

Exercise Session

1. For each of the following functions state its complexity class (big-Oh):

$$f(n) = \sum_{i=1}^n i = 1 + 2 + \dots + (n - 1) + n$$

$$g(n) = \sum_{i=1}^{\lfloor n/2 \rfloor} 2i = 2 + 4 + 6 + \dots + n$$

Hint: you can safely assume that n is an even number.

2. (a) Argue that $\log_2 n = O(\log_{10} n)$,
 (b) Argue that $\log_a n = O(\log_b n)$ for any $a > 1, b > 1$
3. Formulate loop invariants for Programs 1.14 p. 32 + 1.15 p. 33
4. GT Ex. C-2.31 p. 135 , GT Ex. R-2.10 p. 132 .

Problems For Self-Study

- What is the complexity class (big-Oh) of the following function?

$$h(n) = \sum_{i=1}^{\lfloor n/2 \rfloor} (2i - 1) = 1 + 3 + 5 + \dots + n$$

Hint: you can safely assume that n is an odd number.

- Exercises R-2.7, R-2.8, R-2.9, R-2.11, R-2.12, R-2.16, R-2.17 p. 132
- Exercises C-2.10 p. 133

Homework Assignment

Exercises R-2.13, R-2.15, p. 132 and C-2.9 p. 133 [2-3h]

Deadline: before the lecture on February 21.