PREDICTION OF TUBERCULOSIS DISEASE USING SIR MODEL WITH IMPLEMENTATION OF EULER AND FOURTH ORDER RUNGE-KUTTA METHODS

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DECLARATION BY CANDIDATE

We certify that this report and the project to which it refers is the product of our own work and that any 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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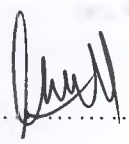

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ABSTRACT

Mathematical model acts as a tool to understand and explain the dynamics of infectious diseases transmissions and SIR model is one of the mathematical models. In this research, SIR model is used to study and understand the tuberculosis infections in Terengganu. SIR model divides a population into three groups: susceptible (S), infected (I), and recovered (R). Susceptible group contains individuals that have never been infected and they are exposed to the disease. While the infected groups contain individuals who are infected to the disease and recovered group contains individuals who are cured from the disease. Euler and Fourth Order Runge-Kutta methods are implemented into this model because they are well suited to solve initial value problem (IVP) for ordinary differential equation (ODE). Both of these methods are the numerical approaches to extract solutions from the basic equations of SIR model. As a conclusion, the best method to get the better prediction by using SIR model is Fourth Order Runge-Kutta method.

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