Eric Blasko

CSE 330

Winter 2018

Lab 2 – Time Complexity

* **Status**

100% complete

* **Complexity Analysis**

O(n²) where n is the size of input

* **Source Code**

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\*Eric Blasko

\*bubble.cpp

\*01/24/2018

\*This program creates a vector of random integers of size n, which is based

\*off of users input.The vector is then sorted and printed to console

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#include <iostream>

#include <vector>

using namespace std;

void bubble(vector<int>&);

//Main function creates a vector of random integers, sorts it, and prints it

int main()

{

srand(time(0));

int n;

cout << "Enter n: ";

cin >> n;

vector<int> v(n);

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

{

v[i] = rand()% 1000000;

}

bubble(v);

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

{

cout << v[i] << endl;

}

}

//This function sorts a vector that was passed by reference

void bubble(vector<int>& v)

{

for(int i = v.size()-1; i > 0; i--)

{

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

{

if (v[j] > v[j+1])

swap(v[j], v[j+1]);

}

}

}

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\* Eric Blasko

\* select.cpp

\* 01/24/2018

\* This program creates a vector of random integers of size n, which is based

\* off of users input.The vector is then sorted and printed to console

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#include <iostream>

#include <vector>

using namespace std;

void select(vector<int>&);

//Main function creates a vector of random integers, sorts it, and prints it

int main()

{

srand(time(0));

int n;

cout << "enter n: ";

cin >> n;

vector<int> v(n);

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

{

v[i] = rand()%1000000;

}

select(v);

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

{

cout << v[i] << endl;

}

}

//This function sorts a vector that was passed by reference

void select(vector<int>& v)

{

for(int i = 0; i < v.size()-1; i++)

{

for(int j = i+1; j < v.size(); j++)

{

if(v[i] > v[j])

{

swap(v[i], v[j]);

}

}

}

}

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\* Eric Blasko

\* insert.cpp

\* 01/24/2018

\* This program creates a vector of random integers of size n, which is based

\* off of users input.The vector is then sorted and printed to console

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

#include <iostream>

#include <vector>

using namespace std;

void insert(vector<int>&);

//Main function creates a vector of random integers, sorts it, and prints it

int main()

{

srand(time(0));

int n;

cout << "Enter n: ";

cin >> n;

vector<int> v(n);

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

{

v[i] = rand() % 1000000;

}

insert(v);

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

{

cout << v[i] << endl;

}

}

//This function sorts a vector that was passed by reference

void insert(vector<int>& v)

{

int elem, j, i;

for(i = 1; i < v.size(); i++)

{

elem = v[i];

for(j = i-1; (j >= 0) && (elem < v[j]); j--)

{

v[j+1] = v[j];

}

v[j+1] = elem;

}

}

* **Sample Runs**

**Bubble Sort**

Script started on 2018-01-22 15:45:34-0800

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output[7Pg++ insert.cpp-c insert.cppbubble.cppinsert.cppbubble.cpp

]777;notify;Command completed;g++ -c bubble.cpp]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ g++ -c bubble.cpptime ./a.out > output[7Pg++ insert.cpp-c insert.cppbubble.cpptime ./a.out > output[7Pg++ bubble.cpp

]777;notify;Command completed;g++ bubble.cpp]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ g++ bubble.cpp-c bubble.cpptime ./a.out > output

