## Assignments #2

Due by 9:20 AM, Wednesday, 10/12/2011

## Note: 16 points in total. Hardcopy submission is required! Please staple your HW solution papers if it has multiple pages!

- 1. Explain why, if T(n) is O(n), then it is also correct to say T(n) is O(n<sup>2</sup>). (2 points)
- 2. For the following code segments, determine the time efficiency T(n) using the Big-Oh notation. You MUST follow the steps we discussed in class to give the Big-Oh notation for each problem. If you give the Big-Oh notation without the right analysis process, you will get at most 50% of the points. Hardcopy is required for submission! (each problem has 2 points)

```
[1]

n = 0;

sum = 0;

cin >> x;

while (x != -9999999) {

n++;

sum += x;

cin >> x;

}

mean = sum / n;

[2]

for (int i = 0; i < n; i++)

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

c[i][j] = a[i][j] + b[i][j];
```

```
[3]
for (int i = 0; i < n; i++)
for (int j = 0; j < n; j++) {
    c[i][j] = 0;
    for (int k = 0; k < n; k++)
        c[i][j] += a[i][k] * b[k][j];
}
```

[4]

```
for (int i = 0; i < n -1; i++) {
for (int j = 0; j < n - 1; j++)
if (x[j] > x[j+1]) {
temp = x[j];
x[j] = x[j+1];
x[j+1] = temp;
}
```

[5] while (n >= 1) n /= 2;

```
[6]

x = 1;

for (int i = 0; i < n -1; i++) {

for (int j = 1; j <= x; j++)

cout << j << endl;

x *= 2;

}
```

```
[7]
long fun(long x, unsigned n) {
    if (n == 0)
        return 1;
    return x + fun(x, n-1);
}
```