MODIFICATION OF EULER METHOD FOR SOLVING FIRST ORDER ORDINARY DIFFERENTIAL EQUATION AND APPLICATION ON EXPONENTIAL POPULATION GROWTH MODEL

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Technical Report Submitted in Fulfillment of the Requirement for Bachelor of Sciences (Hons.) Computational Mathematics in the Faculty of Computer and Mathematics Sciences
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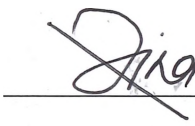
January 2020

DECLARATION BY CANDIDATE

I certify that this report and the project to which it refers is the product of my own work and that idea or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.



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JANUARY 2020

ABSTRACT

Most issues in the engineering and science field can be in the form of ordinary differential equations. Besides, the solution of ordinary differential equations problem can be solved both in theoretical and numerical methods. The theoretical method is recognized to have their difficulty in solving ordinary differential equations problems whereas this method requires a large amount of laborious work and it is complicated. Therefore, the numerical method is preferable to be used such as Euler methods. Euler method is broadly used by many researchers for solving ordinary differential equations in initial value problems. Some methods to be used to solve ordinary differential equations are the Euler method (EM), Modified Euler method (ME), Improved Euler method (IE), Improved Modified Euler method (IME), and Modified Improved Modified Euler method (MIME). The exponential population of the growth model also been solved numerically by using the Euler method. The purpose of this research is to identify which method is most efficient based on its errors. The results of the numerical solutions are compared with analytic solutions. The result shows that MIME offers better approximation compares to other methods.

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