clc;

display('PER UNIT COMPUTATION OF POWER SYSTEM COMPONENTS');

k=input('Enter the Number of Elements:');

mvab=input('Enter the Base MVA:');

kvb=input('Enter the base KV:');

pu=zeros(k);

for i=1:1:k

ch=input('Enter the Component 1.Generator 2.Transformer 3.Load 4.Transmission Line');

switch(ch)

case 1

mva=input('Enter the MVA of Generator:');

kv=input ('Enter the KV of Generator:');

x=input('Enter the Sub-Transiant Reactance of Generator:');

pu(i)=x\*(kv/kvb)\*(kv/kvb)\*(mvab/mva);

case 2

t=input('Enter the type of Transformer: 1.Step Up Transformer 2.Distribution Transformer');

if (t==1)

mva=input('Enter the MVA of Transformer:');

hkv=input ('Enter the HV side KV of Transformer:');

lkv=input ('Enter the LV side KV of Transformer:');

x=input('Enter the Sub-Transiant Reactance of Transformer:');

kvbn=(hkv/lkv)\*kvb

pu(i)=x\*(lkv/kvb)\*(lkv/kvb)\*(mvab/mva);

end

if(t==2)

mva=input('Enter the MVA of Transformer:');

hkv=input ('Enter the HV side KV of Transformer:');

lkv=input ('Enter the LV side KV of Transformer:');

x=input('Enter the Sub-Transiant Reactance of Transformer:');

k=lkv/hkv;

kvbn=k\*kvbn;

pu(i)=x\*(lkv/kvbn)\*(lkv/kvbn)\*(mvab/mva);

end

case 3

mva=input('Enter the MVA of Load:');

kv=input ('Enter the KV of Load:');

x=input('Enter the Sub-Transiant Reactance of Load:');

pu(i)=x\*(kv/kvbn)\*(kv/kvbn)\*(mvab/mva);

case 4

kv=input ('Enter the KV of Line:');

x=input('Enter the Sub-Transiant Reactance of Line:');

pu(i)=x/(kvbn\*kvbn/mvab);

otherwise

disp('Enter the correct Choice');

end

end

pu

**OUTPUT:**

PER UNIT COMPUTATION OF POWER SYSTEM COMPONENTS

Enter the Number of Elements:6

Enter the Base MVA:300

Enter the base KV:20

Enter the Component 1.Generator 2.Transformer 3.Load 4.Transmission Line1

Enter the MVA of Generator:300

Enter the KV of Generator:20

Enter the Sub-Transiant Reactance of Generator:0.2

Enter the Component 1.Generator 2.Transformer 3.Load 4.Transmission Line2

Enter the type of Transformer: 1.Step Up Transformer 2.Distribution Transformer1

Enter the MVA of Transformer:350

Enter the HV side KV of Transformer:230

Enter the LV side KV of Transformer:20

Enter the Sub-Transiant Reactance of Transformer:.1

Enter the Component 1.Generator 2.Transformer 3.Load 4.Transmission Line4

Enter the KV of Line:230

Enter the HV side KV of Step up Transformer:230

Enter the LV side KV of Step up Transformer:20

Enter the Sub-Transiant Reactance of Line:32

Enter the Component 1.Generator 2.Transformer 3.Load 4.Transmission Line2

Enter the type of Transformer: 1.Step Up Transformer 2.Distribution Transformer2

Enter the MVA of Transformer:300

Enter the HV side KV of Transformer:230

Enter the LV side KV of Transformer:13.2

Enter the Sub-Transiant Reactance of Transformer:0.1

Enter the Component 1.Generator 2.Transformer 3.Load 4.Transmission Line3

Enter the MVA of Load:200

Enter the KV of Load:13.2

Enter the Sub-Transiant Reactance of Load:.2

Enter the Component 1.Generator 2.Transformer 3.Load 4.Transmission Line3

Enter the MVA of Load:100

Enter the KV of Load:13.2

Enter the Sub-Transiant Reactance of Load:.2

pu =

0.2000

0.0857

0.1815

0.0915

0.2745

0.5491

clc;

