does not return the result of the division, but the **remainder**.

- If you do $10/2$, the result is 5 and the remainder is **0** (it is EVEN).
- If you do $11/2$, the result is 5 and the remainder is **1** (it is ODD).
- **Rule:** $\text{If } (\text{number mod } 2) = 0$, then the number is even.

THE CHALLENGE: The Number Detective

Create a program that asks the user for a number and tells them if it is even or odd.

Instructions in Snap!:

1. Ask: "Tell me an integer" and wait.
2. Use the control block `if <() = (0)> else`.
3. Inside the first slot of the equals block, place the green `(answer) mod (2)` block.
4. In the **if** slot, the sprite should say "It is EVEN".
5. In the **else** slot, the sprite should say "It is ODD".

Solution Pseudocode

```
Algorithm EvenOrOdd
  Define num As Integer
  Write "Enter a number:"
  Read num

  If (num % 2 = 0) Then
    Write "The number is EVEN"
  Else
    Write "The number is ODD"
  EndIf
EndAlgorithm
```

Fun fact:

In most real languages (like Python or Java), the modulo symbol is the percent sign %.

```
if num % 2 == 0:
    print("It is even")
```

This document is published under license
© ⓘ Creative Commons Attribution 4.0 International (CC BY 4.0)