

Scientific Programming in Python
Worksheet
22 September 2009

Flow control

Remember to start your program with

```
from __future__ import division
from scipy import *
```

Tasks

1. Print the first 10 integers to the screen.
2. Print the first N integers to the screen.
3. Compute $1^2 + 2^2 + 3^2 + \dots + N^2$ using a loop and check that it is equal to $\frac{N(N+1)(2N+1)}{6}$ for any $N \geq 1$.
4. Confirm using a loop that

$$\sum_{i=0}^N x^i = \frac{1 - x^{N+1}}{1 - x}$$

for any $N \geq 0$ and $x \in \mathbb{R}/\{1\}$.

5. Use a loop to find the smallest positive integer N such that $a^N \geq b$ for inputs $a, b > 1$.