**MATLAB CODE-CONDUCTION**

% define variables

L=1; % length of rod

n=10; % number of grid points

dx=L/(n-1); % Grid spacing

x=linspace(0,L,n); %Grid points

alpha=1; % thermal diffusivity

dt=0.001; % Time step

% maximum number of time steps

max\_time\_steps=10000;

% initialize temperature vector

T=zeros(1,n);

% boundary conditions

T(1)=100; % left boundary temperature

T(n)=0; % right boundary temperature

% iterate over time steps

for t = 1:max\_time\_steps

for i = 2:n-1

T\_w=T(i-1);

T\_p=T(i);

T\_e=T(i+1);

T(i)=T\_p + alpha\*dt\*(T\_e-2\*T\_p+T\_w)/(dx^2);

end

end

% plot the graph

plot(x,T);

xlabel('x');

ylabel('Temperature');