

3. Given the function below, answer the questions on the right. For part A, fill out the table below with values for a, b, and c such that when random(a, b, c) is called, the value in the leftmost column is returned. If the return statement is unreachable, write "N/A" in the boxes for a, b, and c.

```
let random = (a: number, b: number, c: number): string => {
  if (a > b) {
    if (b > c) {
      return "c";
    } else {
      return "o";
    }
  }
  if (b < c) {
    if (a === b && c < a) {
      return "m";
    }
    return "p";
  }
  if (a === b && b === c) {
    return "!";
  }
  return "woo";
};
```

a.

return:	a	b	c
"p"			
"c"			
"!"			
"woo"			

b. Underline any unreachable code. If there is none, write "N/A".

c. What would be the **output** if random(1, 1, 1) were called within the main function?

4. For the following question, your goal is to write the code in the main function that yields the desired output. This output requires exactly 4 lines of code. Write each of the 4 lines of code in the correct order on the right.

```
let bar = (x: string, num: number): string => {
  if (num === 0) {
    print("done");
    return "finished";
  } else {
    print("recurring: " + x);
    return bar(x.substr(1), num - 1);
  }
};

let foo = (x: string): string => {
  print(x + x);
  print("finished");
  return x + x + x;
};

let main = async () => {
  // Your code goes here
};

main();
```

Desired output:

- fastfast
string

- finished
string

- fastfastfast
string

- recurring: rat
string

- recurring: at
string

- done
string

- catcat
string

- finished
string

- main
string

Line 1:

Line 2:

Line 3:

Line 4:

5. Answer the questions below using the following classes:

```
class CoffeeBlend {
    caffeinePerOunce: number = 0; // in milligrams
    flavor: string = "";
}

class CupOJoe {
    ounces: number = 0;
    caffeineContent: number = 0; // in milligrams
    flavor: string = "";
}
```

a) Write a function named `brewCoffee` that has two parameters -- a `CoffeeBlend` object named `blend` and a number named `ouncesToBrew` (representing the number of ounces to brew) -- and returns a `CupOJoe` object made using that blend. This means that the `CupOJoe` object you return should match the flavor of the blend, contain the number of ounces given by `ouncesToBrew`, and should have a *total* `caffeineContent` derived from `ouncesToBrew` and the `CoffeeBlend`'s `caffeinePerOunce`.

b) Computer scientists need *a lot* of caffeine to function properly. Write a function named `lotsaCaffeine` with one parameter -- a List of `CoffeeBlend` objects named `blends` -- that finds the `CoffeeBlend` object in the list with the *greatest* `caffeinePerOunce` value and returns a 72oz `CupOJoe` object made using that `CoffeeBlend` (hint: you should be using the `brewCoffee` function you defined in (a)). For the base case, simply return a new `CupOJoe` object with the default property values.

6. Based on the following Book class and foo function, answer the questions below.

```
class Book {
  title: string = "";
  author: string = "";
  page: number = 0;
}
let foo = (title: string, author: string, currentPage: number): number => {
  if (title.includes("in") && author.includes("er")) {
    currentPage = currentPage + currentPage;
  } else {
    currentPage = currentPage + 1 * 2;
  }
  currentPage = 1 + currentPage;
  print(currentPage + 1);
  return currentPage;
};
let main = async () => {
  let myBook = new Book(); // (1)
  myBook.title = await promptString("Give me a title"); // (2)
  myBook.author = await promptString("Give me an author"); // (3)
  myBook.page = await promptNumber("Give me my current page"); // (4)
  let a: number = foo(myBook.title, myBook.author, myBook.page); // (5)
  let yourBook = new Book();
  yourBook.title = "Breaking Dawn";
  yourBook.author = "Stepanie Meyer";
  yourBook.page = 24;
  let b: number = foo(yourBook.title, yourBook.author, yourBook.page); // (6)
  if (a > b) {
    print("My book is better than yours");
  } else {
    print("We are reading good books");
  }
};
main();
```

a. For all of the following questions, suppose the user inputs "Mockingjay", "Suzanne Collins", and 15 for the lines denoted by (2), (3), and (4). What will be the printed output after main finishes executing?

b. What is the value of a after the line denoted by (5) is executed?

c. What is the value of b after the line denoted by (6) is executed?

d. What are the values of the properties of myBook after main finishes execution? Please write them in the following format: <name> = <value>.