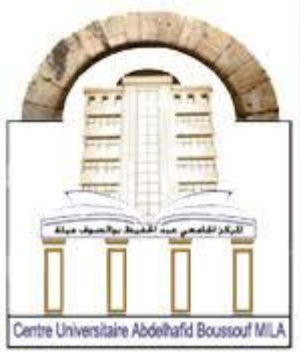
Abdelhafid Boussouf
University
Center of Mila



Structure of Computers and Applications
1st year ST – ENGINEERING

Part 2: The basics of Algorithm and Program

Course 07: C OPERATORS

By

Dr. Farouk KECITA

Academic year : 2024/2025

13_ C OPERATORS

❑ Operator:

- An operator is a Symbol that **performs** an operation. An operators acts some variables are called **operands** to get the desired **result**.
- An operator is a symbol that is used to perform mathematical or logical manipulations in the program.
- C language has the following operators:

✓ **1. Arithmetic operators**

✓ **2. Relational operators**

✓ **3. Logical operators**

✓ **4. Assignment operators**

✓ **5. Increment or decrement operators**

13_ C OPERATORS

❑ Arithmetic operators:

➢ These are used to perform **basic mathematical** calculations like addition, subtraction, multiplication, division and modulus operations in

Operators	Meaning	Example	Result
+	Addition	4 + 2	6
–	Subtraction	4 – 2	2
*	Multiplication	4 * 2	8
/	Division	4 / 2	2
%	Modulus operator to get remainder in integer division	5 % 2	1

13_ C OPERATORS

❑ Relational operator:

- A relational operator checks the **relationship** between two **operands**.
- If the relation is **true**, it returns **1**; if the relation is false, it returns **value 0**. Operands may be **variables**, constants or **expressions**.
- Relational operators are used in **decision making** and **loops**.

Operator	Meaning	Example	Return value
<	is less than	2<9	1
< =	is less than or equal to	2 < = 2	1
>	is greater than	2 > 9	0
> =	is greater than or equal to	3 > = 2	1
= =	is equal to	2 = = 3	0
!=	is not equal to	2!=2	0

13_ C OPERATORS

❑ Logical operators

- These operators are used to combine the results of two or more conditions.
- An expression containing logical operator returns either **0** or **1** depending upon whether expression results **true** or **false**.

Operator	Description	Example
&&	Logical **AND**	If c=5 and d=2 then, ((c==5) **&&** (d>5)) returns false.
||	Logical **OR**	If c=5 and d=2 then, ((c==5)||(d>5)) returns true.
!	Logical **NOT**	If c=5 then, !(c==5) returns false.

- **Logical AND :**

Truth Table

Op1	Op2	Op1 && Op2
true	true	true
true	false	false
false	true	false
false	false	false

Logical OR :

Truth Table

Op1	Op2	Op1 // Op2
true	true	true
true	false	true
false	true	true
false	false	false

13_ C OPERATORS

❑ Assignment operators:

➢ This operator is used to assign the values for the variables in the programs.

Operator	Description	Example
=	Simple assignment	A=B; i.e. B value is assigned to A
+=	Addition and assignment	A+=B is same as A=A+B
-=	Subtraction and assignment	A-=B is same as A=A-B
*=	Multiplication and assignment	A*=B is same as A=A*B
/=	Division and assignment	A/=B is same as A=A/B
%=	Modulus and assignment	A%=B is same as A=A%B

13_ C OPERATORS

❑ Increment or decrement operators:

➢ These operators are used to increment or decrement by **1** in an expression.

Operator	Description	Example
++operand	Unary pre-increment	A=**++**10; first evaluates 11 and assigns A=11
--operand	Unary pre-decrement	A=**--**10; first evaluates 9 and assigns A=9
operand++	Unary post-increment	A=10**++**; first assigns A=10 then increments A by 1
operand--	Unary post-decrement	A=10**--**;first assigns A=10 then decrements A by 1

Note:

We cannot use increment (Decrement) operator on the **constant values** because increment (Decrement) operator operates on only variables.