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Pledge: I pledge my Honor that I have abided by the Stevens honor system

Give the asymptotic complexity of the following functions. Choose the most appropriate notation from among , , and . Give only a single answer for each question (giving more than one answer will result in a zero for that question).

1. **void** **function1**(**int** n) {

**for** (**int** i = 1; i <= n; i++) {

**for** (**int** j = i; j <= n; j += 2) {

cout << "\*";

}

}

}

Answer: **(n^2)**

1. **void** **function2**(**int** n) {

**int** count = 0;

**for** (**int** i = 1; i \* i \* i <= n; i++) {

count++;

}

cout << count;

}

Answer: **(n^1/3)**

1. **void** **function3**(**int** n) {

**int** count = 0;

**for** (**int** i = 1; i \* i <= n; i++) {

**for** (**int** j = 1; j + n/2 <= n; j++) {

**for** (**int** k = 1; k <= n; k \*= 2) {

count++;

}

}

}

cout << count;

}

Answer:  **((n^(3/2))(log 2 (n))/2)**

1. **void** **function4**(**int** n) {

**int** count = 0;

**for** (**int** i = n/2; i <= n; i++) {

**for** (**int** j = 1; j <= n; j \*= 2) {

**for** (**int** k = 1; k <= n; k \*= 2) {

count++;

}

}

}

cout << count;

}

Answer:

1. **void** **function5**(**int** n) {

**if** (n % 2 == 0) {

**return**;

}

**for** (**int** i = 1; i <= n; i++) {

**for** (**int** j = 1; j <= n; j++) {

cout << "\*";

**break**;

}

}

}

Answer: **(n)**

1. **void** **function6**(**int** n) {

**int** count = 0;

**for** (**int** i = 1; i <= n/2; i++) {

**for** (**int** j = 1; j <= n/3; j++) {

**for** (**int** k = 1; k <= n/4; k++) {

count++;

}

}

}

cout << count;

}

Answer:

1. **void** **function7**(**int** n) {

**for** (**int** i = 1; i <= n; i++) {

**for** (**int** j = 1; j <= n; j += i) {

cout << "\*";

}

}

}

Answer:

1. **void** **function8**(**int** n) {

**int** i = 1, s = 1;

**while** (s <= n) {

i++;

s += i;

cout << "\*";

}

}

Answer:

1. Processing Arrays
   1. Suppose you have an unsorted array of integers of length and want to sum all the elements inside it. What is the running time of your algorithm? **(n)**
   2. Suppose you have an unsorted array of integers of length and want to determine if all the values inside are positive. What is the running time of your algorithm? **O(n)**
   3. Suppose you have a sorted array of integers of length and want to determine the median value. What is the running time of your algorithm?  **(1)**
2. True or False: Answer: **True**

Then, if true, prove it by giving integer values for the required constants , , and . Choose the tightest values possible for the and constants. If false, show a contradiction.

**5n^2 <= 5n^2+4n+8 <=6n^2 for all n >=6**