

Assignment 5 - Run Times

Due: 03-02-2021 (Tuesday @ 12:30 p.m.)

- Count = **1,048,576**
- Complexity = **Big O(n²)**

```
int count = 0;
int n = 1024;
for(int i = 0; i < n; i++) {
    for(int j = 0; j < n; j++){
        count++;
    }
}
cout<<count<<endl;
```

- Count = **523,776**
- Complexity = **Big O(n²)**

```
int count = 0;
int n = 1024;
for(int i = 0; i < n; i++) {
    for(int j = 0; j < i; j++){
        count++;
    }
}
cout<<count<<endl;
```

- Count = **536,346,624**
- Complexity = **Big O(n³)**

```
int count = 0;
int n = 1024;
for(int i = 0; i < n; i++) {
    for(int j = 0; j < i; j++){
        for(int k = 0; k < n; k++){
            count++;
        }
    }
}
cout<<count<<endl;
```

- Count = **2,048**
- Complexity = **Big O(n)**

```
int count=0;
int n = 1024;
for(int i = 0; i < 2*n; i++) {
    count++;
}
cout<<count<<endl;
```

- Count = **2,097,152**
- Complexity = **Big O(n^2)**

```
int count=0;
int n = 1024;
for(int i = 0; i < n; i++) {
    for(int j = 0; j < 2n; j++){
        count++;
    }
}
cout<<count<<endl;
```

- Count = **524,800**
- Complexity = **Big O(n^2)**

```
int count=0;
int n = 1024;
for(int i = 0; i < n; i++) {
    count++;
}
for(int j = 0; j < n; j++){
    for(int k = 0; k < j; k++){
        count++;
    }
}
cout<<count<<endl;
```

- Count = **11,264**
- Complexity = **Big O(n log n)**

```
int count = 0;
int n = 1024;
int i = n;

while(i>0){
    for(int j = 0; j < n; j++){
        count++;
    }
    i /= 2;
    cout<<i<<endl;
}
cout<<count<<endl;
```

-
- Comparisons = **10**
 - Complexity = **Big O(log n)**

```
bool found = 0;
int n = 1024;
int i = n;

// assume loaded with random numbers
// and in ascending order.
int *A = new int[n];

// Whats most number of comparisons?
// Whats the complexity?
found = BinarySearch(A,n);
```

-
- Count = **11**
 - Complexity = **Big O(log n)**

```
int count = 0;
int n = 1024;

int i = n;
while(i>0){
    cout<<i<<endl;
    i /= 2;
}
cout<<count<<endl;
```

Deliverables

- banner page (you know what it is)
- print it