

Object-oriented Practice

Lecture 14 - Spring 2019

Have out pencil, paper, and
PollEverywhere!

Wednesday, March 27
6-7pm



MAR
27

UNC Computer Science Diversity Panel

Public · Hosted by Lydia Heater and 2 others

✓ Going ▼

➔ Share ▼

⋮



Wednesday, March 27, 2019 at 6 PM – 7 PM

Next Week · 36–55°F Cloudy



Sitterson Hall

201 South Columbia Street, Chapel Hill, North Carolina 27514

Show Map

```
3 class Account {
4     balance: number;
5
6     constructor(amount: number) {
7         this.balance = amount;
8     }
9
10    deposit(amount: number): void {
11        this.balance += amount;
12    }
13
14    withdraw(amount: number): number {
15        this.balance -= amount;
16        return amount;
17    }
18
19    transfer(amount: number, to: Account): void {
20        this.deposit(to.withdraw(amount));
21    }
22 }
```

```
24 export let main = async () => {
25     let alice: Account = new Account(100);
26     let bob: Account = new Account(50);
27     alice.transfer(25, bob);
28     print(alice.balance);
29     print(bob.balance);
30 };
31 main();
```

Warning: This code listing may have a bug or a poorly named variable.
CQ0: Draw an Environment Diagram and Respond on PollEv.com/compunc

```

3 class Course {
4     code: string;
5     title: string;
6     constructor(code: string, title: string) {
7         this.code = code;
8         this.title = title;
9     }
10 }
11
12 class Catalog {
13     courses: Course[] = [];
14
15     add(code: string, title: string): void {
16         let aCourse = new Course(code, title);
17         this.courses[this.courses.length - 1] = aCourse;
18     }
19
20     lookup(code: string): string {
21         for (let i = 0; i < this.courses.length; i++) {
22             if (this.courses[i].code === code) {
23                 return this.courses[i].title;
24             }
25         }
26         return "Not Found";
27     }
28 }

```

CQ1. Trace the code below and maintain a diagram of the `courses` object on the heap below. Respond to ?s on PollEv

```

let courses = new Catalog();
courses.add("COMP110", "Introduction");
courses.add("COMP401", "Foundations");
print(courses.lookup("COMP410"));
print(courses.lookup("COMP110"));

```

```
3 class Cat {
4     name: string;
5
6     constructor(name: string) {
7         this.name = name;
8     }
9
10    speak(): void {
11        print("meow my name is " + this.name);
12    }
13 }
14
15 class Dog {
16     name: string;
17
18     constructor(name: string) {
19         this.name = name;
20     }
21
22    speak(): void {
23        print("woof I'm " + this.name);
24    }
25 }
```

```
27 export let main = async () => {
28     let alex = new Dog("Chester");
29     let fido = new Cat("Boots");
30     alex.speak();
31     fido.speak();
32 };
33 main();
```

Warning: This code listing has poorly named variables.

CQ2: Draw an Environment Diagram and Respond on PollEv.com/compunc

CQ3: Draw an Environment Diagram and Respond on PollEv.com/compunc

```
3 class Fa {
4   next: La;
5
6   constructor(next: La) {
7     this.next = next;
8   }
9
10  play(): void {
11    print("Fa");
12    this.next.play();
13    this.next.play();
14  }
15 }
16
17 class La {
18   count: number = 0;
19
20   play(): void {
21     this.count++;
22     print("La");
23   }
24 }
25
26 export let main = async () => {
27   let a = new La();
28   let b = new Fa(a);
29   b.play();
30   print(a.count);
31 };
32 main();
```

CQ4: Draw an Environment Diagram and Respond on PollEv.com/compunc

```
3 class Fraction {
4   n: number;
5   d: number;
6
7   constructor(n: number, d: number) {
8     this.n = n;
9     this.d = d;
10    this.simplify();
11  }
12
13  simplify(): void {
14    for (let gcf = this.n; gcf > 1; gcf--) {
15      let nFactor = this.n % gcf === 0;
16      let dFactor = this.d % gcf === 0;
17      if (nFactor && dFactor) {
18        this.n = this.n / gcf;
19        this.d = this.d / gcf;
20        return;
21      }
22    }
23  }
24
25  toString(): string {
26    return this.n + "/" + this.d;
27  }
28 }
```

```
30 export let main = async () => {
31   let frac = new Fraction(4, 6);
32   print(frac.toString());
33 };
34
35 main();
```


Reminders

- Worksheet – Due Tonight
- PS04 Emoji – Due Monday 3/25
 - You are *strongly encouraged* to get a start *before* the Quiz.
- Quiz 4 – This Thursday 3/21