

HW1(deadline:2014/10/8)

8. Determine the big-O notation for the following:

- a. $5n^{52} + n^{25}$
- b. $6\log(n) + 9n$
- c. $3n^4 + n\log(n)$
- d. $5n^2 + n^{32}$

12. If the efficiency of the algorithm `doIt` can be expressed as $O(n) = n^2$, calculate the efficiency of the following program segment:

```
for (i = 1; i <= n; i++)
    for (j = 1; j < n, j++)
        doIt (...)
```

14. Given that the efficiency of an algorithm is $5n^2$, if a step in this algorithm takes 1 nanosecond (10^{-9} seconds), how long does it take the algorithm to process an input of size 1000?

22. Write a compare function (see Program 1-6) to compare two strings.

32. Rewrite Program 1-4 to create a list of nodes. Each node consists of two fields. The first field is a pointer to a structure that contains a student id (integer) and a grade-point average (float). The second field is a link. The data are to be read from a text file.

Then write a program to read a file of at least 10 students and test the function you wrote. You will also need to use the generic compare code in Program 1-6 in your program.