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Week 6: Programming with pointers

Exercise 1 - Program

Consider the following program fragment:

```
int x;
int y;
int z;
int* w;
int* q;
x = 0;
y = 1;
z = 2;
w = &x;
q = &y;
*w = y;
*q = z;
*w = x + y + z + *q;
*q = x + y + z + *w;
printf("x=%d, y=%d, z=%d",x,y,z);
```

It should output x=7, y=18, and z=2. The program achieves this through the following steps:
1. Integers x, y, and z are defined and pointers w and q are defined.
2. x is set to 0, y is set to 1, z is set to 2. w is set to the memory address of x, and q is set to the memory address of y.
3. w is set to the value of y, which means that x becomes 1.
4. q is set to the value of z, which means that y becomes 2.
5. w is set to be equal to x+y+z+q, so the value of x becomes 7.
6. q is set to be equal to x+y+z+w, so the value of y becomes 18.

Exercise 3c - Linked list

The code becomes stuck in the while loop because the pointer p is never set to be the next value in the linked list. As a consequence of this p!=null never becomes false, and the program prints 1 infinitely (the first value in the list).