In [1]:
```
def get_digits(number):
    digits = []
    result = -1
    while (number != 0):
        result = number % 10
        number = (number - result) / 10
        digits.append(result)
    return digits
```

In [2]:
```
def get_sum_of_squares(digits):
    sum = 0
    for digit in digits:
        sum = sum + digit ** 2
    return sum
```

In [3]:
```
print(get_sum_of_squares(get_digits(123)))
```

```
14.0
```

In [25]:
```
def try_cycle(starting_number):
    cycle = [starting_number]
    this_number = starting_number
    while True:

        this_number = get_sum_of_squares(get_digits(this_number))
        cycle.append(this_number)

        if (this_number == starting_number):
            break;
        if (len(cycle) > 500):
            break;
    if (len(cycle) < 500):
        print("Cycle for " + str(starting_number) + ":")
        print(cycle)
```

In [ ]:
```
print("Any numbers without a cycle listed do not cycle within 500 values.")
for num in range(1, 100000):
    try_cycle(num)
```

```
Any numbers without a cycle listed do not cycle within 500 values.
Cycle for 1:
[1, 1]
Cycle for 4:
[4, 16, 37.0, 58.0, 89.0, 145.0, 42.0, 20.0, 4.0]
Cycle for 16:
[16, 37.0, 58.0, 89.0, 145.0, 42.0, 20.0, 4.0, 16.0]
Cycle for 20:
[20, 4.0, 16.0, 37.0, 58.0, 89.0, 145.0, 42.0, 20.0]
Cycle for 37:
[37, 58.0, 89.0, 145.0, 42.0, 20.0, 4.0, 16.0, 37.0]
Cycle for 42:
[42, 20.0, 4.0, 16.0, 37.0, 58.0, 89.0, 145.0, 42.0]
Cycle for 58:
[58, 89.0, 145.0, 42.0, 20.0, 4.0, 16.0, 37.0, 58.0]
Cycle for 89:
```

```
[89, 145.0, 42.0, 20.0, 4.0, 16.0, 37.0, 58.0, 89.0]
Cycle for 145:
[145, 42.0, 20.0, 4.0, 16.0, 37.0, 58.0, 89.0, 145.0]
```