MinDistance

1.)Solving the right summation formulae using formula 1 on the right:

Where u = (n-1)

Gives us:

2.) So, we now take *n* out as a constant which gives us : 3.) Using the formula 1 again where u=(n-1) we get: n\*n   
  
So big-theta of minDistance is (n^2).

MinDistance2:

1. Solving the right summation formulae with formula 1 from appendix:

Where u=(n-1) and l=(i+1)

Give us :

1. Re-writing that, substituting u=n-1 gives us :
2. Solving using formula 2 from appendix gives us (n-1)(n-1+1)/2  
   which simplifies to 0.5(n^2-n)

So big theta of minDistance2 is (n^2).

Functionality Testing – minDistance & minDistance2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test Case | Test Instance | Expected Output | Actual Output | Test Result |
| Array with same elements | { 5, 5, 5, 5, 5, 5, 5, 5, 5} | 0 | 0 |  |
| Array with same negative elements | { -9,-9,-9,-9,-9,-9,-9} | 0 | 0 |  |
| Array with two elements | {9,1} | 8 | 8 |  |
| Array with negative elements | { -4, -9, -7, -1, -90, -100, -56, -24 }; | 2 | 2 |  |
| Array with one element |  |  |  |  |
| Array with random elements | { 2,-20,56,78,13,45,80,100 } | 2 | 2 |  |
| Array with 0s | { 0,0,0,0,0,0} | 0 | 0 |  |