1000

real 0m4.615s

user 0m0.014s

sys 0m0.004s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

1000

real 0m3.400s

user 0m0.014s

sys 0m0.004s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

1000

real 0m2.591s

user 0m0.015s

sys 0m0.002s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

1000

real 0m2.145s

user 0m0.017s

sys 0m0.001s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

^[[A^[[A 1000

real 0m4.905s

user 0m0.017s

sys 0m0.001s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

2000

real 0m2.456s

user 0m0.039s

sys 0m0.003s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

2000

real 0m2.081s

user 0m0.041s

sys 0m0.002s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

2000

real 0m2.473s

user 0m0.040s

sys 0m0.003s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

2000

real 0m2.824s

user 0m0.036s

sys 0m0.006s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

2000

real 0m2.664s

user 0m0.040s

sys 0m0.001s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

3000

real 0m2.258s

user 0m0.082s

sys 0m0.001s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

3000

real 0m3.426s

user 0m0.081s

sys 0m0.002s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

3000

real 0m2.523s

user 0m0.079s

sys 0m0.004s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

3000

real 0m2.003s

user 0m0.078s

sys 0m0.006s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

3000

real 0m2.138s

user 0m0.080s

sys 0m0.003s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

4000

real 0m2.300s

user 0m0.136s

sys 0m0.004s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

4000

real 0m2.163s

user 0m0.135s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

4000

real 0m2.005s

user 0m0.137s

sys 0m0.004s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

4000

real 0m2.092s

user 0m0.136s

sys 0m0.004s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

4000

real 0m2.220s

user 0m0.135s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

5000

real 0m2.437s

user 0m0.209s

sys 0m0.004s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

5000

real 0m2.327s

user 0m0.207s

sys 0m0.007s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

5000

real 0m2.396s

user 0m0.208s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

5000

real 0m3.124s

user 0m0.207s

sys 0m0.006s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

5000

real 0m1.957s

user 0m0.209s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

6000

real 0m2.142s

user 0m0.298s

sys 0m0.004s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

6000

real 0m2.112s

user 0m0.297s

sys 0m0.006s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

6000

real 0m2.982s

user 0m0.297s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

6000

real 0m2.054s

user 0m0.296s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

6000

real 0m2.127s

user 0m0.298s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

7000

real 0m2.245s

user 0m0.407s

sys 0m0.006s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

7000

real 0m6.688s

user 0m0.402s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

7000

real 0m2.874s

user 0m0.404s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

7000

real 0m12.193s

user 0m0.405s

sys 0m0.004s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

7000

real 0m2.113s

user 0m0.403s

sys 0m0.006s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

8000

real 0m2.900s

user 0m0.528s

sys 0m0.004s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output[7Pg++ bubble.cpptime ./a.out > output

8000

real 0m2.355s

user 0m0.524s

sys 0m0.006s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

8000

real 0m3.440s

user 0m0.519s

sys 0m0.008s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

8000

real 0m2.256s

user 0m0.523s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

8000

real 0m2.203s

user 0m0.526s

sys 0m0.004s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

9000

real 0m2.585s

user 0m0.658s

sys 0m0.013s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

9000

real 0m2.160s

user 0m0.663s

sys 0m0.008s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

9000

real 0m2.172s

user 0m0.658s

sys 0m0.009s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

9000

real 0m2.112s

user 0m0.666s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

9000

real 0m2.581s

user 0m0.660s

sys 0m0.008s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

10000

real 0m3.491s

user 0m0.818s

sys 0m0.008s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

10000

real 0m3.174s

user 0m0.821s

sys 0m0.008s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

10000

real 0m3.322s

user 0m0.816s

sys 0m0.008s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

10000

real 0m3.624s

user 0m0.816s

sys 0m0.007s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ time ./a.out > output

10000

real 0m3.777s

user 0m0.818s

sys 0m0.007s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/bubble]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/bubble[005670557@csusb.edu@jb358-8 bubble]$ exit

Script done on 2018-01-22 15:49:17-0800

**Select Sort**

Script started on 2018-01-23 19:54:43-0800

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ g++ 0[K-c select.cpp

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ g\_[K++ select.cpp

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ tiem[K[Kme ./a.out > output

