

Step-1

We have to find the number of exchanges will permute $(5, 4, 3, 2, 1)$ back to $(1, 2, 3, 4, 5)$

And we have to find the number of exchanges to change $(6, 5, 4, 3, 2, 1)$ back to $(1, 2, 3, 4, 5, 6)$, one is even and the other is odd.

For $(n, \dots, 1)$ to $(1, \dots, n)$, we have to show that $n = 100$ and 101 are even, $n = 102$ and 103 are odd.

Step-2

First we exchange 1 and 5 then it becomes $(1, 4, 3, 2, 5)$, then we exchange 4 and 2 then it becomes $(1, 2, 3, 4, 5)$.

It requires 2 exchanges to permute $(5, 4, 3, 2, 1)$ back to $(1, 2, 3, 4, 5)$

Step-3

First we exchange 1 and 6 then 2 and 5 then 3 and 4.

Therefore the number of exchanges to be perform that $(6, 5, 4, 3, 2, 1)$ back to $(1, 2, 3, 4, 5, 6)$ is 3.

For $n = 100$ there are 50 exchanges and then 51 exchanges for $n = 102$ requires.