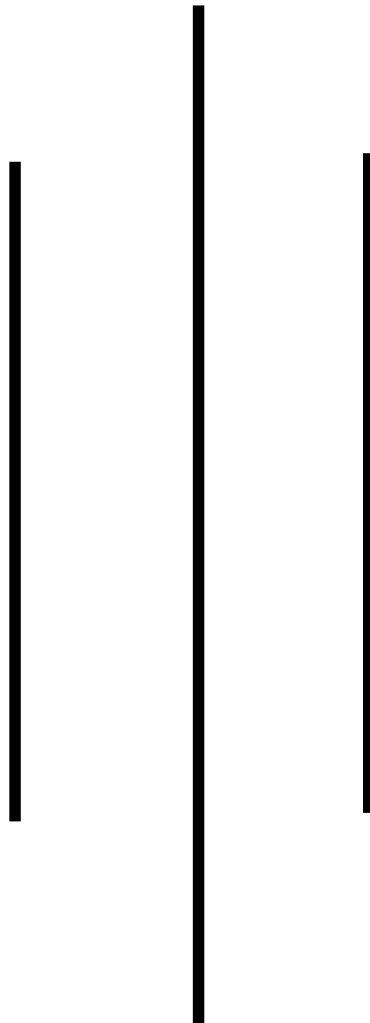


Deerwalk Institute Of Technology

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Simulation and Modeling Practical

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Date:

Background Theory

Current is directly proportional to the voltage. We can write:

$$V \propto I$$

Where, I = Current

V = Voltage.

By removing the proportional sign, we get:

$$\rightarrow V = I * R$$

$$\rightarrow I = \frac{V}{R}$$

Where R is a constant called electrical resistance.

Program coding

```
#include <stdio.h>
int main()
{
    int V[] = {1,2,3,4,5,6,7,8,9,10};    //Voltege
    int R = 3;                            //Resistance
    double current;
    int i;
    FILE *fp;
    fp = fopen("cur.xls","w+");           //Open file to write
    fprintf(fp,"Volt\tCurrent");
    for(i=0;i<10;i++)
    {
        current = (double)V[i]/R;        //calculate current
        fprintf(fp,"\n%d,%lf",V[i],current);
    }
    fclose(fp);
    printf("Simulation completed. See the xls file created");
    return 0;
}
```

Output:

Volt	Current
1	0.333333
2	0.666667
3	1
4	1.333333
5	1.666667
6	2
7	2.333333
8	2.666667
9	3
10	3.333333

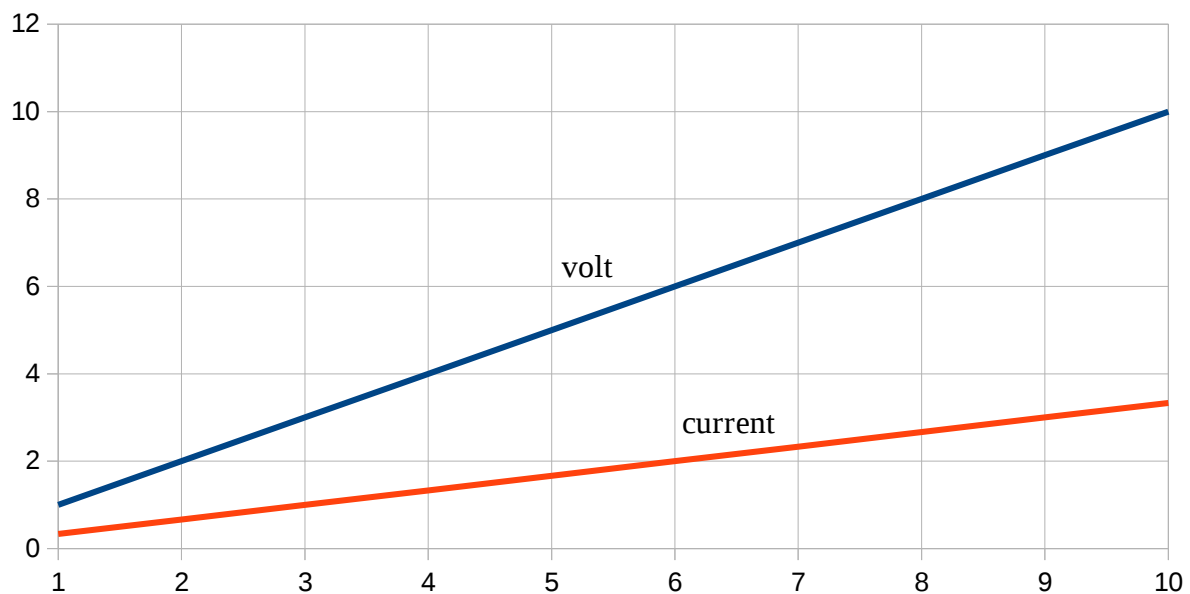


Illustration 1: Graph of Voltage vs. Current

Conclusion:

The theoretical concept of the relationship between voltage and current was simulated using C program and we found that there is a linear relationship between voltage and current if we vary voltage with constant resistance.