

CmpE 300 - 1st Assignment

Posted 25.10.2004

Please answer the following questions and submit your answers to your assistant until 17:00 Monday, November 1, 2004. The sole purpose of this homework is to familiarize you with the processes involved in answering complexity related questions. Please work on them by your own.

Please do not submit just an answer, but show all your reasoning, and how you arrive at the answers. For any further questions, contact the assistant.

Question 1 (50 pts.): Prove or disprove:

$$O\left(\left(\frac{n^2}{\log \log n}\right)^{\frac{1}{2}}\right) = O(\lfloor \sqrt{n} \rfloor).$$

Question 2 (50 pts.): What does the following function return (as a function of n)? What is the worst-case running time in big-O notation?

```
function loops(n)
1.   m = 0
2.   for k = 1 to n do
3.       for l = 1 to k do
4.           for i = l to l + k do
5.               m = m + 1
6.           endfor
7.       endfor
8.   endfor
9.   return(m)
10.  end
```

Important note: See the general information document in the Download Files section of the course web page.