
```

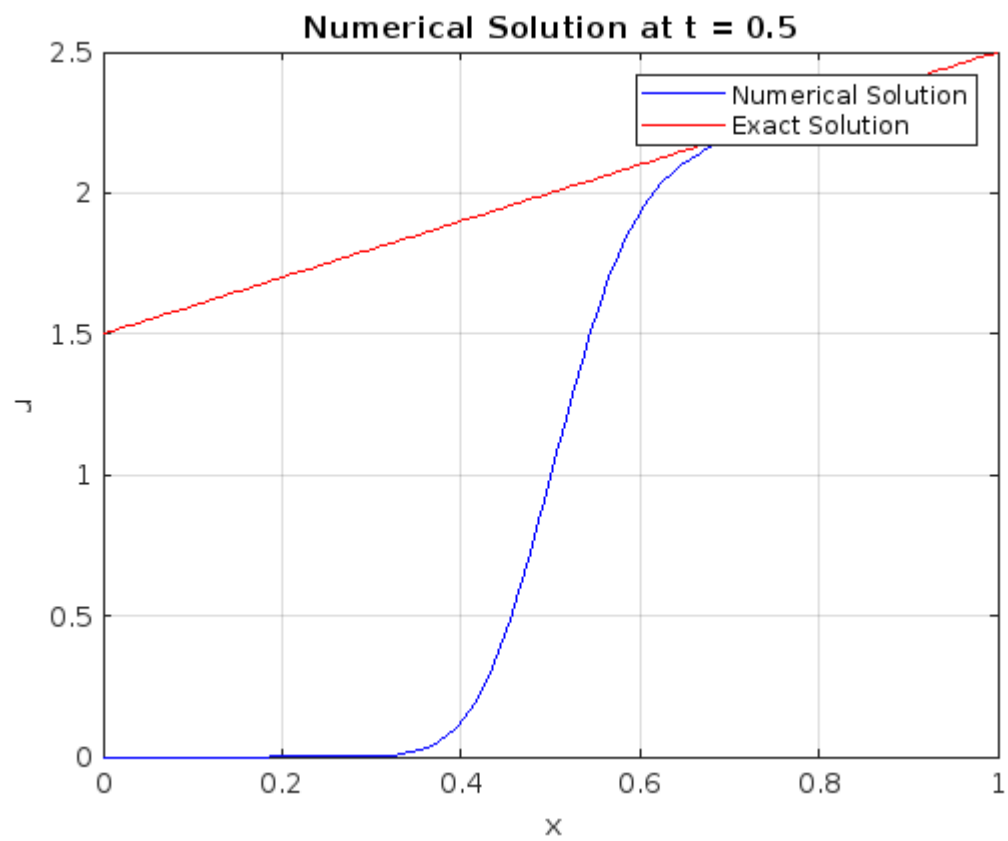
% Parameters
L = 1; % Length of the domain (0 <= x <= 1)
Nx = 100; % Number of spatial grid points
x = linspace(0, L, Nx); % Spatial grid
dx = x(2) - x(1);
T = 0.5; % Final time
Nt = 1000; % Number of time steps
t = linspace(0, T, Nt); % Time grid
dt = t(2) - t(1);
% Initialize the solution matrix
u = zeros(Nx, Nt);
% Initial condition
u(:, 1) = 2 + x;
% Time-stepping loop
for n = 1:Nt - 1
    for i = 2:Nx
        u(i, n + 1) = u(i, n) - (dt / dx) * (u(i, n) - u(i - 1, n));
    end
end
% Exact solution
u_exact = 2 + x - t(end);
% Plot and compare with the exact solution
figure;
plot(x, u(:, end), 'b', x, u_exact, 'r');
legend('Numerical Solution', 'Exact Solution');
xlabel('x');
ylabel('u');
title(['Numerical Solution at t = ', num2str(T)]);
grid on;
% Compute and print the maximum absolute error
error = max(abs(u(:, end) - u_exact));
disp(['Maximum Absolute Error: ', num2str(error)]);

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Maximum Absolute Error: 1.5      1.5101      1.5202      1.5303
1.5404      1.5505      1.5606      1.5707      1.5808      1.5909
1.601       1.6111      1.6212      1.6313      1.6414      1.6515
1.6616      1.6717      1.6818      1.6919      1.702       1.7121
1.7222      1.7323      1.7424      1.7525      1.7626      1.7727
1.7828      1.7929      1.803       1.8131      1.8232      1.8333
1.8434      1.8535      1.8636      1.8737      1.8838      1.8939
1.904       1.9141      1.9242      1.9343      1.9444      1.9545
1.9646      1.9747      1.9848      1.9949      2.0051      2.0152
2.0253      2.0354      2.0455      2.0556      2.0657      2.0758
2.0859      2.096       2.1061      2.1162      2.1263      2.1364
2.1465      2.1566      2.1667      2.1768      2.1869      2.197
2.2071      2.2172      2.2273      2.2374      2.2475      2.2576
2.2677      2.2778      2.2879      2.298       2.3081      2.3182
2.3283      2.3384      2.3485      2.3586      2.3687      2.3788
2.3889      2.399       2.4091      2.4192      2.4293      2.4394
2.4495      2.4596      2.4697      2.4798      2.4899      2.5

```

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