

```

1 #include <iostream>
2 #include <string>
3 using namespace std;
4
5 int main() {
6     // Get the circuit info as a string using the getline function.
7     string circuitSpecs;
8     cout << "Circuit Description: ";
9     getline(cin, circuitSpecs);
10
11     // Make an array for the values of the resistances.
12     double resistances[3];
13     for(int i{0}; i < 3; i++)
14     {
15         resistances[i] = stod(circuitSpecs.substr(2 + 2*i, 1));
16     }
17
18
19     // Make an equivalent resistance variable and calculate it depending on the
    type of connection.
20     double totalResistance{};
21     if(circuitSpecs[0] == 'S'){
22         for(int i{0}; i < 3; i++)
23         {
24             totalResistance += resistances[i];
25         }
26     }
27     else
28     {
29         for(int i{0}; i < 3; i++)
30         {
31             totalResistance += (1/resistances[i]);
32         }
33         totalResistance = 1/totalResistance;
34     }
35
36     // Read the voltage applied to the circuit.
37     double voltage{};
38     cout << "Voltage Applied: ";
39     cin >> voltage;
40
41     // Print out the calculated equivalent resistance and circuit
    current.
42     cout << "Equivalent Resistance: " << totalResistance << endl;
43     cout << "Current in the Circuit: " << voltage / totalResistance <<
    endl;
44 }

```

```
Circuit Description: S 1 2 3
Voltage Applied: 3
Equivalent Resistance: 6
Current in the Circuit: 0.5
```

$$R_{eq} = R_1 + R_2 + R_3 = 1 + 2 + 3 = 6 \, \Omega$$

$$I = \frac{V}{R_{eq}} = \frac{3}{6} = 0.5 \, \text{Amp}$$

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```
Circuit Description: P 2 2 2
Voltage Applied: 6
Equivalent Resistance: 0.666667
Current in the Circuit: 9
```

$$R_{eq} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}} = \frac{1}{\frac{1}{2} + \frac{1}{2} + \frac{1}{2}} = 0.667 \, \Omega$$

$$I = \frac{V}{R_{eq}} = \frac{6}{0.667} = 9 \, \text{Amp}$$

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```
Circuit Description: S 4 2 6
Voltage Applied: 7
Equivalent Resistance: 12
Current in the Circuit: 0.583333
```

$$R_{eq} = R_1 + R_2 + R_3 = 4 + 2 + 6 = 12 \, \Omega$$

$$I = \frac{V}{R_{eq}} = \frac{7}{12} = 0.583 \, \text{Amp}$$

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```
Circuit Description: P 9 1 4
Voltage Applied: 9
Equivalent Resistance: 0.734694
Current in the Circuit: 12.25
```

$$R_{eq} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}} = \frac{1}{\frac{1}{9} + \frac{1}{1} + \frac{1}{4}} = 0.735 \, \Omega$$

$$I = \frac{V}{R_{eq}} = \frac{9}{0.735} = 12.25 \, \text{Amp}$$

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```
Circuit Description: S 8 3 3
Voltage Applied: 5
Equivalent Resistance: 14
Current in the Circuit: 0.357143
```

$$R_{eq} = R_1 + R_2 + R_3 = 8 + 3 + 3 = 14 \, \Omega$$

$$I = \frac{V}{R_{eq}} = \frac{5}{14} = 0.357 \, \text{Amp}$$

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