

Writing exercise

1. Argument sequence:

$N = 1 \Rightarrow 1$

$N = 2 \Rightarrow 1$

$N = 3 \Rightarrow 10, 5, 16, 8, 4, 2, 1$

$N = 4 \Rightarrow 2, 1$

$N = 5 \Rightarrow 5, 16, 8, 4, 2, 1$

$N = 6 \Rightarrow 6, 3, 10, 5, 16, 8, 4, 2, 1$

$N = 7 \Rightarrow 22, 11, 34, 17, 52, 26, 13, 40, 20, 10, 5, 16, 8, 4, 2, 1$

$N = 8 \Rightarrow 4, 2, 1$

$N = 9 \Rightarrow 28, 14, 7, 22, 11, 34, 17, 52, 26, 13, 40, 20, 10, 5, 16, 8, 4, 2, 1$

2. 2.1 Base cases are 1 and -1

2.2 Recursive case occurs when base > limit

2.3 a. $\text{print}(\text{puzzle}(14,10)) \Rightarrow -1$

b. $\text{print}(\text{puzzle}(4,7)) \Rightarrow 840$ (4x5x6x7)

c. $\text{print}(\text{puzzle}(0,0)) \Rightarrow 1$

3. $\text{show}(123) \Rightarrow 3\ 2\ 1$

4. $\text{show}(134) \Rightarrow 4\ 3\ 1\ 0$

5. $\text{show}(145) \Rightarrow 5\ 4\ 1\ 1\ 4\ 5$

6. $\text{def sum}(n):$

 if $n == 1$:

 return 1

 else:

 return $1/n + \text{sum}(n - 1)$

7.

8. $\text{ex237}(6) \Rightarrow 6\ 4\ 2\ 1\ 1\ 3\ 1\ 2\ 4\ 6$

9. $\text{ex238}(6) \Rightarrow 32$.