

Jacobi Iterative Method

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```
A=[5 -2 3;-3 9 1;2 -1 -7]
b=[-1;2;3]
N=40
x=[1,1,1]
jacobi(A, b, N)
```

```
function jacobi(A, b, N)
test=all((2*abs(diag(A)))- sum(abs(A),2)>=0);
if test==0
    A([1 2],:) = A([2 1],:);
    b([1 2]) = b([2 1]);
end
```

```
test=all((2*abs(diag(A)))- sum(abs(A),2)>=0);
```

```
if test==0
    A([2 1],:) = A([1 2],:);
    b([2 1]) = b([1 2]);
    A([1 3],:) = A([3 1],:);
    b([1 3]) = b([3 1]);
    disp("not a dominant vector")
end
disp(" dominant vector")
```

```
d=diag(A);
D=diag(d);
disp("Displaying the diagonal matrix")
disp(D)
D_inv=inv(D);
disp("Displaying the inverse of diagonal matrix")
disp(D_inv)
E=A-D;
disp("Displaying remainder matrix")
disp(E)
x=[1;1;1];
T=-D_inv*E;
C=D_inv*b;
```

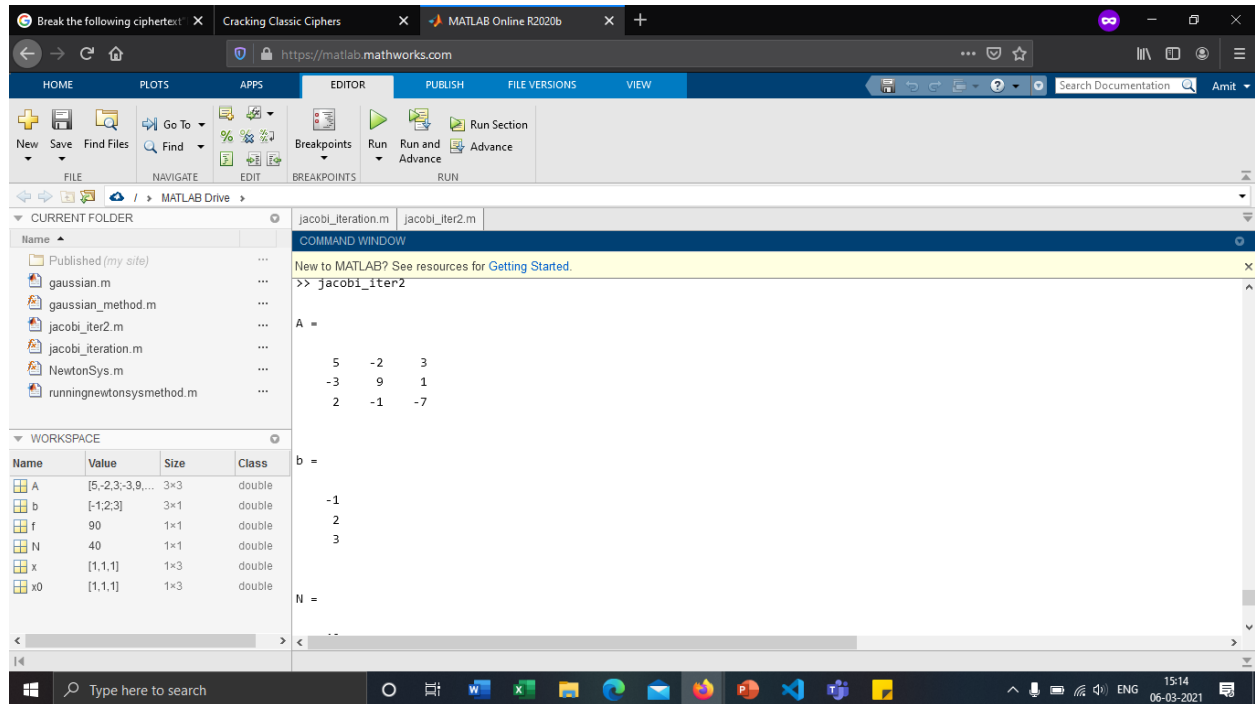
```
for j=1:N
    x=T*x+C;
end
```

```

disp("Here are the result of the following matrix: ")
disp(x)
end

```

OUTPUT



Break the following ciphertext x Cracking Classic Ciphers x MATLAB Online R2020b x +

https://matlab.mathworks.com

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gaussian_method.m ...
jacobi_iter2.m ...
jacobi_iteration.m ...
NewtonSys.m ...
runningnewtonsysthmethod.m ...

WORKSPACE

Name	Value	Size	Class
A	[5,-2,3;-3,9,...	3×3	double
b	[-1;2;3]	3×1	double
f	90	1×1	double
N	40	1×1	double
x	[1,1,1]	1×3	double
x0	[1,1,1]	1×3	double

COMMAND WINDOW

New to MATLAB? See resources for Getting Started.

```

N =
    40

x =
    1    1    1

dominant vector
Displaying the diagonal matrix
    5     0     0
     0     9     0
     0     0    -7

Displaying the inverse of diagonal matrix
    0.2000     0     0
     0    0.1111     0
     0     0   -0.1429

```

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Break the following ciphertext x Cracking Classic Ciphers x MATLAB Online R2020b x +

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```

0     0    -7

Displaying the inverse of diagonal matrix
    0.2000     0     0
     0    0.1111     0
     0     0   -0.1429

Displaying remainder matrix
     0    -2     3
    -3     0     1
     2    -1     0

Here are the result of the following matrix:
    0.1861
    0.3312
   -0.4227

>>

```

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