ELEMENTARY MATLAB® COURSE – SESSION 2

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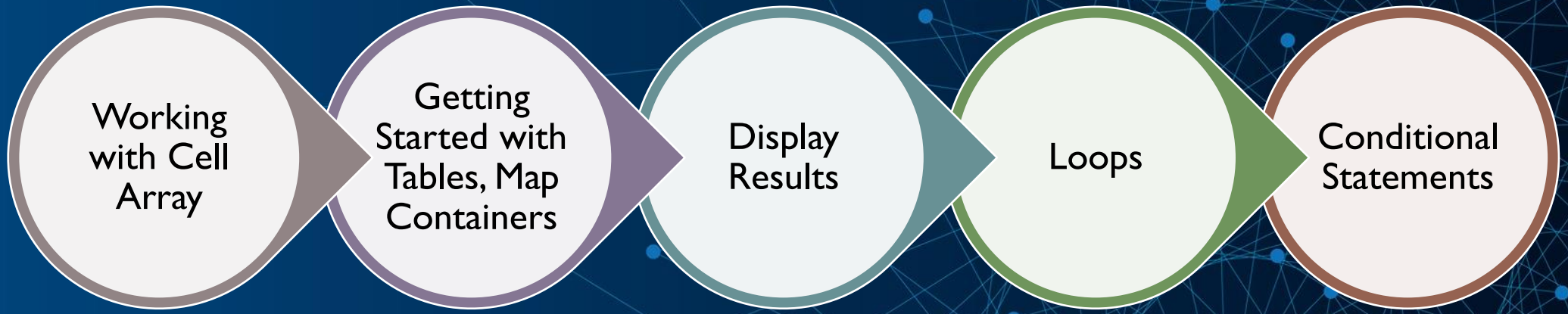
- April 2024

MathWorks

CONTENTS



WHAT IS CELL ARRAY?

- A cell array in MATLAB is a data structure that can hold data of different types and sizes. Unlike traditional arrays, where each element must be of the same type and size, a cell array allows for flexibility in storing heterogeneous data.
- Syntax: Cell arrays are created using curly braces {} and can contain any combination of numbers, strings, other arrays, or even other cell arrays.

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CELL ARRAY FEATURES

- Flexible Data Storage
- Mixed Data Types
- Multi-dimensional Storage
- Ease of Access and Manipulation
- Efficient Memory Usage


