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Certificate of participation

Issued to : Tanja DOUCIN
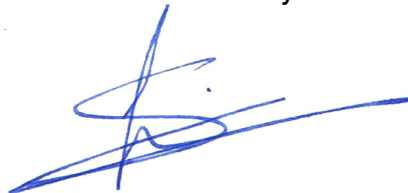
Title of the course :

Data Structures: From Basics to Advanced

Date of the course : from 27.01.2025 to 04.02.2025

Hours of training : 35 (100 %)

Attendance rate : 100 %

Esch-sur-Alzette: 06 February 2025

Dr. Serge Linckels
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Data Structures: From Basics to Advanced

Content:

Differences Between C and C++
Object-Oriented Programming in C++
Introduction to Data Structures and Algorithms
Arrays and Sorting Algorithms
Types of Linked Lists and Their Algorithms
Stacks and Queues with Algorithms
Trees, Types of Trees, and Tree Traversal Algorithms
Graphs: Creation, Traversal Algorithms, and Cycle Detection

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Learning Outcomes:

Identify and implement fundamental data structures such as arrays, linked lists, stacks, queues, trees, and graphs.

Apply various sorting algorithms and evaluate their time and space complexities.

Analyze and compare time and space complexities of different algorithms and data structures.

Design and analyze algorithms based on core principles of algorithm development.

Implement a variety of data structures and algorithms using a programming language.

Evaluate the efficiency of algorithms and data structures in terms of performance.

Design and implement efficient algorithms to solve real-world problems.

Debug and optimize algorithms and data structures for improved performance.

Apply critical thinking and problem-solving skills to address algorithmic challenges.

Effectively communicate technical concepts related to data structures and algorithms.

Work both independently and collaboratively to solve algorithmic problems.

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Continuously adapt to and learn new data structures and algorithmic techniques. Recognize the importance of efficient data structures and algorithms in computer science.

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