```
class Coord {
  public int row, col;
  public Coord(int rowVal, int colVal) {
    this.row = rowVal;
    this.col = colVal;
  }
}
class Car {
  public String color;
  public Coord location;
  public Car(String colorVal, Coord locVal) {
    this.color = colorVal;
    this.location = locVal;
  }
}
class Q1 {
  public static void g(Car c1, Car c2) {
    c2 = c1;
    c2.color = "blue";
  }
  public static String question () {
    Car redCar = new Car("red", new Coord(5, 6));
    Car greenCar = new Car("green", new Coord(7, 8));
    g(redCar, greenCar);
    return redCar.color + ", " + greenCar.color;
  }
  public static void main(String[] args) {
    System.out.println(question());
  }
}
```

Stack

Method calls and variables

Q1.g(@B,@D)	
c1	@B
c2	@B @B
returns: nothing (void)	

Q1.question()	
redCar	@B
greenCar	@D
returns: "blue, green"	

Q1.main(@Z)	
args	@Z
returns: nothing (void)	

Heap

Objects and their fields, arrays

@A	Coord row 5 col 6
@B	Car color "blue" ~~"red"~~ location @A
@C	Coord row 7 col 8
@D	Car color "green" location @C
@Z	[] *An empty array for args, a detail not used in this example*

Fields are associated with classes and objects. In the code above, `row`, `col`, `color`, and `location` are all **fields**. Also called **instance variables**, but we will use "field" to avoid confusion with other kinds of variables.

Variables are associated with methods. In the code above, `c1`, `c2`, `redCar`, `greenCar`, `rowVal`, `colVal`, `colorVal`, and `locVal` are **variables**. Variables in the method signature (for example c1 and c2) are also called **parameters**.

```
public class Q2 {
  public static void f(Coord c) {
    Car car = new Car("blue", c);
    car.location.row = 10;
    car.location.col = 9;
  }
  public static int question() {
    Coord unit = new Coord(1, 1);
    Car blackCar = new Car("black", unit);
    f(unit);
    return blackCar.location.row;
  }
  public static void main(String[] args) {
    System.out.println(question());
  }
}
```

Stack

Q2.f(@A)	
c	@A
car	@D
returns: Void	

Q2.question()	
unit	@A
blackCar	@B
returns: 10	

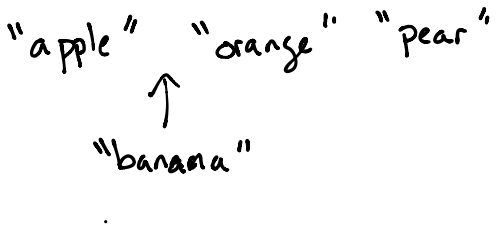
Q2.main(@Z)	
args	@Z
returns: nothing (void)	

Heap

@A	Coord row ~~1~~ 10 col ~~1~~ 9
@B	Car color "black" location @A
@D	Car color "blue" location @A
@Z	[] *An empty array for args, a detail not used in this example*

```
interface StringList {
  // We will fill this in together
  void add(String s);
  void insert(String s, int index);
  void remove(int index);
  boolean contains(String s);
  String get(int index);

}
```




```
class StringListIdea1 implements StringList {
  // How will it store the data?

  // How will it implement the methods?

}
```

- count/size
- ArrayList X
- String[]
- vector
- dictionary?