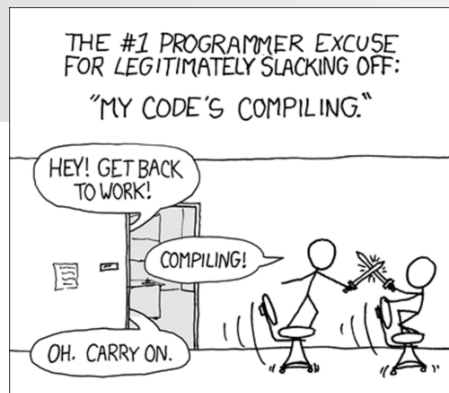


## Big-Oh 2



## Announcements

- Apt Set 2 – Due Sept 16
- Jotto – Due Sept 24
  - Snarf down

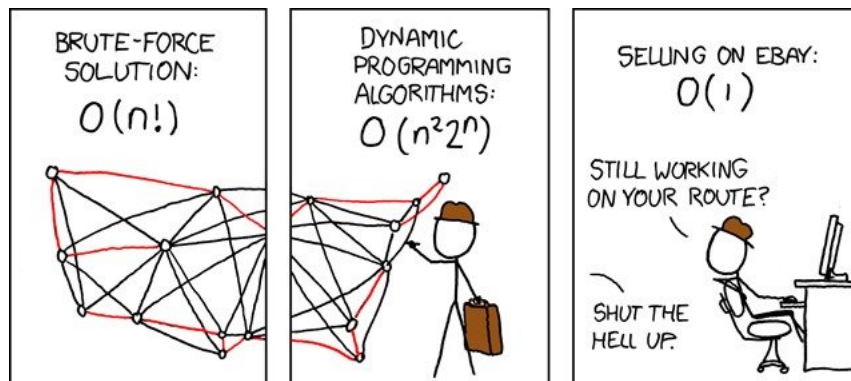
## We are in a study

- Look for a Piazza post
- 15 minutes
  - Drawing for \$75 amazon gift card
- Another survey at end of semester
  - complete both for iPad drawing

## Practice

[goo.gl/dGwqAL](http://goo.gl/dGwqAL)

### The traveling salesperson





## numberOne

```
1 public int numberOne(int n){  
2     return n;  
3 }
```



## numberTwo

```
1 public int numberTwo(int n){  
2     int answer = 1;  
3     for(int i = 0; i < n; i++)  
4         answer *= n;  
5     return answer;  
6 }
```



## numberThree

```
1 public int numberThree(int n){
2     int answer = 1;
3     for(int i = 0; i < n; i++)
4         for(int j = 0; j < n; j++)
5             answer *= n;
6     return answer;
7 }
```



## numberFour

```
1 public int numberFour(int n){
2     int answer = 1;
3     for(int i = 0; i < n; i++)
4         answer *= n;
5     for(int i = 0; i < n; i++)
6         for(int j = 0; j < n; j++)
7             answer *= n;
8     return answer;
9 }
```



## numberFive

```
1 public int numberFive(int n){  
2     int answer = 1;  
3     for(int i = 1; i <= n; i=i*2)  
4         answer *= n;  
5     return answer;  
}
```



## numberSix

```
1 public int numberSix(int n){  
2     int answer = 1;  
3     for(int i = 1; i <= n; i=i*2)  
4         for(int j = 0; j < n; j++)  
5             answer *= n;  
6     return answer;  
7 }
```

## numberSeven

```

1 public int numberSeven(int n){
2     if(numberTwo(n) > 10000){
3         return n;
4     }
5     else
6         return numberFive(n);
7 }

```

```

1 public int numberTwo(int n){
2     int answer = 1;
3     for(int i = 0; i < n; i++)
4         answer *= n;
5     return answer;
6 }

```

```

1 public int numberFive(int n){
2     int answer = 1;
3     for(int i = 1; i <= n; i=i*2)
4         answer *= n;
5     return answer;

```

## Runtime (Big-oh)

|          | Array | List | (Hash)Set | (Hash)Map |
|----------|-------|------|-----------|-----------|
| Add      |       |      |           |           |
| Remove   |       |      |           |           |
| Get      |       |      |           |           |
| Contains |       |      |           |           |

- **add(E e)**
  - Appends the specified element to the end of this list.
- **remove(int index)**
  - Removes the element at the specified position in this list.
- **get(int index)**
  - Returns the element at the specified position in this list.
- **contains(Object o)**
  - Returns true if this list contains the specified element.

## Runtime (Big-oh)

|          | Array | List | (Hash)Set | (Hash)Map |
|----------|-------|------|-----------|-----------|
| Add      |       |      |           |           |
| Remove   |       |      |           |           |
| Get      |       |      |           |           |
| Contains |       |      |           |           |

