OptaPlanner Training

COURSE CONTENT

About Multisoft

Train yourself with the best and develop valuable in-demand skills with Multisoft Systems. A leading certification training provider, Multisoft collaborates with top technologies to bring world-class one-on-one and certification trainings. With the goal to empower professionals and business across the globe, we offer more than 1500 training courses, which are delivered by Multisoft's global subject matter experts. We offer tailored corporate training; project Based Training, comprehensive learning solution with lifetime e-learning access, after training support and globally recognized training certificates.

About Course

OptaPlanner Training by Multisoft Systems is a comprehensive program designed to help professionals master business resource optimization using AI-driven constraint-solving techniques. This course introduces participants to the power of OptaPlanner, a powerful open-source constraint satisfaction engine built on Java, used to solve complex scheduling, routing, and planning challenges across industries.

Module 1: Planner introduction

- ✓ What is OptaPlanner?
- ✓ What is a planning problem?
- ✓ Use Cases and examples

Module 2: Bin Packaging Problem Example

- ✓ Problem statement
- ✓ Problem size
- ✓ Domain model diagram
- ✓ Main method
- ✓ Solver configuration
- ✓ Domain model implementation
- ✓ Score configuration

Module 3: Travelling Salesman Problem (TSP)

- ✓ Problem statement
- ✓ Problem size
- ✓ Domain model
- ✓ Main method
- ✓ Chaining
- ✓ Solver configuration
- ✓ Domain model implementation
- ✓ Score configuration

Module 4: Planner configuration

- ✓ Overview
- ✓ Solver configuration
- ✓ Model your planning problem
- ✓ Use the Solver

Module 5: Score calculation

- ✓ Score terminology
- ✓ Choose a Score definition
- ✓ Calculate the Score
- ✓ Score calculation performance tricks
- ✓ Reusing the Score calculation outside the Solver

Module 6: Optimization algorithms

- ✓ Search space size in the real world
- ✓ Does Planner find the optimal solution?
- ✓ Architecture overview
- ✓ Optimization algorithms overview
- ✓ Which optimization algorithms should I use?
- ✓ SolverPhase
- ✓ Scope overview
- ✓ Termination
- ✓ SolverEventListener
- ✓ Custom SolverPhase

Module 7: Move and neighborhood selection

- ✓ Move and neighborhood introduction
- ✓ Generic Move Selectors
- ✓ Combining multiple MoveSelectors
- ✓ EntitySelector
- ✓ ValueSelector
- ✓ General Selector features
- ✓ Custom moves

Module 8: Construction heuristics

✓ First Fit

✓ Best Fit

✓ Advanced Greedy Fit

✓ the Cheapest insertion

✓ Regret insertion

Module 9: Local search

✓ Local Search concepts

✓ Hill Climbing (Simple Local Search)

✓ Tabu Search

✓ Simulated Annealing

✓ Late Acceptance

✓ Step counting hill climbing

✓ Late Simulated Annealing (experimental)

✓ Using a custom Termination, MoveSelector, EntitySelector, ValueSelector or Acceptor

Module 10: Evolutionary algorithms

✓ Evolutionary Strategies

✓ Genetic Algorithms

Hyperheuristics

Module 1: Exact methods

✓ Brute Force

✓ Depth-first Search

Module 2: Benchmarking and tweaking

- ✓ Finding the best Solver configuration
- ✓ Doing a benchmark
- ✓ Benchmark report
- ✓ Summary statistics
- ✓ Statistics per dataset (graph and CSV)
- ✓ Advanced benchmarking

Module 3: Repeated planning

- ✓ Introduction to repeated planning
- ✓ Backup planning
- ✓ Continuous planning (windowed planning)
- ✓ Real-time planning (event based planning)

Module 4: Drools

- ✓ Short introduction to Drools
- ✓ Writing Score Function in Drools

Module 5: Integration

- ✓ Overview
- ✓ Persistent storage
- ✓ SOA and ESB
- ✓ Other environment