1000

real 0m2.959s

user 0m0.021s

sys 0m0.003s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

1000

real 0m2.825s

user 0m0.021s

sys 0m0.004s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

1000

real 0m1.842s

user 0m0.019s

sys 0m0.005s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

1000

real 0m1.709s

user 0m0.022s

sys 0m0.002s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

1000

real 0m2.633s

user 0m0.022s

sys 0m0.004s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

2000

real 0m2.252s

user 0m0.062s

sys 0m0.003s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

2000

real 0m2.183s

user 0m0.058s

sys 0m0.005s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

2000

real 0m2.351s

user 0m0.062s

sys 0m0.003s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

222 000

real 0m3.863s

user 0m0.062s

sys 0m0.004s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

2000

real 0m1.837s

user 0m0.061s

sys 0m0.003s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

3000

real 0m2.065s

user 0m0.139s

sys 0m0.004s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

3000

real 0m2.242s

user 0m0.146s

sys 0m0.002s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

3000

real 0m2.121s

user 0m0.138s

sys 0m0.005s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

3000

real 0m2.352s

user 0m0.133s

sys 0m0.004s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

3000

real 0m4.052s

user 0m0.130s

sys 0m0.004s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

4000

real 0m10.444s

user 0m0.220s

sys 0m0.007s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

4000

real 0m2.566s

user 0m0.224s

sys 0m0.004s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

4000

real 0m2.364s

user 0m0.286s

sys 0m0.007s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

4000

real 0m2.727s

user 0m0.329s

sys 0m0.013s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

4000

real 0m2.940s

user 0m0.223s

sys 0m0.007s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

5000

real 0m3.280s

user 0m0.466s

sys 0m0.009s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

5000

real 0m2.361s

user 0m0.350s

sys 0m0.005s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

5000

real 0m2.541s

user 0m0.409s

sys 0m0.011s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

5000

real 0m2.353s

user 0m0.347s

sys 0m0.008s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

5000

real 0m2.548s

user 0m0.419s

sys 0m0.009s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

6000

real 0m2.535s

user 0m0.488s

sys 0m0.008s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

6000

real 0m2.595s

user 0m0.506s

sys 0m0.009s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

6000

real 0m3.375s

user 0m0.747s

sys 0m0.012s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

6000

real 0m2.496s

user 0m0.489s

sys 0m0.008s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

6000

real 0m2.523s

user 0m0.522s

sys 0m0.009s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

7000

real 0m3.144s

user 0m0.937s

sys 0m0.012s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

7000

real 0m2.757s

user 0m0.668s

sys 0m0.009s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

7000

real 0m3.415s

user 0m0.942s

sys 0m0.009s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

7000

real 0m3.393s

user 0m0.892s

sys 0m0.009s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

7000

real 0m3.009s

user 0m1.001s

sys 0m0.010s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

8000

real 0m3.774s

user 0m1.212s

sys 0m0.013s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

8000

real 0m3.260s

user 0m0.913s

sys 0m0.008s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

8000

real 0m2.922s

user 0m0.889s

sys 0m0.007s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

8000

real 0m3.921s

user 0m1.210s

sys 0m0.010s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

8000

real 0m3.087s

user 0m1.206s

sys 0m0.014s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

9000

real 0m3.243s

user 0m1.091s

sys 0m0.010s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

9000

real 0m3.284s

user 0m1.124s

sys 0m0.011s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

9000

real 0m4.866s

user 0m1.411s

sys 0m0.009s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

9000

real 0m3.514s

user 0m1.645s

sys 0m0.014s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

9000

real 0m3.768s

user 0m1.335s

sys 0m0.011s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

10000

real 0m6.757s

user 0m1.348s

sys 0m0.012s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

10000

real 0m3.995s

user 0m1.700s

sys 0m0.012s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

10000

real 0m4.131s

user 0m1.356s

sys 0m0.013s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

10000

real 0m3.583s

user 0m1.353s

sys 0m0.012s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ time ./a.out > output

10000

real 0m5.090s

user 0m1.374s

sys 0m0.010s

]0;005670557@csusb.edu@csevnc:~/cse330/lab2/select[005670557@csusb.edu@csevnc select]$ exit

Script done on 2018-01-23 19:58:45-0800

**Insertion Sort**

Script started on 2018-01-22 15:51:18-0800

]777;notify;Command completed;gedit insert.txt]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ g++ -c insert.cpp

]777;notify;Command completed;g++ -c insert.cpp]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ g++ insert.cpp

]777;notify;Command completed;g++ insert.cpp]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

