n=1000;

for i=1:2

A=randn(n);

x=randn(n,1);

t=cputime;

for rep=1:100 % compute the product 100 times

b=zeros(n,1);

for j=1:n

for i=1:n

b(i)=b(i)+A(i,j)\*x(j);

end

end

end

matrixsize=n

time=cputime-t

t=cputime;

for rep=1:100

b=zeros(n,1);

b=A\*x;

end

time2=cputime-t

n=2000;

end

>> Q2

matrixsize =

1000

time =

1.5132

time2 =

0.0468

matrixsize =

2000

time =

6.0060

time2 =

0.2184

a=[2 0 0 0; -1 2 0 0; 3 1 -1 0; 4 1 -3 3];

b=[2 3 2 9];

for i=1:size(a,1)

if a(i,i) == 0

return

end

for j=1:i-1

b(i)=b(i)-a(i,j)\*b(j);

end

b(i)=b(i)/a(i,i);

end

b

>> q3

b =

1 2 3 4

a=[3 2 1 0; 0 1 2 3; 0 0 -2 1; 0 0 0 4];

b=[-10 10 1 12];

for i=size(a,1):-1:1

if a(i,i) == 0

return

end

for j=size(a,1):-1:i+1

b(i)=b(i)-a(i,j)\*b(j);

end

b(i)=b(i)/a(i,i);

end

b

>> Q4

b =

-3 -1 1 3