display('SYMMETRICAL FAULT ANALYSIS');

nb=input('Enter the number of buses:');

nl=input('Enter the number of lines:');

for i=1:1:nl

sb(i)=input('Enter the Starting bus number:');

eb(i)=input('Enter the Ending bus number:');

z(i)=input('Enter the impedence Value:');

shy(i)=input('Enter the halfline charging admitance:');

end

y=zeros(nb,nb);

for i=1:1:nl

sy(i)=1/z(i);

l=sb(i);

m=eb(i);

y(l,l)=y(l,l)+sy(i)+shy(i);

y(m,m)=y(m,m)+sy(i)+shy(i);

y(l,m)=y(l,m)-sy(i);

y(m,l)=y(m,l)-sy(i);

end

y

n=input('Enter the number of Impedence to be added:');

for i=1:1:n

b=input('Enter the bus number:');

az=input('Enter the impedence Value:');

y(b,b)=y(b,b)+(1/az);

end

y

zb=inv(y);

zb

k=input('Enter the faulted Bus Number');

ifault=1/zb(k,k);

vf=zeros(nb);

for i=1:1:nb

vf(i)=(1-zb(i,k)/zb(k,k));

end

vf(k)=0;

vf

for l=1:1:(nb)

for m=1:1:(nb)

ist(l,m)=(vf(l)-vf(m))/zb(l,m);

end

end

ist

**OUTPUT:**

SYMMETRICAL FAULT ANALYSIS

Enter the number of buses:3

Enter the number of lines:3

Enter the Starting bus number:1

Enter the Ending bus number:2

Enter the impedence Value:0.13j

Enter the halfline charging admitance:0

Enter the Starting bus number:1

Enter the Ending bus number:3

Enter the impedence Value:0.08j

Enter the halfline charging admitance:0

Enter the Starting bus number:2

Enter the Ending bus number:3

Enter the impedence Value:0.03j

Enter the halfline charging admitance:0

y =

0.0000 -20.1923i 0.0000 + 7.6923i 0.0000 +12.5000i

0.0000 + 7.6923i 0.0000 -41.0256i 0.0000 +33.3333i

0.0000 +12.5000i 0.0000 +33.3333i 0.0000 -45.8333i

Enter the number of Impedence to be added:2

Enter the bus number:1

Enter the impedence Value:0.25j

Enter the bus number:2

Enter the impedence Value:0.2j

y =

0.0000 -24.1923i 0.0000 + 7.6923i 0.0000 +12.5000i

0.0000 + 7.6923i 0.0000 -46.0256i 0.0000 +33.3333i

0.0000 +12.5000i 0.0000 +33.3333i 0.0000 -45.8333i

zb =

0.0000 + 0.1274i 0.0000 + 0.0981i 0.0000 + 0.1061i

0.0000 + 0.0981i 0.0000 + 0.1215i 0.0000 + 0.1151i

0.0000 + 0.1061i 0.0000 + 0.1151i 0.0000 + 0.1345i

Enter the faulted Bus Number3

vf =

0.2111

0.1439

0

ist=

**-**0.6889i

-1.9999i

-1.2434i

clc;

display('Y-BUS Formation By Singular Transformation Method');

nb=input('Enter the number of Buses:');

nl=input('Enter the number of Elements:');

a=zeros(nb,nl);

zp=zeros(nl,nl);

yp=zeros(nl,nl);

yb=zeros(nb,nb);

for i=1:nl

l=input('Enter the line number:');

sb(i)=input('Enter the starting Bus number:');

if sb(i)>0

a(sb(i),i)=1;

end

se(i)=input('Enter the Ending Bus number:');

if se(i)>0

a(se(i),i)=-1;

end

zp(l,l)=input('Enter the series impedence');

yp(l,l)=inv(zp(l,l));

end

a

coupling=input('Is the line Mutually Coupled? yes=1 no=0; Enter your Option:');

if (coupling==1)

k=input('Enter the number of coupling to be added');

