Optimal Database Design Problem

Defended by: Group 06

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Politecnico di Torino

Optimization Methods and Algorithms

Algorithm presentation

Genetic Algorithm

Main Features

Key points of our implementation:

- Scalability and adaptability
- Multistart and restart
- Multithreading
- Large Solution Space exploration

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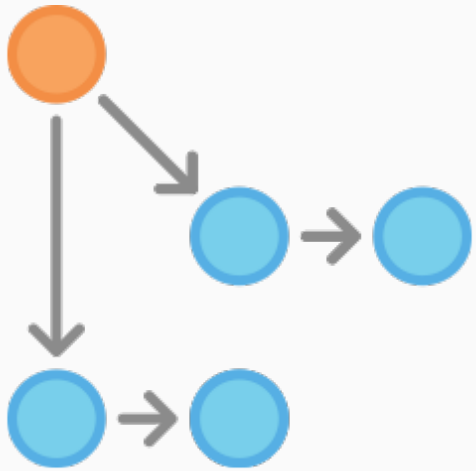

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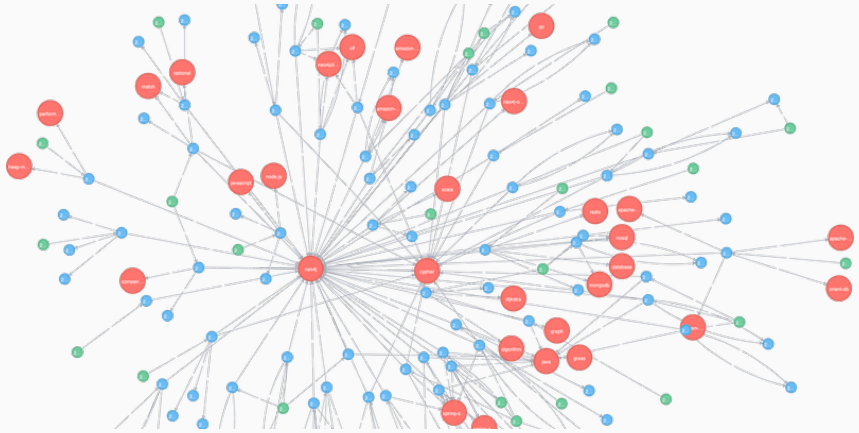
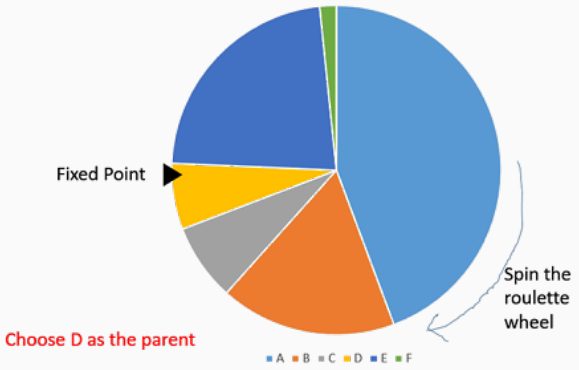


Solution Set Selection procedures

Solution Set Selection procedures implemented:

- Roulette
- Tournament
- Random



Chromosome	Fitness Value
A	8.2
B	3.2
C	1.4
D	1.2
E	4.2
F	0.3

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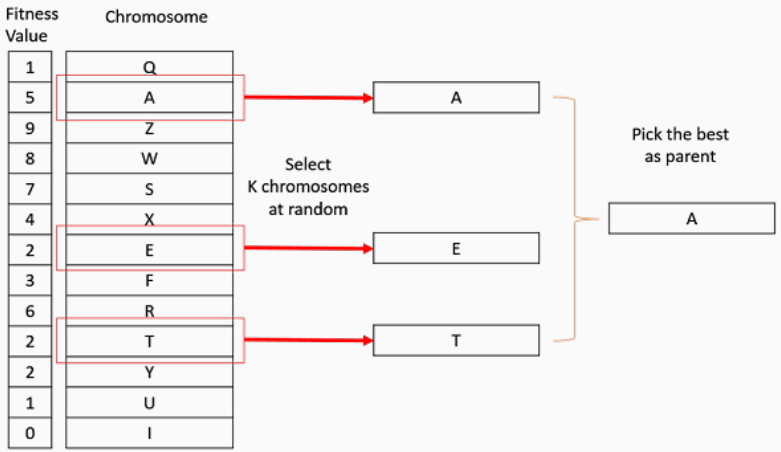

