

COMPUTATIONAL PRACTICUM REQUIREMENTS

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I part (2 pts)

- 1) Report should contain the exact solution in terms of x_0 and y_0 and analyze of points of discontinuity, if exist.

II part (13 pts)

- 2) Euler's method, improved Euler's method and Runge-Kutta method should be implemented in the application with corresponded GUI, that allows user to change x_0 , y_0 , X , N and plot the graphs of exact and numerical solutions.
- 3) Also the graph of local errors for each method also should be plotted.
- 4) Results should be incorporated to the final report.
- 5) Implementation should obey to OOP-design standards, in particular, the code should be organized within SOLID principals (especially within single responsibility principle, Liskov substitution principle, interface segregation principle).
- 6) Report should contain UML-diagram of classes and the most interesting parts of source code.

III part (15 pts)

- 7) Application should contain the possibility to analyze the total approximation error depending on the number of grid cells. GUI should allow to input starting and finishing values of the number of grid cells and provide the graph of total errors for each method for a given range.
- 8) This part should be also reviewed in the report.