SERIES AND PARALLEL CONNECTION

SERIES CONNECTION

1. R CIRCUIT

```
V=input('Enter Voltage (Volts) : ');
R1=input('Enter Resistance 1 (Ohms) : ');
R2=input('Enter Resistance 2 (Ohms) : ');
Equiv_R=R1+R2;
I=V/Equiv_R;
V1=I*R1;
V2=I*R2;
KVL=V1+V2;
fprintf('SERIES CIRCUIT: \n');
```

```
SERIES CIRCUIT:
```

```
fprintf('Equivalent Resistance : %.2f Ohms\n',Equiv_R);
```

```
Equivalent Resistance : 30.00 Ohms
```

```
fprintf('Current,I (Ampere) : %0.2f A\n',I);
```

```
Current,I (Ampere) : 1.67 A
```

```
fprintf('KVL CHECK: \n');
```

```
KVL CHECK:
```

```
fprintf('V1 = %.2f V AND V2 = %.2f V\n',V1,V2);
```

```
V1 = 16.67 V AND V2 = 33.33 V
```

```
fprintf('V = %.2f V AND KVL = %.2f V\n',V,KVL);
```

```
V = 50.00 V AND KVL = 50.00 V
```

2. RLC CIRCUIT

```
V=input('\nEnter Voltage (Volts) : ');
R=input('Enter Resistance (Ohms) : ');
L=input('Enter Inductance(Henry) : ');
C=input('Enter Capacitance(Farad) : ');
XL=2*pi*60*L;
XC=1/(2*pi*60*C);
Z=sqrt(R^2+(XL-XC)^2);
I=V/Z;
VR=I*R;
VL=I*(XL);
VC=I*(XC);
```

```
KVL=VR+(VL-VC);
fprintf('SERIES CIRCUIT WITH RLC: \n');
```

```
SERIES CIRCUIT WITH RLC:
```

```
fprintf('Impedance,Z : %.2f Ohms\n',Z);
```

```
Impedance,Z : 10.00 Ohms
```

```
fprintf('Current,I : %.2f A\n',I);
```

```
Current,I : 5.00 A
```

```
fprintf('KVL CHECK: \n');
```

```
KVL CHECK:
```

```
fprintf('VR = %.2f V, VL = %.2f V and VC = %.2f V\n',VR,VL,VC);
```

```
VR = 50.00 V, VL = 18.85 V and VC = 18.84 V
```

```
fprintf('V = %.2f V AND KVL = %.2f V\n',V,KVL);
```

```
V = 50.00 V AND KVL = 50.01 V
```

PARALLEL CONNECTION

1. R CIRCUIT

```
V=input('\nEnter Voltage (Volts) : ');
R1=input('Enter Resistance 1 (Ohms) : ');
R2=input('Enter Resistance 2 (Ohms) : ');
Equiv_R=(R1*R2)/(R1+R2);
Total_I=V/Equiv_R;
I1=V/R1;
I2=V/R2;
KCL=I1+I2;
fprintf('PARALLEL CIRCUIT: \n');
```

```
PARALLEL CIRCUIT:
```

```
fprintf('Equivalent Resistance : %.2f Ohms\n',Equiv_R);
```

```
Equivalent Resistance : 6.67 Ohms
```

```
fprintf('Current,I : %0.2f A\n',Total_I);
```

```
Current,I : 7.50 A
```

```
fprintf('KCL CHECK: \n');
```

```
KCL CHECK:
```

```
fprintf('I1 = %.2f A AND I2 = %.2f A\n',I1,I2);
```

```
I1 = 5.00 A AND I2 = 2.50 A
```

```
fprintf('Total_I = %.2f A AND KCL = %.2f A\n',Total_I,KCL);
```

```
Total_I = 7.50 A AND KCL = 7.50 A
```

2. RLC CIRCUIT

```
V=input('\nEnter Voltage (Volts) : ');
R=input('Enter Resistance (Ohms) : ');
L=input('Enter Inductance (Henry) : ');
C=input('Enter Capacitance (Farad) : ');
XL=2*pi*60*L;
XC=1/(2*pi*60*C);
Y=1/(sqrt((R1+R2)^2+(XL-XC)^2));
I=V/Y;
IR=V/R;
IL=V/(XL);
IC=V/(XC);
KCL=IR+(IL-IC);
fprintf('PARALLEL CIRCUIT WITH RLC: \n');
```

```
PARALLEL CIRCUIT WITH RLC:
```

```
fprintf('Admittance,Y : %.2f mho\n',Y);
```

```
Admittance,Y : 10.00 mho
```

```
fprintf('Current,I : %0.2f A\n',I);
```

```
Current,I : 5.00 A
```

```
fprintf('KCL CHECK: \n');
```

```
KCL CHECK:
```

```
fprintf('IR = %.2f A , IL = %.2f A and IC = %.2f A\n',IR,IL,IC);
```

```
IR = 5.00 A , IL = 13.26 A and IC = 13.27 A
```

```
fprintf('Total_I = %.2f A AND KCL = %.2f A\n',I,KCL);
```

```
Total_I = 5.00 A AND KCL = 4.99 A
```