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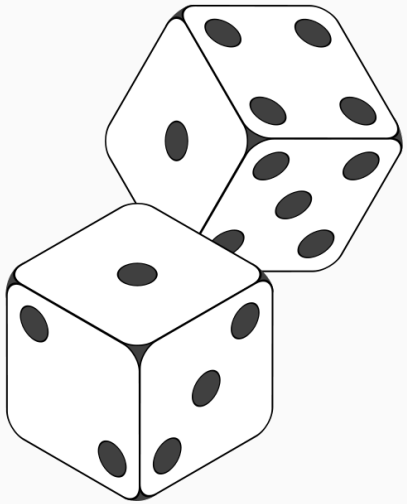
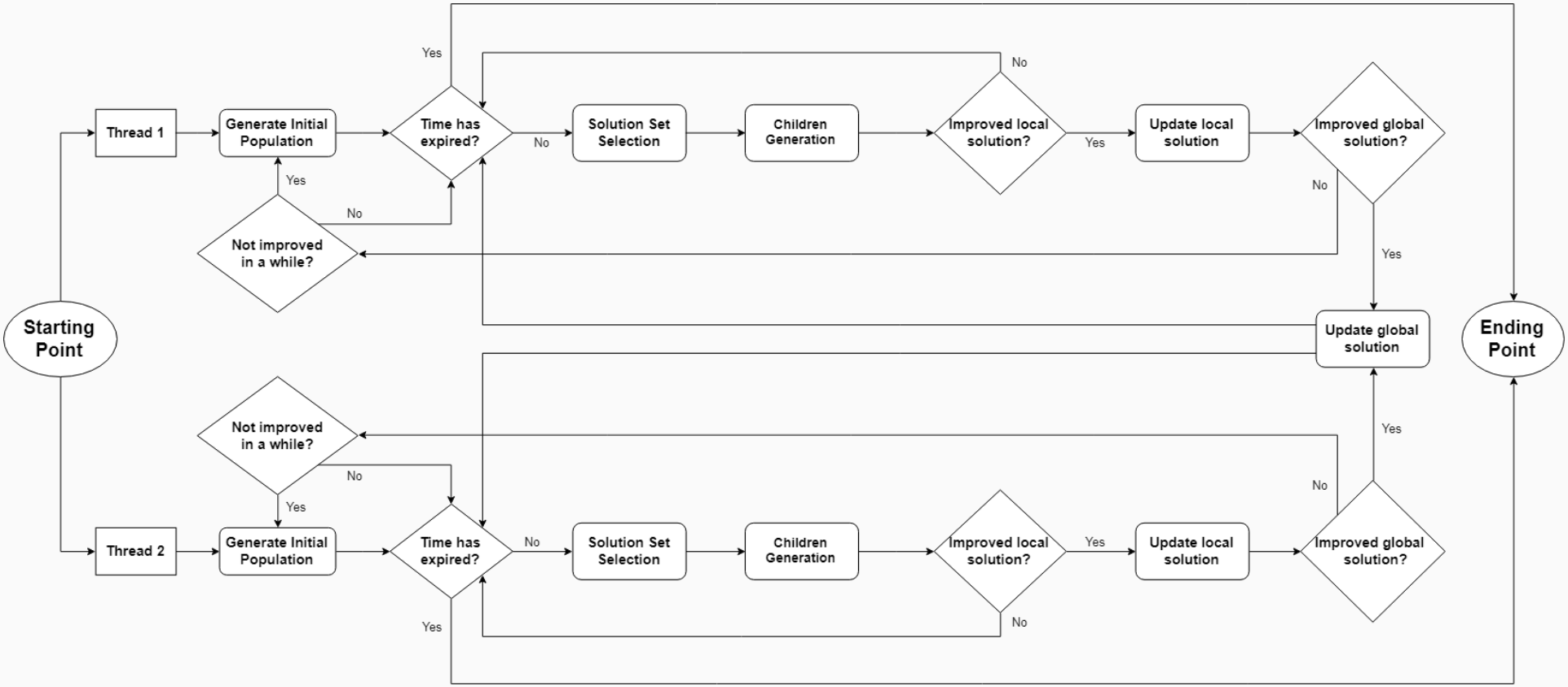


