Implementation of the Right-Hand Side term in the physical system of Poisson problem using Finite Element Method

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Although Moore's law which states that computational power doubles every two years has not been applied in full effect the last couple of years, it is no doubt that the computational ability is improving continuously. With such supplement, efficiency in application of numerical methods improves as well. Among many systems, the Poisson problem is a simple yet interesting one to analyse due to its wide range of application, in electrostatics and fluid dynamics for example. The Poisson problem can be analysed as a homogeneous or inhomogeneous system with inclusion of a pre-determined particular solution, u_p. In this presentation, comparison between the results of the error convergence of the two systems is presented. In 1D, the inhomogeneous system converges to the exact solution much quickly. However, this difference in convergence is to be further analysed in 2D which allows for a non-linear homogeneous solution, u_o, of the inhomogeneous system.