

Module : algorithms with Java

In this online training, you will learn how to write algorithms in pseudo code and translate them into Java code: basic structures, choices and loops, arrays, functions and procedures, object-oriented algorithms. You will also have a first approach to Java programming.

Prerequisites : Know how to use a computer, programming concepts.



Ways to take this course: Online Instructor Led
Online self-paced
Video On Demand

Video conference tool : ZOOM

Duration : 35 H (5 days)

OUTLINE

Introduction to algorithms

- What is an Algorithm?
- Characteristics of an algorithm
- Implementation of an algorithm
- Algorithm and programming
- Structured programming
- Sequences and data
- Reading data, assignment
- Writing the results
- Types, operators and Boolean algebra
- Typical structure of an algorithm

Algorithms: choices and loops

- The IF structure
- IF variations
- The switch structure
- Writing the pseudo code
- Practical work: alternative structures
- WHILE and DO..WHILE
- The repeating structure FOR
- break and continue
- Comparison of loops
- Lab: loop structures

Introduction to the Java language

- The Java language
- JRE, JDK and virtual machine
- Java and JDK installation
- Create and run Java code
- Variables, types and operators
- Alternative structures
- Repeating structures
- Lab: programming in Java

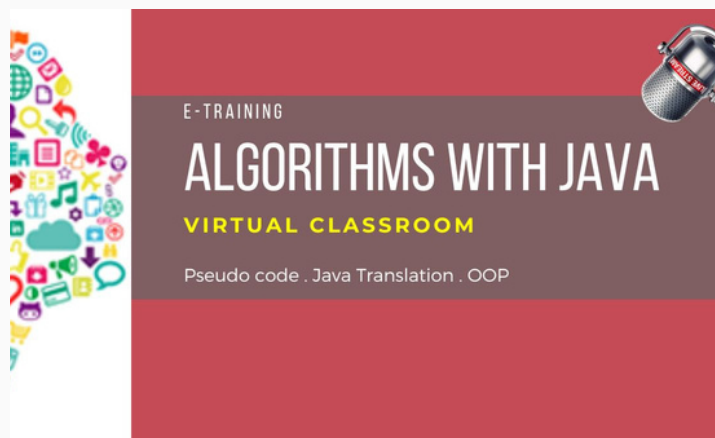
Creating arrays

- Usefulness of tables
- Create an array in pseudo code
- Common statements
- Retrieve an element
- Lab: creating an array in Java

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Functions and procedures

Module, function and procedure
Syntax of a procedure
Parameterless procedure
Procedure with parameter
Parameter passing
Lab: coding a procedure in Java
Syntax of a function
Lab: coding a function in Java

Object Oriented Programming (I)

OOP concepts
Classes, attributes and methods
Classes and objects
Lab: create a class in Java
TP: constructor with parameter

Object Oriented Programming (II)

Pseudo code and OOP
Static attributes
Static methods
Lab: static attributes and methods
Data protection
Encapsulation: setters and getters
Lab: encapsulation in practice
The concept of inheritance
Lab: concept of inheritance

Labs

Basic algorithms
Choices and loops
Functions and procedures
Classes, encapsulation
Concept of inheritance