Assignment 1

This is the algorithm that has been followed to solve genome rearrangement due to reversals.
This algorithm is called "break point reversal".

<u>Algorithm</u> -

```
ImprovedBreakpointReversalSort(p)
     while b(π) > 0
          if π has a decreasing strip
               Among all possible reversals, choose reversal ρ that
               minimizes b(π • ρ)
          else
               Choose a reversal r that flips an increasing strip in
               π
          π <— π • ρ
output π
return
```

π represents the permutation,
b(π) represent the numbers of breakpoints in the permutation,
ρ represents reversal.

When implemented the algorithm performs close to the optimal solution. Following are the
observations-

Simulated	Algorithm
0	0
1	1
5	5
10	10
20	22
50	51
75	75
100	99
200	206
400	430
500	535
800	739

Table above shows how the number of simulated flips differ from the flips made by the
algorithm. The graph for this observation is below -

Algorithm