EGME 2050 Computational Methods

Spring 2022

Lab Week 8

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**Problem 1: Section 32.4**

function x = GaussJordan(A,b)

% Pivot code

N=length(A);

ii=0;

for k=1:(N-1)

%Finds the maximum value in the column, not including the rows that have already been sorted.

[m,i]=max(abs(A([k:N],k)));

%Pivots A

A([(ii+1),(i+ii)],:)=A([(i+ii),(ii+1)],:);

%Pivots b

b([(ii+1),(i+ii)],:)=b([(i+ii),(ii+1)],:);

ii=ii+1;

end

% Gauss-Jordan code

Aa=[A b]; %Creats N by N+1 matrix

%Forward elimination

for c=1:N

Aa(c,:)=Aa(c,:)/Aa(c,c);

for r=(c+1):N

Aa(r,:)=Aa(r,:)-Aa(r,c)\*Aa(c,:);

end

end

%Backward elimination

for c=N:-1:2

for r=(c-1):-1:1

Aa(r,:)=Aa(r,:)-Aa(r,c)\*(Aa(c,:)/Aa(c,c));

end

end

%Assigns x to the updated b, N+1 column

x=Aa(:,(N+1));

end