Task A:

Array findSmallest (keytype N[], int m)

{

Array mins

Int prevMin = -1000000

Int minimum

For (int I = 0; I < m; I++)

{

Minimum = 1000000

For (int j = 0; j < n; j++)

{

If (N[j] < minimum && N[j] > prevMin)

{

Minimum = N[j]

}

}

Mins[i] = minimum

prevMin = minimum

}

Return mins

}

Task B:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| n= | 10 | 30 | 40 | 50 | 60 | 65 | 70 |
| T (s) | 0.0000242 | 0.0183811 | 1.33 | 156.44 | N/A | N/A | N/A |
| T/2n/2 | 7.5625x10-7 | 5.609x10-7 | 1.268x10-6 | 4.662x10-6 | N/A | N/A | N/A |

As n goes to infinity, T/2n/2 seems to be getting larger.

Task C:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| n= | 50 | 100 | 1,000 | 10,000 | 50,000 | 1,000,000 |
| T (s) | 4x10-6 | 7.8x10-6 | 3.51x10-5 | 2.783x10-4 | 0.0011029 | 0.0072619 |
| T/n | 8x10-8 | 7.8x10-8 | 3.51x10-8 | 2.783x10-8 | 2.2058x10-8 | 7.2619x10-9 |

As n goes to infinity, T/n seems to be shrinking ever so slightly.