

 visual programming

# Logical Operators



Bachelor of Information Systems  
Institut Teknologi Del



# Learning Objective(s)

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

- What are logical operators?
- How to use the logical operators?

# Discussion Point

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**Logical** Operators:  
The Core Concepts.



# Problem

- A book store is currently making a clearance sale.
  - The discount is gigantic, **50%**.
- To be eligible for the discount, a transaction is must be at least worth \$200 **and consists of at least 2 books**.





$\geq$  \$200

and



$\geq$  2

the second requirement formed  
in a relational operation.

both conditions must be satisfied  
to grab the discount.





# Question

What is **logical** operator?

# Definition

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**Logical operators** are operators used to summarize one or two logical values in a logical expression.

*These operators accept logical operands and return a logical value (boolean).*



# Logical Operators

No.	Operator	C-Family	BASIC Family
1.	conjunction	&&	and
2.	disjunction		or
3.	negation	!	not



# Conjunction vs. Disjunction

- Will return true **if and only if** all the criteria are true.

- Examples:

- `true && true → true`
- `true && false → false`

- Will return true **if at least one** of the criteria is true.

- Examples:

- `true || true → true`
- `true || false → true`

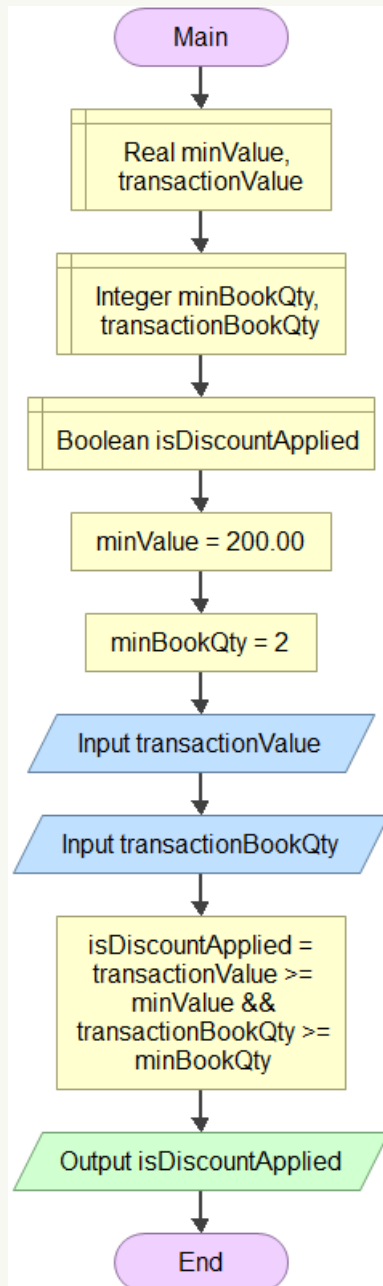
# Negation

- The negation operator is a **unary** operator.
- The operator will return the exact opposite of the given logical operand.
- Examples:
  - `!true → false`
  - `true && !false → true`



# Truth Table

1 <sup>st</sup> exps	2 <sup>nd</sup> exps	conjunction	disjunction	negation
p	q	p && q	p    q	!p
true	true	true	true	false
true	false	false	true	false
false	true	false	true	true
false	false	false	false	true



# Hands On

- The 50% discount is applicable **if and only if** both required criteria are met (true).
  - Using the conjunction operator is the most suitable choice.
  - Why not using disjunction?

# Final Thoughts.



# Conclusion

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1. Logical operators operate and produce logical value.
2. Logical operators are:
  - The **conjunction** operator will return true when all of the criteria are met (true).
  - The **disjunction** operator will return true when at least one of the criteria is met (true).
  - The **negation** operator will return the exact opposite of the given logical value.



# References

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

*Operators – Flowgorithm*

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



– EOF –





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