# Topics in Parameterized Algorithms

In this project we will discuss different algorithms for solving the feedback vertex cover problem.  
We will present the problem and 3 algorithms that we implemented, including brute force algorithm, bounded search tree and randomized algorithms as described in the book parameterized-algorithms [1](#_1._parameterized-algorithms_-)   
Followed by run time for different inputs and algorithm improvements.

## Feedback vertex cover

Given a multi graph G=(V,E) {\displaystyle G=(V,E)}and a positive integer {\displaystyle k}k.  
Is there a subset X{\displaystyle X\subseteq V} with  {\displaystyle |X|\leq k}such that in the graph G\X{\displaystyle G} there are no cycles.

## Algorithms

### 1. Brute force algorithm

## 2. Bounded search tree

## 3. Randomized

## References

### 1. [parameterized-algorithms - Marek Cygan, Fedor V. Fomin, ukasz Kowalik, Daniel Lokshtanov, Dániel Marx, Marcin Pilipczuk, Michaª Pilipczuk and Saket Saurabh](http://parameterized-algorithms.mimuw.edu.pl/index.html)