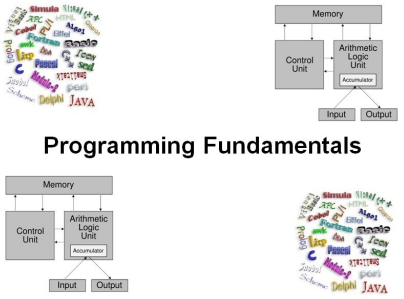
Programming Fundamentals

Duration: 4 days **Price: € 2650**

Open Schedule



Audience Course Programming Fundamentals

The course Programming Fundamentals is designed for individuals who want to learn the principles of programming and to apply their programming knowledge in any language on any platform.

Prerequisites Course Programming Fundamentals

To participate in this course no specific prior knowledge is required. General knowledge of and experience with computers is desirable.

Realization Training Programming Fundamentals

The theory is discussed on the basis of presentation slides. Demos are used to clarify the concepts. The C language is used as an example language. The theory is interspersed with exercises in which participants solve simple programming problems.

Certification Course Programming Fundamentals

Participants receive an official certificate Programming Fundamentals after successful completion of the course.

Content Course Programming Fundamentals

In the course Programming for Beginners the basics of programming are discussed using some programming language. The language is not central in this course, but you simply need a language to program in.

Intro Programming

The course starts with an explanation of the methodology of structured programming. Attention is paid to writing programs in source code and translating this code with compiler and linker into executable binary code.

Structure Diagrams

The participants also learn how to formulate a problem in Nassi Schneiderman diagrams and Data Flow diagrams. Simple problems are analyzed and converted into instructions in the programming language.

Variables and Data Types

Then attention is paid to statements, operators, variables, constants, arrays and data types in programming languages.

Control Flow

And control flow constructs, which are present in every programming language, are treated such as branching with if, then, else, select, case and iterations with while, for, do while, break and continue.

Functions

Code reuse is addressed in the treatment of functions. Both calling functions from a library and writing functions your own functions are discussed. Also the difference between call-by value and call-by reference is explained.

Pointers

Also pointers are covered that can be used to point in memory and to walk through the memory.

Object Orientation

The course ends with an introduction to object oriented programming. After completing the course, participants are able to write small programs that solve programming problems. They will not be aware of all the ins and outs of the language because that is not the purpose of this course.

Modules Course Programming Fundamentals

Module 1 : Intro Programming	Module 2 : Structure Diagrams	Module 3 : Variables and Data Types
Programming Languages	Software Development Phases	Variables
Language Syntax	Structured Programming	Data Types
Levels of Programming	Pseudo Code	Assignment Instructions
Language Generations	Program Structure Diagrams	Variable Declaration
Unstructured Programming	PSD Instructions	Variable Initialization
Procedural Programming	PSD Selection Diagrams	Java Data Types
Object Oriented Programming	Multiple Selection Diagrams	JavaScript Data Types
Compiled Language C	Iteration Diagrams	PHP Data Types
Compiling and Linking	While and For Iteration	Identifiers
Creating Executables	Logical Operations in PSD's	Identifiers Examples
Intermediate Language Java	Input and Output	Constants
Compiler and Interpreter	I/O in PSD	Strong Typing
Compiling and Running Java Programs	Average PSD	Weak Typing
Script Language Python	File I/O in PSD	Dynamic Typing
Running Python Scripts	Functions in PSD	Comments
Module 4 : Control Flow	**Module 5 : Operators**	**Module 6 : Arrays**
Control Structures	What is an Operator?	What are Arrays?
if Statement	JavaScript Operators	Creating Arrays
if else Statement	Arithmetic Operators	Initializing Arrays
if else Examples	Logical Operators	Accessing Arrays
Multiple Selections	Comparison Operators	Array Indexes
Nested if Statements	Assignment Operators	Array length
switch case Statement	String Operators	Processing with for
Iteration Statements	Bitwise Operators	Processing with for each
for Loop	Other Operators	Multidimensional Arrays
while and do..while Loop	Operator Precedence	Associative Arrays JavaScript
break and continue	Expressions	Associative Arrays PHP
Module 7 : Functions	**Module 8 : Pointers**	**Module 9 : Classes and Objects**
Library Functions	Pointers	Class Definition
User Defined Functions	Variables and Addresses	Encapsulation
Calling Functions	Pointer Declaration	Access Modifiers
Advantages of Functions	Initializing Pointers	Constructors
Function Prototype	Pointers to Variables	Creating Objects
Function Definition	Pointer Dereferencing	Fields and Methods
Passing Parameters	Pointer Assignment	Instance variables
Local and Global Variables	Call by Value and by Reference	Class variables
Return Statement	Pointers and Arrays	Using Objects
Types of Calls	Address Arithmetic	Object References
Recursion	Arrays in Function Calls	Object Destruction

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