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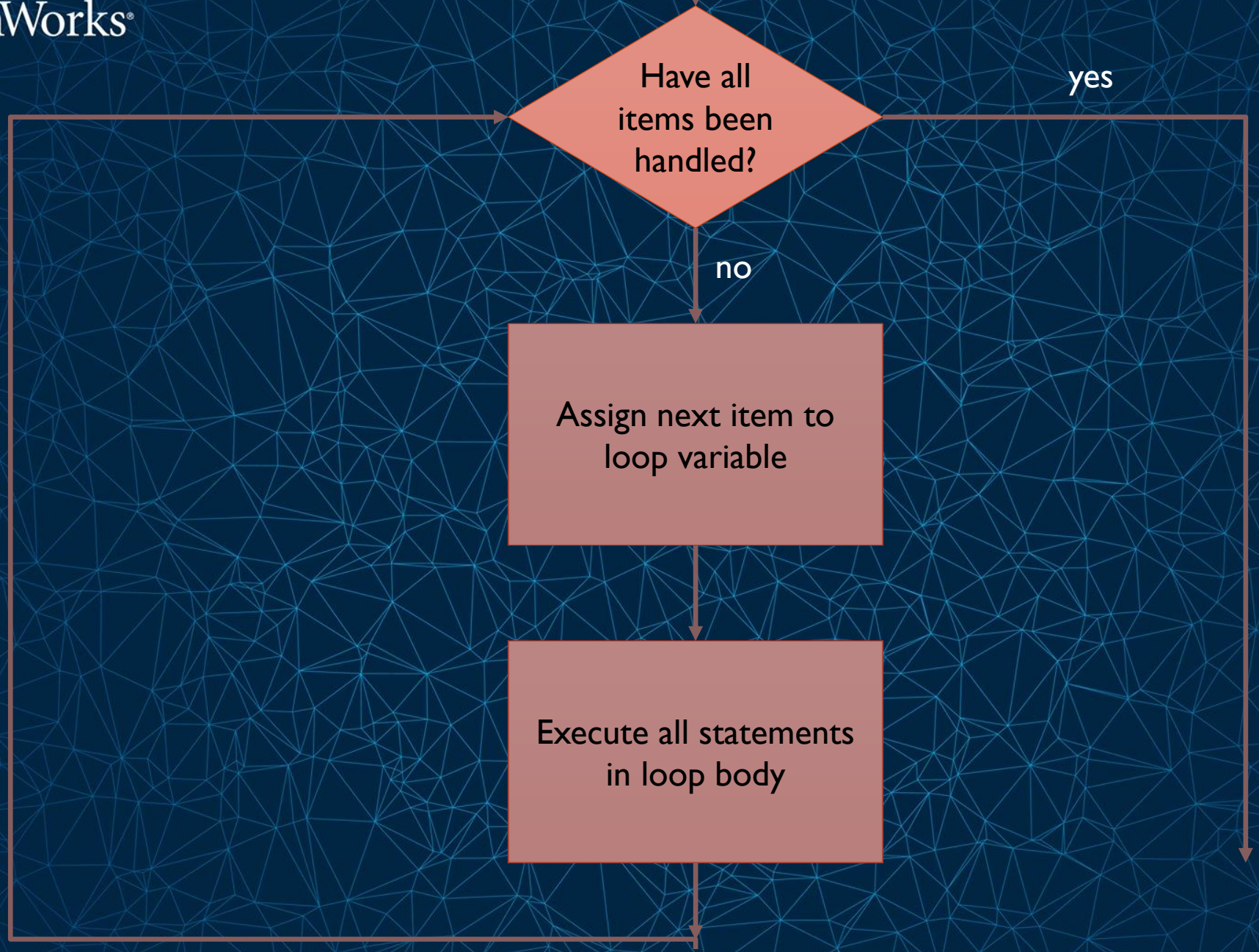
CONTROL FLOW

LOGICAL OPERATORS

Operator	Description
<	Less than
>	Greater than
<=	Less than or equal to
>=	Greater than or equal to
==	Equal to
~=	Not Equal to


Have all items been handled?
yes
no
Assign next item to loop variable
Execute all statements in loop body

LOOPS - FOR

We use **“for”** to repeat a particular command number of times!

```
A = matrix that defined by user
for i = A
    Statement
end
```