for i=1:k

l=input('Enter the starting Line number');

m=input('Enter the Ending Line number');

z=input('Enter the coupling Impedence');

yp(l,m)=1/z;

yp(m,l)=yp(l,m);

end

end

yb=a\*yp\*a';

yb

**OUTPUT:**

Y-BUS Formation By Singular Transformation Method

Enter the number of Buses:3

Enter the number of Elements:5

Enter the line number:1

Enter the starting Bus number:1

Enter the Ending Bus number:0

Enter the series impedence0.2j

Enter the line number:2

Enter the starting Bus number:1

Enter the Ending Bus number:2

Enter the series impedence0.3j

Enter the line number:3

Enter the starting Bus number:3

Enter the Ending Bus number:1

Enter the series impedence0.3j

Enter the line number:4

Enter the starting Bus number:2

Enter the Ending Bus number:3

Enter the series impedence0.5j

Enter the line number:5

Enter the starting Bus number:2

Enter the Ending Bus number:0

Enter the series impedence0.4j

a =

1 1 -1 0 0

0 -1 0 1 1

0 0 1 -1 0

Is the line Mutually Coupled? yes=1 no=0; Enter your Option:1

Enter the number of coupling to be added2

Enter the starting Line number1

Enter the Ending Line number3

Enter the coupling Impedence0.6j

Enter the starting Line number5

Enter the Ending Line number4

Enter the coupling Impedence0.8j

yb =

0.0000 - 8.3333i 0.0000 + 3.3333i 0.0000 + 1.6667i

0.0000 + 3.3333i 0.0000 -10.3333i 0.0000 + 3.2500i

0.0000 + 1.6667i 0.0000 + 3.2500i 0.0000 - 5.3333i

clc;

display('CALCULATION OF Y-BUS MATRIX BY Gaussian Elimination Method');

nb=input('Enter the number of buses:');

nl=input('Enter the number of lines:');

for i=1:1:nl

sb(i)=input('Enter the Starting bus number:');

eb(i)=input('Enter the Ending bus number:');

z(i)=input('Enter the impedence Value:');

shz(i)=input('Enter the halfline charging Impedence:');

end

y=zeros(nb,nb);

for i=1:1:nl

sy(i)=1/z(i);

shy(i)=1/shz(i);

l=sb(i);

m=eb(i);

y(l,l)=y(l,l)+sy(i)+shy(i);

y(m,m)=y(m,m)+sy(i)+shy(i);

y(l,m)=y(l,m)-sy(i);

y(m,l)=y(m,l)-sy(i);

end

y

k=input('Enter the bus to be Eliminated:');

for l=1:1:(nb)

for m=1:1:(nb)

y(l,m)=y(l,m)-(y(l,k)\*y(k,m))/y(k,k);

end

end

y(k,:)=[];

y(:,k)=[];

y

**OUTPUT:**

CALCULATION OF Y-BUS MATRIX BY Gaussian Elimination Method

Enter the number of buses:3

Enter the number of lines:3

Enter the Starting bus number:1

Enter the Ending bus number:2

Enter the impedence Value:0.05+0.25j

Enter the halfline charging Impedence:0.02j

Enter the Starting bus number:1

Enter the Ending bus number:3

Enter the impedence Value:0.03j

Enter the halfline charging Impedence:0.03j

Enter the Starting bus number:2

Enter the Ending bus number:3

Enter the impedence Value:0.04+0.22j

Enter the halfline charging Impedence:0.12j

y =

1.0e+02 \*

0.0077 - 1.2051i -0.0077 + 0.0385i 0.0000 + 0.3333i

-0.0077 + 0.0385i 0.0157 - 0.6658i -0.0080 + 0.0440i

0.0000 + 0.3333i -0.0080 + 0.0440i 0.0080 - 0.7940i

Enter the bus to be Eliminated:3

y =

1.0e+02 \*

0.0091 - 1.0652i -0.0109 + 0.0570i

-0.0109 + 0.0570i 0.0148 - 0.6634i