Design & Patterns in Software Development

Course code: GOC271

The course concerns in the first place with the application of design patters, known as the „GoF Design Patterns". You will learn to use the patterns in analyses, architecture, design, programming, the so called idioms and refactorization patterns as well as performance tuning patterns and patterns for testing. During the course we will show you a set of techniques, methods, procedures and practices called the „best practices", applicable in particular stages and disciplines of software development. The aim of the course is to enable the understanding of the principles use via real life examples. During the whole course we work on a case study individually and in teams with the lector's guidance.

Course designation

The course is designed especially for programmers, who want to extend their knowledge portfolio in the area of qualified software development. A project manager, analyst, architect, designer, developer, tester – all of the software professions should use, or more precisely should well understand the patterns and the so called „best practices".

What will you learn?

- To well understand the patterns in software development.
- To apply the patterns in object analyses, architecture, design.
- To practically use the patterns in object programming, testing and optimization.

Teaching methods

Specialized lecture with real life examples, exercises on computers ¨

Study materials

Printed publications in accordance to the specialized publishers' offer.

Course syllabus:

Introduction into the creation of software (SW)

- Making methodology SW - waterfall, iterative, RAD, Test-driven or architecturally-centric
- Collection and management requirements
- The basic disciplines and related artifacts

Conceptual modeling, analytical models

- Modelling negotiations (Use Case Model)
- Creating a domain model
- Patterns object static model
- GRASP patterns
- Patterns dynamic model

Gang of Four patterns

- Categorization designs

Patterns of production (the object)

- Singleton
- Abstract Factory
- Fator Method
- Builder
- Prototype

Patterns structures

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- Facade
- Adapter
- Bridge
- Proxy
- Decorator
- Composite
- Flyweight

Patterns of behavior

- Interpreter
- Template Method
- Chain of Responsibility
- Command
- Iterator
- Mediator
- Memento
- Observer
- State
- Strategy
- Visitor

Refactoring

- Principles of refactoring
- Refaktoriza?n? patterns and their support in the IDE

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