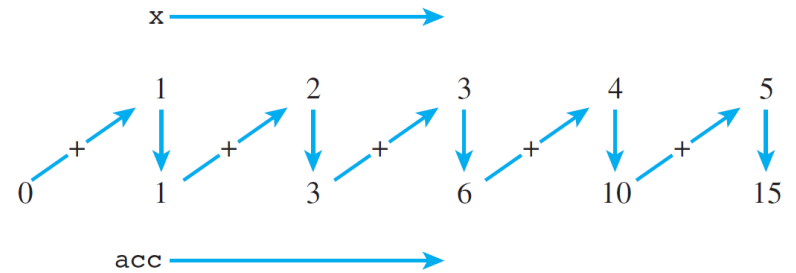


Accumulator Pattern

```
>>> acc=0
>>> for x in range(1,6):
    acc = acc + x
```



Wallis Formula

$$\frac{2}{1} \cdot \frac{2}{3} \cdot \frac{4}{3} \cdot \frac{4}{5} \cdot \frac{6}{5} \cdot \frac{6}{7} \cdot \frac{8}{7} \cdot \frac{8}{9} \cdots = \frac{\pi}{2}$$

- Product of terms
- Use accumulator pattern again
 - This time multiply instead of add
 - Need to initialize with 1 not 0

$$\begin{array}{c} \text{Pair 1} \\ \boxed{\frac{2}{1} \times \frac{2}{3}} \end{array} \times \begin{array}{c} \text{Pair 2} \\ \boxed{\frac{4}{3} \times \frac{4}{5}} \end{array} \times \begin{array}{c} \text{Pair 3} \\ \boxed{\frac{6}{5} \times \frac{6}{7}} \end{array} \times \dots$$

In Class Exercise: Factorial

- Write the **contract** and implementation of a function called factorial that computes the product of the first N numbers where N is a parameter.
- `>>> factorial(2)`
- 2
- `>>> factorial(3)`
- 6
- `>>> factorial(4)`
- 24

In Class Exercise: Triangle

- Groups of 2
- Write the **contract** and implementation of a procedure `triangle` that takes a height of a triangle and prints out a right triangle.

- `>>> triangle(2)`
- *
- **
- `>>> triangle(4)`
- *
- **
- ***
- ****

