- ◼ Theory of While Loops

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- Definition

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- A while loop is used to repeat a block of code as long as a certain condition is true.

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- It checks the condition before each iteration.

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- If the condition becomes false, the loop stops.

- Syntax

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- while condition:

-     # code block

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- condition → an expression that returns True or False.

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- The code inside runs again and again while the condition is True

- Steps of Execution

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- Step 1: Check the condition.

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- Step 2: If True, run the code.

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- Step 3: Update the variable (to avoid infinite loop).

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- Step 4: Go back to Step 1.

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- Step 5: Stop when the condition is False

- Program 1: Monthly Savings Growth (While Loop)

- savings = 0

- month = 1

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- while month <= 12:

-     savings += 1000

-     print(f"Month {month}: Total Savings = ₹{savings}")

-     month += 1

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- 🔍 Explanation:

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- Start with savings = 0 (no money saved yet).

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- Start counting months with month = 1.

- Condition → while month <= 12:

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- Means loop runs from Month 1 to Month 12.

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- Inside loop:

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- Add ₹1000 every month → savings += 1000

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- Print current month and total savings.

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- Increase month → month += 1 (otherwise it will never stop).

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- When month becomes 13, condition is false → loop stops