Presentation

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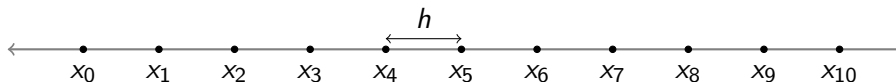
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Introduction

Likhna hai abhi

Theory

Finite Difference Methods(FDM) are used for solving differential equations by approximating dervatives at the grid points.

Figure: 1D mesh with 11 nodes and a meshsize h

The difference $h = x_5 - x_4$ is constant throughout the mesh and $x_4 \equiv x_0 + 4h$.

The approximation of first order derivative can be defined as,

$$U_x|_i = \lim_{h \to 0} \frac{U_{i+1} - U_i}{h} \qquad \text{Forward difference}$$

$$\text{or,} \qquad U_x|_i = \lim_{h \to 0} \frac{U_i - U_{i-1}}{h} \qquad \text{Backward difference}$$

$$\text{or,} \qquad U_x|_i = \lim_{h \to 0} \frac{U_{i+1} - U_{i-1}}{} \qquad \text{Central difference}$$

So,in this project we are going to find the electrostatic potential of a capacitor using **Finite difference Method** and other **iterative schemes**[1] and also determining the most appropriate method on the basis of number of iterations.

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[1]SOR(succesive over relaxation) ,Jacobi, Guass-siedel