

2) (10 pts) ANL (Algorithm Analysis)

a) (5 pts) Given that a function has time complexity $O(n^2)$, if the function takes 338 ms for an input of size 13000, how long will the same function take for an input of size 8000?

b) (5 pts) What is the run-time of the segment of code below, in terms of the variables n and k ? Please provide a Big-Oh bound and briefly justify your answer. (Assume k has already been defined as set to a value prior to the code segment shown.)

```
int i, total = 0;
for (i=0; i<n; i+=2) {
    int start = k;
    while (start > 0) {
        total += ((k|i) & start);
        start /= 2;
    }
}
```