— University of Mosul —

College of Petroleum & Mining Engineering

"**Computer Programing II /Theoretical**"

Second class

Lecture …(2)….

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LECTURE CONTENTS

- ❑ **Constants and Variables**
- ❑ **Arithmetic expression**
- ❑ **Rule of Precedence**

Constants and Variables

Constants:- It is the data whose value does not change during the execution of the program, such as numerical constants (integers, real numbers, and complex numbers), logical numbers, and symbolic numbers.

S1=25

S2=3.45

S3=5+3i

S4=5>8

S5=' Mathematics Department'

Variables:- They are names of values that can change or be fixed during the execution of the program. They actually represent addresses of locations in memory where these values are stored.

The following conditions must be met to name the variable:

A. Must start with a letter.

B. The name can consist of letters and numbers.

C. The only allowed symbol is the underscore (_).

D. The length of the name must not exceed 63 characters.

E. It must not be one of the reserved keywords (usually shown in blue) such as if, else, for, while, continue, break, etc.

F. The program is case-sensitive (A is different from a).

G. The name should be on the left and the value on the right.

For Example :- Names of true and false

Name of Constants or Variables	Required value	Formula	True &False in the formula	Reason
S1	34	S1=34	True	------
typ	59	50=typ	False	g
End	100	End=100	False	e

There are variables that have a predefined value, i.e. they can be changed, but normally they are defined in this way:

Variables	Indicates
ans	Variable containing the last arithmetic operation for which no variable has been named.
pi	π
i_j	Imaginary part $\sqrt{-1}$ of complex number
inf	Infinity means division by 0
NaN	Not a number -: 0/0 or $\frac{\infty}{\infty}$

Rule of Precedence:-

This rule states that priority is given to operations within parentheses, **processed from left to right**. For arithmetic operations, the order is as follows: power first, multiplication (and division) second and addition (and subtraction) last.

For Example

Algebraic expression	Expression in Matlab
$\frac{A}{B}+C$	A/B+C
$\frac{A}{B+C}$	A/(B+C)