Children generation methods

Children generation methods implemented:

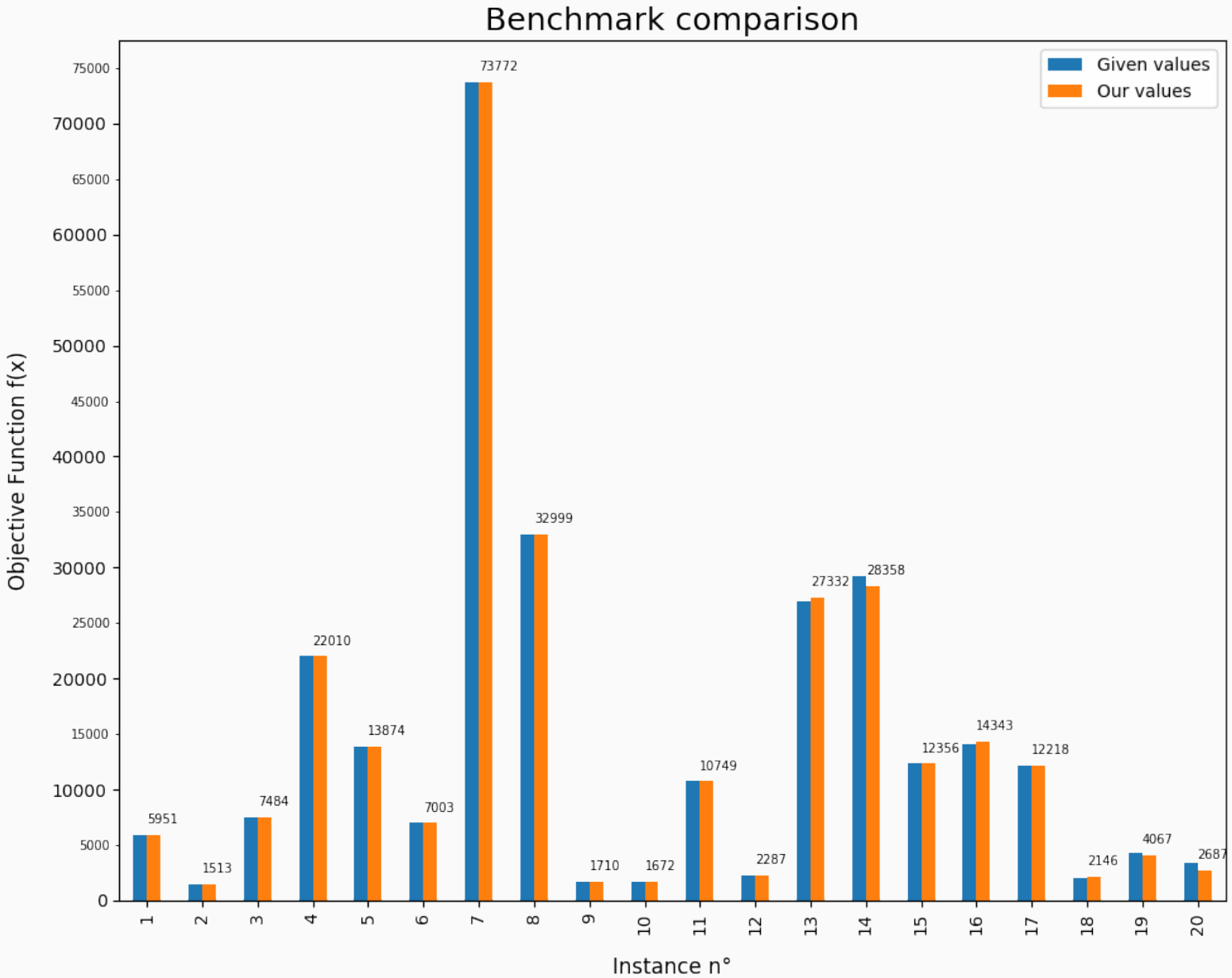
- Mutation
  - 2-bit instead of 1
  - 70% chance to be chosen
- Inversion
  - traditional approach adapted to the instance dimension
  - 15% chance to be chosen
- Crossover
  - traditional approach
  - 15% change to be chosen

Algorithm steps



Results analysis

Result Analysis



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