

# Design & Patterns in Software Development

Course code: GOC271

The course concerns in the first place with the application of design patterns, known as the „GoF Design Patterns“. You will learn to use the patterns in analyses, architecture, design, programming, the so called idioms and refactoring 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
- Factor Method
- Builder
- Prototype

Patterns structures

**GOPAS Praha**  
Kodařská 1441/46  
101 00 Praha 10  
Tel.: +420 234 064 900-3  
[info@gopas.cz](mailto:info@gopas.cz)

**GOPAS Brno**  
Nové sady 996/25  
602 00 Brno  
Tel.: +420 542 422 111  
[info@gopas.cz](mailto:info@gopas.cz)

**GOPAS Bratislava**  
Dr. Vladimíra Clementisa 10  
Bratislava, 821 02  
Tel.: +421 248 282 701-2  
[info@gopas.sk](mailto:info@gopas.sk)

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# Design & Patterns in Software Development

- 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

**GOPAS Praha**  
Koda?ská 1441/46  
101 00 Praha 10  
Tel.: +420 234 064 900-3  
[info@gopas.cz](mailto:info@gopas.cz)

**GOPAS Brno**  
Nové sady 996/25  
602 00 Brno  
Tel.: +420 542 422 111  
[info@gopas.cz](mailto:info@gopas.cz)

**GOPAS Bratislava**  
Dr. Vladimíra Clementisa 10  
Bratislava, 821 02  
Tel.: +421 248 282 701-2  
[info@gopas.sk](mailto:info@gopas.sk)

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