



Practice 8: Guess the Number

Indefinite condition-controlled loops (while / repeat until)

Module 2: Flow Control

What if we don't know how many times to repeat?

Unlike the previous practice, where we counted from 1 to 10, sometimes we need the computer to repeat something **until a specific event happens**. For example: "Keep asking for the password until it is correct." This is called a condition-controlled loop.

Practice Objectives

- Understand the difference between **definite** and **indefinite** loops.
- Learn to use the `repeat until < >` block.
- Generate random numbers with the computer.
- Use variables to keep track of the number of attempts.

Key Concepts: The "Until" Loop

In Snap!, we use the orange block `repeat until < >`.

- **The Condition:** This is the diamond-shaped slot. The loop will keep running as long as the condition is **FALSE**. As soon as it becomes **TRUE**, the loop stops.
- **Random Number:** We will use the green block `pick random (1) to (100)` so the computer "thinks" of a secret number.

THE CHALLENGE: The Guessing Game

Create a game where the sprite thinks of a number and you have to guess it. The program should give you hints ("it's higher" or "it's lower").

Suggested steps:

1. Create two variables: `secret` and `attempts`.
2. At the start, set `[secret]` to (pick random 1 to 50).
3. Use the block `repeat until <(answer) = (secret)>`.
4. Inside the loop:
 - Ask: "What number am I thinking of?".
 - Change `attempts` by 1.
 - Use an `if / else` to say if the `secret` is higher or lower than the `answer`.
5. Outside the loop, congratulate the user and tell them how many attempts they took.

Solution Pseudocode

In programming, this type of loop is usually known as **While** or **Do-Until**.

```
Algorithm GuessTheNumber
  Define secret, guess, counter As Integer
  secret <- Random(1, 50)
  counter <- 0
  guess <- 0


  Repeat
    Write "Enter a number:"
    Read guess
    counter <- counter + 1
    If (guess < secret) Then
      Write "Higher..."
    Else
      If (guess > secret) Then
        Write "Lower..."
      EndIf
    EndIf
  Until (guess = secret)

  Write "Bravo! You did it in ", counter, " attempts."
EndAlgorithm
```

Important Difference

- **For Loop (Definite):** You know you will loop 10 times.

- **While/Until Loop (Indefinite):** It could take 1 turn or 1000 turns, depending on the user's luck!

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