```
function [e] = E(A)
n=length(A);
e=norm(A-diag(diag(A)),'fro');
end
```

```
function [A,J] = Givens(A,p,q)
n=length(A);
if A(p,q)==0
    c=1;
    s=0;
else
    tao=(A(q,q)-A(p,p))/(2*A(p,q));
    if tao==0
        t=1;
    end
    if tao>0
        t=1/(abs(tao)+sqrt(1+tao^2));
    end
    if tao<0
        t=-1/(abs(tao)+sqrt(1+tao^2));
    end
    c=1/(sqrt(1+t^2));
    s=t*c;
end
ep=zeros(n,1);ep(p)=1;
eq=zeros(n,1);eq(q)=1;
J=eye(n)+(c-1)*(ep*ep'+eq*eq')+s*(ep*eq'-eq*ep');
A=J'*A*J;
end
```

```
function [a,J] = Jacobi(A)
n=length(A);
u=1e-30;
derta=E(A);
J=eye(n);
while 1
    if derta<=u
        break
    end
    for i=1:n-1
        for j=i+1:n
            if abs(A(i,j))>derta
                [A,J0]=Givens(A,i,j);
                J=J*J0;
            end
        end
    end
```

```
    derta=derta/n;
end
a=diag(A);
end


n=50;
A=diag(4*ones(1,n))+diag(ones(1,n-1),1)+diag(ones(1,n-1),-1);
[a,J]=Jacobi(A);
a


a =

    2.0038
    5.9962
    4.0616
    3.9384
    2.4418
    5.8649
    5.4780
    2.8953
    3.3353
    5.1047
    4.3068
    2.0152
    2.0604
    5.9848
    5.9059
    3.6932
    3.5721
    4.7796
    5.6324
    2.0341
    3.4527
    4.4279
    4.5473
    2.0941
    2.1831
    5.9396
    4.6647
    3.2204
    3.1085
    5.9659
    5.8169
    2.2996
    3.0000
    5.0000
    4.8915
    2.2380
    2.1351
    5.7004
    5.3012
    2.3676
```

```
    2.7947
    5.7620
    5.5582
    2.5220
    2.6988
    5.3923
    5.2053
    2.6077
    3.8155
    4.1845
```

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