

 visual programming

# Repetition (Loop)



Bachelor of Information Systems  
Institut Teknologi Del



# Learning Objective(s)

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*This material should address the following question(s).*

- What is repetition and its importance?
- What are the forms of repetition?

# Discussion Point

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**Repetition:**  
The Core Concepts.



# Problem

- A vending machine is an automated outlet for selling item (e.g. snacks, drinks).
  - It is convenient.
  - Cost-effective.
- It serves customers autonomously without any supervision.





# Problem

- **Steps** in serving a transaction:
  - ... *a customer enters a payment.*
  - 1. It accepts payment.
  - 2. It accepts item selection.
  - 3. It dispenses selected item.
  - 4. It finalizes transaction.
  - ... *repeats*

**Repetition** happens here.





# Problem

- How **many transaction** should the vending machine serve?
  - Depends on how many item left in the machine.







# Question

What is **repetition**?

# Definition

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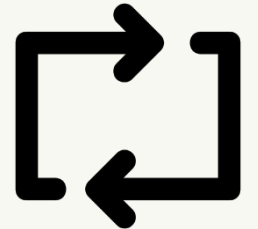
*As its name suggests, a **repetition** (loop) repeats a sequence of instructions when a condition is met.*

*E.g. The vending machine repeats transaction handling when there is item left.*



# Repetition

- The decision to repeat relies on an evaluation of a predefined conditional expression that produces a logical value.
  - Relational, logical, or combination of the two.



# Discussion Point

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Forms of **Repetition**.

# Forms of Repetition

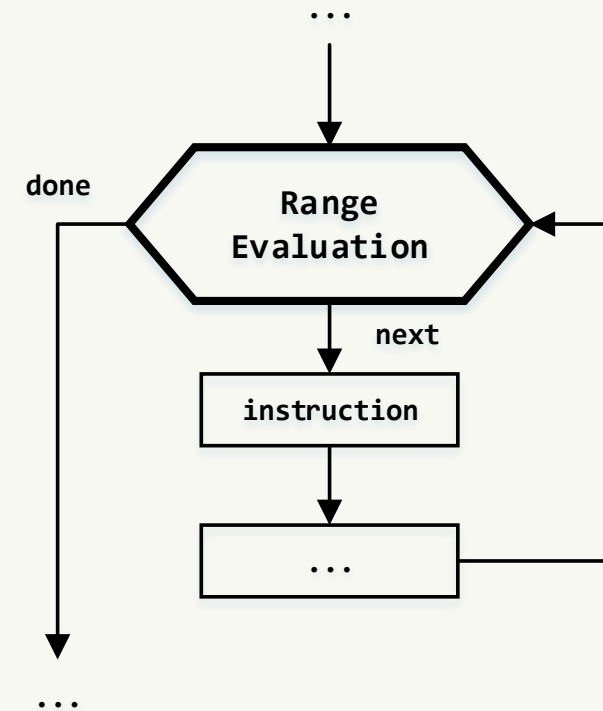
- Basically, there are for, while and do-while forms.

Characteristics	for	while	do-while
Conditional expression	beginning	beginning	end
Case suitability	deterministic, range	non-deterministic	non-deterministic
Min. #of iteration	0	0	1

# Suitable Cases: for

for

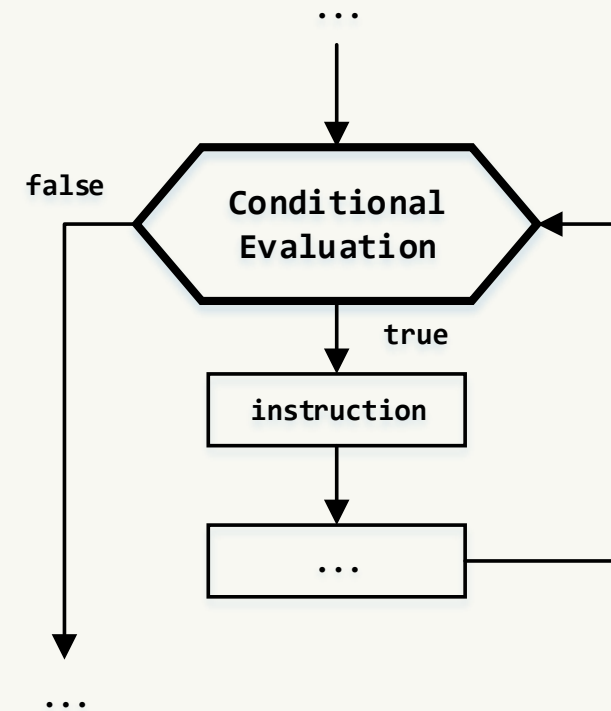
- **Characteristics:**
  - Deterministic.
- **Sample cases:**
  - Jump 10 times.
  - Checking student attendance.



# Suitable Cases: while

while

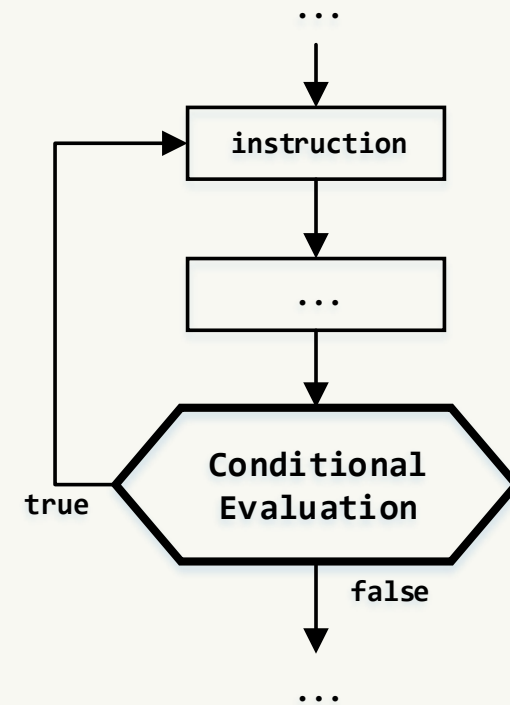
- **Characteristic:**
  - Non-deterministic.
- **Sample cases:**
  - Jog for 10 minutes.
    - How many steps?
  - Read a novel.
    - How many pages?



# Suitable Cases: do-while

do-while

- **Characteristics:**
  - Non-deterministic.
  - It runs at least once.
- **Sample cases:**
  - Guessing game!
    - How many guessing is needed?
  - A cashier processes payment.
    - How many item in a transaction?



# Final Thoughts.





# Conclusion

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1. Repetition (loop) is a way to repeat a set of instruction.
  - The decision to repeat relies on the evaluation of a predefined conditional expression.
2. Basically, there are three forms of repetition.
  - `for`, `while`, and `do-while` forms.

# References

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*Wassberg, J. (2020). Computer Programming for Absolute Beginners. Packt.*

*Repetition – Flowgorithm*

<http://www.flowgorithm.org/documentation/do.html>

<http://www.flowgorithm.org/documentation/for.html>

<http://www.flowgorithm.org/documentation/while.html>



– EOF –



# Course Lecturer

Mario E. S. Simaremare  
Institut Teknologi Del



@simaremare



@dasar-pemrograman



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