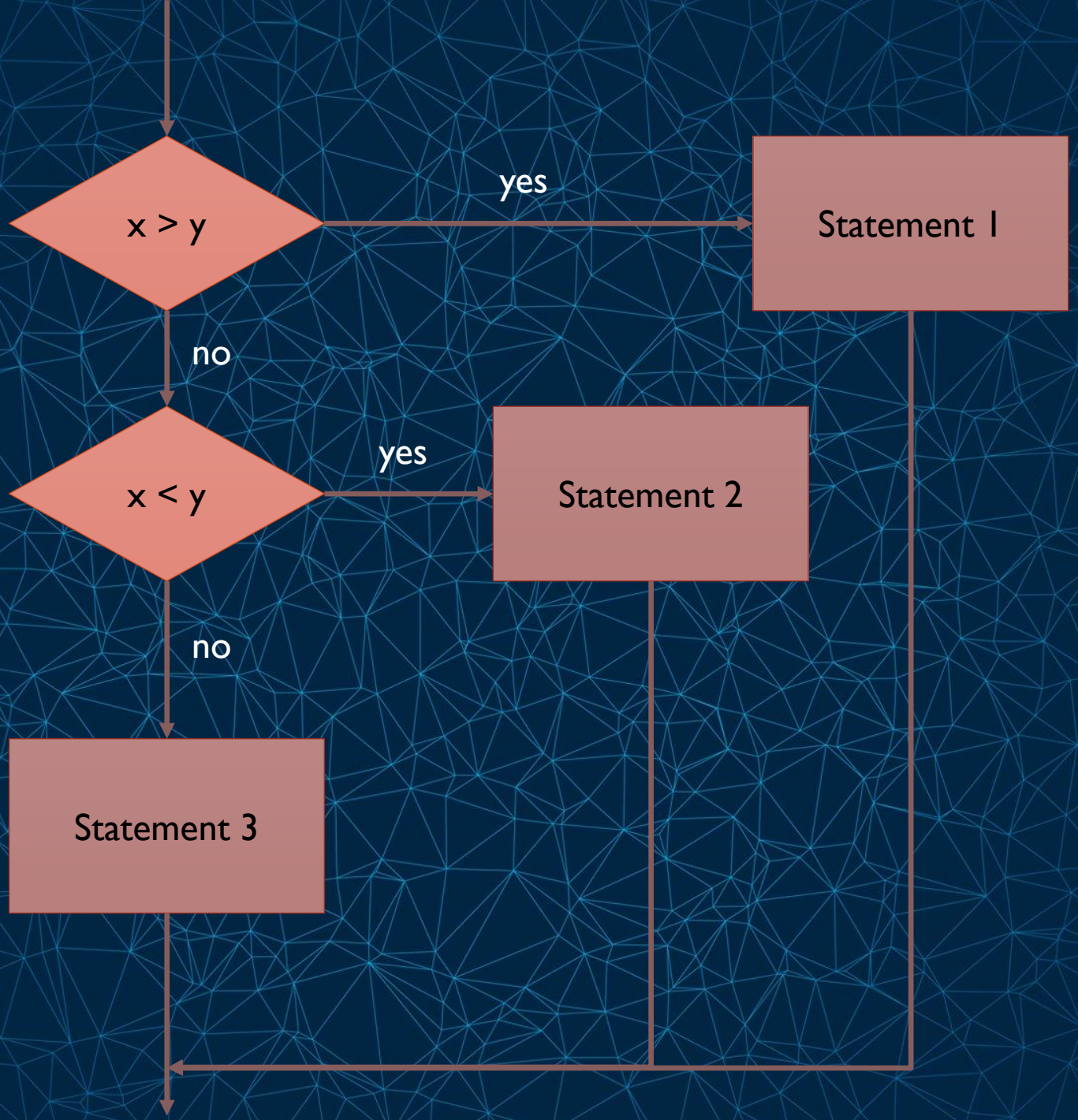
LOOPS - WHILE

We use **“while”** to repeat a particular command number of times, even infinite!

```
A = Number that defined by user
while I < A
    Statement
end
```

EXAMPLE

Write a program that gets a number from the user and then returns the factorial of the given number.


x > y
yes
Statement 1
no
x < y
yes
Statement 2
no
Statement 3

CONDITIONAL STATEMENTS
IF/ELSE/ELSEIF

```
A = number that defined by user
B = another number that defined by user
If i = A
    Statement 1
elseif i = B
    Statement 2
else
    Statement 3
end
```

CONDITIONAL STATEMENTS SWITCH/CASE/OTHERWISE

```
switch i
    case A
        statement 1
    case B
        statement 2
    otherwise
        statement 3
end
```

EXAMPLE: GRADE CALCULATOR

Write a MATLAB script that takes the average score of a student as input and outputs their corresponding grade according to the following criteria:

- A: 90 or above
- B: 80-89
- C: 70-79
- D: 60-69
- F: Below 60

Your script should use a switch/case statement to determine the grade based on the input average score.

BREAK/CONTINUE

- **break** – terminates execution of for and while loops. For nested loops, it exits the innermost loop only.
- **continue -** passes control to the next iteration of a for or while loop

EXAMPLE: BMI CALCULATOR

Write a program that gets height and weight from user, then calculates his BMI and shows his fat region.

<18.5 Under Weight	18.5< < 24.9 Normal Weight	25< < 29.9 Overweight	30< < 34.9 Obese (Class1)	35< < 39.9 Obese (Class2)	40< Obese (Class3)

END OF PRESENTATION!

Thanks for your attention. 🥹