PennX: SD3x
Algorithm Design and Analysis

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Quiz 1.1

Given an array A, let's say that there is an inversion between indices i and j if i < j but A[i] > A[j].

What is the array containing the elements {1, 2, 3, 4, 5, 6} that has the maximum number of inversions?

{1, 2, 3, 4, 5, 6}

{1, 2, 3, 4, 5, 6}

i < j 2 < 3 ✓

A[i] > A[j] 2 > 3 ✗

How many inversions does the array from the previous question have?

{6, 5, 4, 3, 2, 1}

i < j A[i] > A[j]

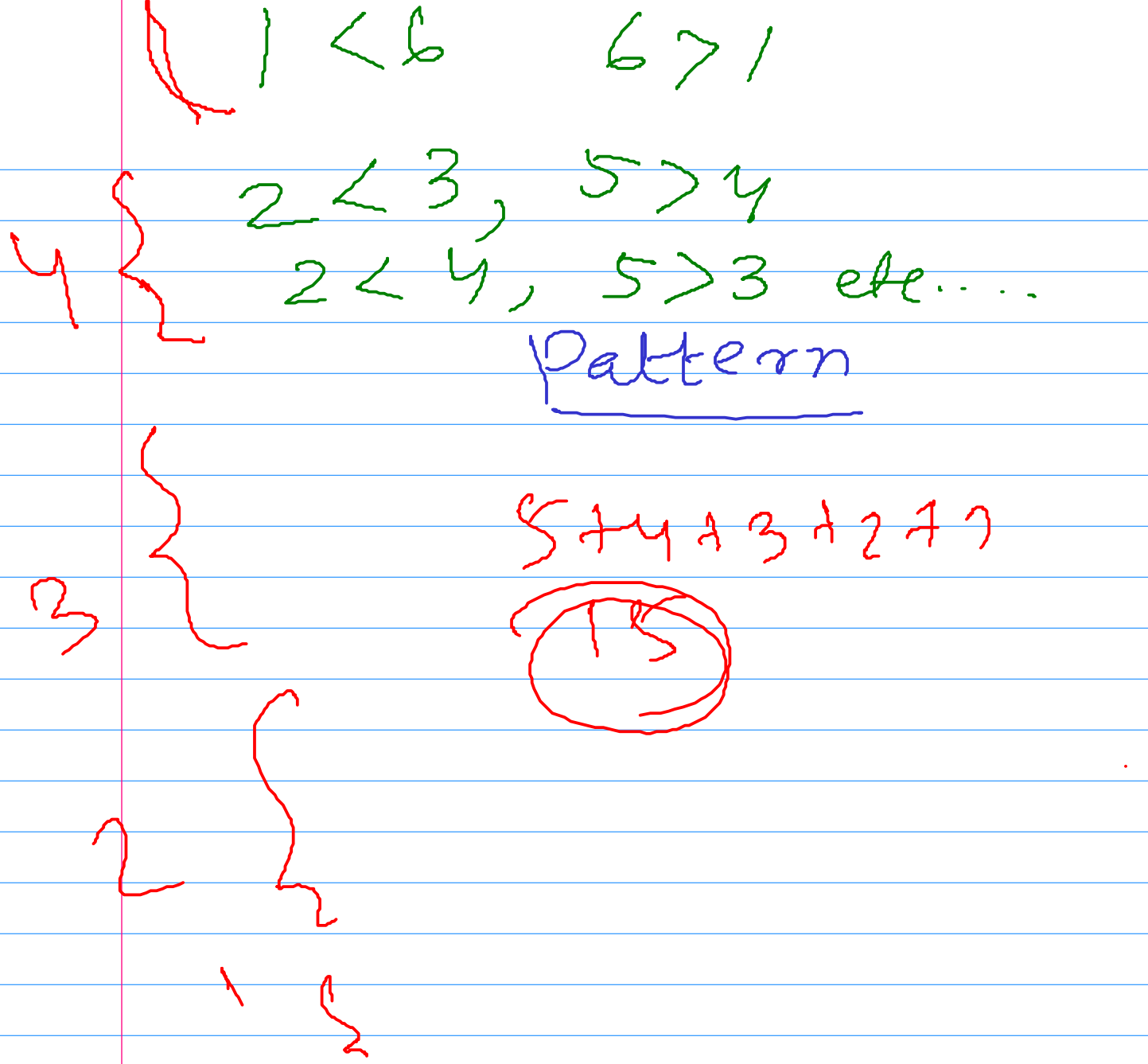
1 < 2 , 6 > 5

1 < 3 6 > 4

1 < 4 6 > 3

1 < 5 6 > 2

5



What is the most number of inversions possible for an array of n elements?

n-1 n

$5 \times 6 = 30$

$\frac{30}{2} = 15$

$\frac{n(n-1)}{2}$