Course syllabus

C++ Essentials 1 (CPPE1)

Module 0: Installing And Using Your Programming Environment

- Introduction to IDE;
- Online tools;
- Edube Interactive.

CPPE1 - Module 1: Absolute Basics - Introduction to Computer Programming

- languages: natural and artificial;
- machine languages;
- high-level programming languages,
- obtaining the machine code: compilation process;
- variables;
- integer values in real life and in C++;
- integer literals;
- characters;
- comments;
- the basics of flow control;
- dealing with streams and basic I/O operations;
- writing simple programs.

CPPE1 - Module 2: Advanced flow control and data aggregates

- how to control the flow of the program;
- more data types;
- conditional instructions: if, else, switch;
- loops and controlling the loop execution;
- logic, bitwise and arithmetic operators;
- vectors, multidimensional arrays;
- declaring and initializing structures.

CPPE1 - Module 3: Extending expressive power: pointers, functions, and memory

- designing, declaring, and invoking functions;
- pointers;
- different methods of passing parameters and their purpose;
- default parameters;
- inline functions;
- overloaded functions;
- sorting;
- memory on demand.

CPPE1 - Module 4: Accessing various data types

- arrays of pointers;
- conversions;
- strings: declarations, initializations, assignments;

- strings as an example of objects: (methods and properties)
- using and declaring namespaces;
- dealing with exceptions.

CPPE1 - End of Part 1

- CPPE1: Part 1 Summary Test (Score 70% or more to unlock Part 2.)

C++ Essentials 2 (CPPE2)

CPPE2 - Module 1: The essentials of Object-Oriented Programming

- Basic concepts of OOP;
- A stack: the procedural approach vs. the OOP approach;
- The anatomy of the class;
- Static components;
- Objects vs. pointers and objects inside objects.

CPPE2 - Module 2: Inheritance

- Class hierarchies;
- Classes, inheritance, and type compatibility;
- Polymorphism and virtual methods;
- Objects as parameters, and dynamic casting;
- Various supplements;
- The *const* keyword;
- Friendship in the C++ world.

CPPE2 - Module 3: Exceptions

- Introduction to exceptions;
- The *throw* statement;
- Categorizing exceptions;
- Catching exceptions;
- Exceptions in action.

CPPE2 - Module 4: Operators and enumerated types

- Overloading operators;
- Enumerated types.

CPPE2 - End of Part 2

- CPPE2: Part 2 Summary Test (Score 70% or more to unlock the Final Test)
- C++ Essentials - Final Test (Score 70% or more to be eligible for the CPA exam discount code.)