

Numerical Solution of IVP for ODE in Problem Solving Environments

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The problem solving environments (PSEs) Maple and Matlab are in very wide use. Although they have much in common, they are clearly distinguished by the emphasis in Maple on algebraic computation and in Matlab on numerical computation. We discuss here a Maple program, IVPsolve, for solving numerically initial value problems (IVPs) for systems of first order ordinary differential equations (ODEs), $y' = f(x, y)$. The talk will discuss the motivation for writing such a program, and discuss features distinguishing it from programs written for use in General Scientific Computing, including design decisions taken to make use of important features and common usages of Problem Solving Environments. The discussion will be example oriented, comparing performance with the Matlab codes of Shampine and Reichelt.

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