1000

real 0m7.977s

user 0m0.005s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

1000

real 0m3.456s

user 0m0.007s

sys 0m0.002s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

1000

real 0m1.896s

user 0m0.005s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

1000

real 0m2.113s

user 0m0.008s

sys 0m0.002s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

1000

real 0m1.848s

user 0m0.007s

sys 0m0.003s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

2000

real 0m1.635s

user 0m0.018s

sys 0m0.002s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

2000

real 0m1.739s

user 0m0.017s

sys 0m0.004s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

2000

real 0m2.491s

user 0m0.018s

sys 0m0.002s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

2000

real 0m2.691s

user 0m0.017s

sys 0m0.003s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

2000

real 0m2.090s

user 0m0.017s

sys 0m0.002s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

3000

real 0m3.320s

user 0m0.027s

sys 0m0.006s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

3000

real 0m1.913s

user 0m0.032s

sys 0m0.002s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

3000

real 0m1.593s

user 0m0.031s

sys 0m0.002s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

3000

real 0m2.327s

user 0m0.031s

sys 0m0.001s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

3000

real 0m2.096s

user 0m0.029s

sys 0m0.004s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

4000

real 0m1.769s

user 0m0.046s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

4000

real 0m1.584s

user 0m0.045s

sys 0m0.004s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

4000

real 0m1.890s

user 0m0.047s

sys 0m0.003s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

4000

real 0m1.737s

user 0m0.047s

sys 0m0.003s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

4000

real 0m1.593s

user 0m0.043s

sys 0m0.007s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

5000

real 0m1.457s

user 0m0.068s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

5000

real 0m1.616s

user 0m0.068s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

5000

real 0m2.273s

user 0m0.066s

sys 0m0.007s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

5000

real 0m3.441s

user 0m0.069s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

5000

real 0m1.472s

user 0m0.068s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

6000

real 0m2.388s

user 0m0.096s

sys 0m0.004s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

6000

real 0m1.563s

user 0m0.091s

sys 0m0.009s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

6000

real 0m1.516s

user 0m0.095s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

6000

real 0m2.850s

user 0m0.092s

sys 0m0.006s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

6000

real 0m1.426s

user 0m0.093s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

7000

real 0m2.491s

user 0m0.122s

sys 0m0.009s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

7000

real 0m2.490s

user 0m0.124s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

7000

real 0m1.644s

user 0m0.125s

sys 0m0.007s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

7000

real 0m1.963s

user 0m0.129s

sys 0m0.003s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

7000

real 0m4.508s

user 0m0.124s

sys 0m0.008s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

8000

real 0m2.174s

user 0m0.161s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

8000

real 0m1.559s

user 0m0.159s

sys 0m0.008s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

8000

real 0m1.727s

user 0m0.159s

sys 0m0.007s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

8000

real 0m2.280s

user 0m0.163s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

8000

real 0m2.591s

user 0m0.160s

sys 0m0.007s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

8000 9000

real 0m11.793s

user 0m0.200s

sys 0m0.007s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

9000

real 0m2.615s

user 0m0.202s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

9000

real 0m1.725s

user 0m0.195s

sys 0m0.010s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

9000

real 0m3.326s

user 0m0.197s

sys 0m0.009s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

9000

real 0m3.982s

user 0m0.201s

sys 0m0.005s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

9000

real 0m2.745s

user 0m0.200s

sys 0m0.006s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

10000

real 0m12.509s

user 0m0.243s

sys 0m0.010s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

10000

real 0m2.364s

user 0m0.245s

sys 0m0.007s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

10000

real 0m2.133s

user 0m0.246s

sys 0m0.006s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

10000

real 0m2.266s

user 0m0.241s

sys 0m0.009s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ time ./a.out > output

10000

real 0m2.591s

user 0m0.247s

sys 0m0.007s

]777;notify;Command completed;time ./a.out > output]0;005670557@csusb.edu@jb358-8:~/cse330/lab2/insert]7;file://jb358-8.cse.csusb.edu/home/csusb.edu/005670557/cse330/lab2/insert[005670557@csusb.edu@jb358-8 insert]$ exit

Script done on 2018-01-22 15:55:27-0800

* **Discussion**

|  |  |  |  |
| --- | --- | --- | --- |
| Bubble Sort | | | |
| n | n² | exec time(sec) | c= Time/n² |
| 1,000 | 1,000,000 | 0.0154 | 1.54E-08 |
| 2,000 | 4,000,000 | 0.0392 | 9.80E-09 |
| 3,000 | 9,000,000 | 0.08 | 8.89E-09 |
| 4,000 | 16,000,000 | 0.1358 | 8.49E-09 |
| 5,000 | 25,000,000 | 0.208 | 8.32E-09 |
| 6,000 | 36,000,000 | 0.2972 | 8.26E-09 |
| 7,000 | 49,000,000 | 0.4042 | 8.25E-09 |
| 8,000 | 64,000,000 | 0.524 | 8.19E-09 |
| 9,000 | 81,000,000 | 0.661 | 8.16E-09 |
| 10,000 | 100,000,000 | 0.8178 | 8.18E-09 |
|  |  |  |  |
| Select Sort | | | |
| n | n² | exec time(sec) | c= Time/n² |
| 1000 | 1,000,000 | 0.021 | 2.10E-08 |
| 2000 | 4,000,000 | 0.061 | 1.53E-08 |
| 3000 | 9,000,000 | 0.1372 | 1.52E-08 |
| 4000 | 16,000,000 | 0.2564 | 1.60E-08 |
| 5000 | 25,000,000 | 0.3982 | 1.59E-08 |
| 6000 | 36,000,000 | 0.5504 | 1.53E-08 |
| 7000 | 49,000,000 | 0.888 | 1.81E-08 |
| 8000 | 64,000,000 | 1.086 | 1.70E-08 |
| 9000 | 81,000,000 | 1.3212 | 1.63E-08 |
| 10000 | 100,000,000 | 1.4262 | 1.43E-08 |
|  |  |  |  |
| Insert | | | |
| n | n² | exec time(sec) | c= Time/n² |
| 1000 | 1,000,000 | 0.0064 | 6.40E-09 |
| 2000 | 4,000,000 | 0.0174 | 4.35E-09 |
| 3000 | 9,000,000 | 0.03 | 3.33E-09 |
| 4000 | 16,000,000 | 0.0456 | 2.85E-09 |
| 5000 | 25,000,000 | 0.0678 | 2.71E-09 |
| 6000 | 36,000,000 | 0.0934 | 2.59E-09 |
| 7000 | 49,000,000 | 0.1248 | 2.55E-09 |
| 8000 | 64,000,000 | 0.16 | 2.50E-09 |
| 9000 | 81,000,000 | 0.199 | 2.46E-09 |
| 10000 | 100,000,000 | 0.2444 | 2.44E-09 |