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COM 301

Assignment 1

1. Functions grow in following order

* 2/N
* 37
* N
* N log log N
* N log N
* N log (N2)
* N log2 N
* N1.5
* N2
* N2 logN
* N3
* 2N/2
* 2N

NlogN and N log N2 grow at the same rate.

1. Run time
2. **Running time is O(n) because the loop is iterating n times**
3. **Running time is O(n2) because loop is iterating n2times**
4. **Running time is O(n3) because loop is iterating n3 times**
5. Programming assignment
6. **Running time is O (1) + O(n\*1) = O(n)**
7. **Running time is O (1) + O(n\*n\*1) = O(n2)**
8. **Running time is O (1) + O(n\*** **n2) = O(n3)**

The following code includes all 3 fragments:

//Includes cases 1, 2, and 3

#include<iostream>

#include <time.h>

using namespace std;

int main()

{

//Initialise the start time.

clock\_t startTime = clock();

//Initialise the variables.

int n, sum = 0, ch, i, j;

// user enters values of n

cout << "Enter the value of n";

cin >> n;

// user enters the choice of case

cout << "Enter the choice (1-3)";

cin >> ch;

//proceed according to choice

switch (ch)

{

case 1:

// apply first code

for (int i = 0; i < n; i++)

++sum;

// prompt execution time

cout << double(clock() - startTime) / (double)CLOCKS\_PER\_SEC << " seconds." << endl;

case 2:

// apply second code

for (int i = 0; i < n; ++i)

for (int j = 0; j < n; ++j)

++sum;

// prompt execution time

cout << double(clock() - startTime) / (double)CLOCKS\_PER\_SEC << " seconds." << endl;

case 3:

// apply third code

for (i = 0; i < n; ++i)

for (j = 0; j < n \* n; ++j)

++sum;

// prompt execution time

cout << double(clock() - startTime) / (double)CLOCKS\_PER\_SEC << " seconds." << endl;

system("pause");

}

}







