Pop Quiz 1

CS330, Algorithm Analysis, Fall 2017

Problem 1. Sort the following complexities from highest to lowest:
$O(3^n), O(n), O(n!), O(nlog(n)), O(n^2), O(n^2log(n)), O(n^3)$

Problem 2. What is the complexity of:

(a) $T(n) = 6nlogn + logn$

(b) $T(n) = n^3 + n^2logn + 3n$

(c) $T(n, i) = n + i$ where $i <= n$

(d) $T(n) = nlogn + n^2 + n!$

Problem 3. $f(n)$ is $O(n^2)$ means n^2 bounds $f(n)$ from:

(a) Above

(b) Below

(c) Above and below

Problem 4. $f(n)$ is $\Omega(n^2)$ means n^2 bounds $f(n)$ from:

(a) Above

(b) Below

(c) Above and below

Problem 5. $f(n)$ is $\Theta(n^2)$ means n^2 bounds $f(n)$ from:

(a) Above

(b) Below

(c) Above and below

Problem 6. Prove that $n + 7 = O(n^2)$

Problem 7. Prove that the result of the following algorithm is 2^A

```
ALG(A)
{
        R = 1
        I = 0
        while (I<A)
        {
                R = R * 2
                I = I + 1
        }
        return R
}
```

Pop Quiz 1 - Answersheet

DATE: NAME:

Problem 1.

1) 2) 3) 4) 5)

6) 7)

Problem 2.

a) b) c) d)

Problem 3: **Problem 4:** **Problem 5:**

Problem 6:

Problem 7: