Chapter 2 - Big O

Submit Assignment

Due Sunday by 11:59pm **Points** 10 **Submitting** a file upload
File Types doc and docx **Available** after Sep 15 at 12am

Again, turn in a doc with your answers interlaced with the questions. Color my questions gray and your answers black. And I'm sorry Canvas can't handle tabs: copy paste this in to VS and it will fix it.

1. Find the complexity of the function used to find the kth smallest integer in an unordered array of integers:

```
int selectkth(int a[], int k, int n) {
int i, j, mini, tmp;
for (i = 0; i < k; i++) {
mini = i;
for (j = i+1; j < n; j++)
if (a[j]<a[mini])
mini = j;
tmp = a[i];
a[i] = a[mini];
a[mini] = tmp;
}
return a[k-1];
```

2. Determine the complexity of the following implementations of the algorithms for adding, multiplying, and transposing n 3 n matrices:

```
for (i = 0; i < n; i++)
for (j = 0; j < n; j++)
a[i][j] = b[i][j] + c[i][j];
for (i = 0; i < n; i++)
```

```
for (j = 0; j < n; j++)
for (k = a[i][j] = 0; k < n; k++)
a[i][j] += b[i][k] * c[k][j];
for (i = 0; i < n - 1; i++)
for (j = i+1; j < n; j++) {
tmp = a[i][j];
a[i][j] = a[j][i];
a[j][i] = tmp;
}
```

3) If something is O(n^3), is it also O(n^2) ?

4) If an algorithm had an average case of O(n), a best case of O(log n), and a worst case of O(n^2), what is its overall Big O?

5) What is #4's Omega?