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Analysis of Algorithms - Homework 0

1.

i(4, s[1,3,2])
i(4, i(1, s([3,2])))
i(4, i(1, i(3, s([2]))))
i(4, i(1, i(3, i(2, s([])))))
i(4, i(1, i(3, **i**(2, []))))
i(4, i(1, **i**(3, [2])))
i(4, i(1, i(3 :: **i**(2, []))))
i(4, i(1, **i**(2, [3])))
i(4, **i**(1, [2,3]))
i(4, 1 :: **i**([2,3]))
i(4, 1 :: 2 :: **i**(3,[]))
i(4, [1,2,3])
1 :: **i**(4, [2,3])
1 :: 2 :: **i**(4, [3])
1 :: 2 :: 3 :: **i**(4, [])
[1,2,3,4]

2. The selection sort algorithm would look similar to the following pseudocode:

s([]) = []
min = s(x < xs)
s(x :: xs) = s(min) + [x]

3. See hw0.py
4. See hw0.py
5. See hw0.py
6. See hw0.py
7. See hw0.py
8. See hw0.py
9.
   a. accum = 1
      accum = b^0
      b^(n+1) = b^n * accum
   b. If n = 0 → accum
      Else if n = 1 → b
      Else → powIt(b, n - 1, accum * b)
   c. See hw0.py