Project No.1

Introduction to optimisation

1. Introduction

The main objective of this project is to test the deterministic methods of optimisation on second and forth degree polynomials and familiarising students with the problem of reaching the so-called local minimum.

Prerequisites:

- OptiM software & OptiM guidebook
- Dev-Cpp compilator

2. Exercise No. 1

Task:

Find the minimum of a 2nd degree function.

Data:

The set of files gathered in the compressed file 1_Paraboloid.zip. The archive is comprised of the full structure of catalogues and all files necessary to run the OptiM software.

Results:

Use different deterministic methods following the guidelines from the OptiM guidebook. The report should include:

- Presentation of the results for a minimum of three methods.
- Comparison between the obtained results and the results gained using the attached Excel file.
- Comparison between the iteration number and the obtained result.
- Conclusions.

3. Exercise No. 2

Task:

Find the minimum of a 2nd degree function with 2 variables.

Data:

The set of files gathered in the compressed file 2_Paraboloid.zip. The archive is comprised of the full structure of catalogues and all files necessary to run the OptiM software.

Results:

Use different deterministic methods following the guidelines from the OptiM guidebook. The report should include:

- Presentation of the results for a minimum of three methods.
- Comparison between the iteration number and the obtained result.
- Conclusions.

4. Exercise No. 3

Task:

Find the minimum of a 4th degree function with 2 variables. Local minimum problem.

Data:

The set of files gathered in the compressed file 3_Wielomian_4.zip. The archive is comprised of the full structure of catalogues and all files necessary to run the OptiM software.

Results:

Use different deterministic methods following the guidelines from the OptiM guidebook. The report should include:

- Presentation of the results for a minimum of three methods.
- Comparison between the obtained results and the results gained using the attached Excel file.
- Comparison between the iteration number and the obtained results.
- Conclusions.

5. Exercise No. 4

Task:

Optimise your own function.

Results:

Use different deterministic methods following the guidelines from the OptiM guidebook. The report should include:

- Presentation of the results for a minimum of three methods.
- Comparison between the iteration number and the obtained result.
- Conclusions.