

Data Structures and Algorithms – CS2402

Exercises on Algorithms Analysis

For all the following exercises, find the running time function. Detail the steps that lead you to the result.

Exercise 1 *for (int i = 0; i < n; i++)*
 sum++;

Exercise 2 *for (int i = n; i < p; i++)*
 sum++;

Exercise 3 *for (int i = n; i ≤ p; i++)*
 sum++;

Exercise 4 *for (int i = n; i ≥ p; i--)*
 sum++;

Exercise 5 *for (int i = 0; i < n; i = +2)*
 sum++;

Exercise 6 *for (int i = 0; i < n; i = +k)*
 sum++;

Exercise 7 *for (int i = 0; i < n; i = ++)*
 my_procedure; // where my_procedure is known to run in running time p(n)

Exercise 8 *for (int i = 0; i < n; i = ++)*
 for (int j = 0, j < n, j = ++)
 sum++;

Exercise 9 *for (int i = 0; i < n; i = ++)*
 for (int j = 0, j < i, j = ++)
 sum++;

Exercise 10 *for (int i = 0; i < n; i = +k)*
 for (int j = 0, j < i, j = +m)
 sum++;