Physics 40: Quiz Three

Thursday, April 25, 2019

[**1.**] Consider these two codes:

```
#include <stdio.h>
#include <math.h>
int main(void)
{
    int j;
    j=11;
    do
    {
    j=j-1;
    printf("\n%i",j);
    } while(j>0);
    return 0;
}
```

```
#include <stdio.h>
#include <math.h>
int main(void)
{
    int j;
    j=11;
    do
    {
    j=j+1;
    printf("\n%i",j);
    } while(j>0);
    return 0;
}
```

What will the code on the left write to the screen?
What will happen when you run the code on the right?

[**3.**] Newton's Universal Law of Gravity says that the magnitude of the gravitational force between two point masses is $F = GM_1M_2/r^2$ and that the direction of the force lies along the line connecting the masses. Using this, and assuming M_1 is situated at the origin $(0,0)$ and M_2 is at (x,y), explain why the x component of the force on M_2 is $F_x = -GM_1M_2x/r^3$. A picture might help your explanation.

<u>Extra Credit:</u> What is the x component of the force on M_1?