

# Linear Search

Tuesday August 9<sup>th</sup>

# Problem

- What happens when you need to find a specific entry in an array?
- For example, an array of friend's names you invited to your birthday party
- How do you see if you forgot to invite your best friend named Amy?

# How to Solve

- LOOPS! We learned about these a few classes ago

# Did we find it?

- Want to look through the array to a loop makes the most sense
- Must also keep track if we found Amy or not
  - Sounds like a Boolean variable to me!
  - In this case, will call this variable “found”

# Search Pseudo Code

- First step is to set “found” to false. Why? Because we have not even started looking for Amy yet so there is no way we could have found her name in the array already!
- Next we need a for loop (we could also use a while loop but for the assignment we need a for loop so we will just do the example with a for loop too)
  - This loop will look through each index of the array called “friends” and if the name stored in that index equals Amy, then we know we found her so we set “found” equal to true

# Found Pseudo Code

- After the for loop, we have an if statement that will output to the user whether or not we found her name in the list
  - If found is true, then we say “she is on the guest list!”
  - If found is false, then we say “she is not on the guest list! Invite her!”

# Solution

```
public class Finder {  
    public static void main(String[] args) {  
        // List of friends to look through  
        String[] friends = { "Amy", "Chris", "Broghan",  
"Audi", "Cheng", "Eric" };  
  
        boolean found = false; // true if friend was  
found, else false  
        String friendToFind = "Amy"; // friend to find  
  
        // Look for the friend!  
        for(int i=0; i<friends.length; i++) {  
            if(friendToFind.equals(friends[i])) {  
                found = true;  
            }  
        }  
  
        // Report results  
        if(found) {  
            System.out.println( friendToFind + "is on the  
guest list! :)");  
        } else {  
            System.out.println(friendToFind + "she is not  
on the guest list! Invite her!");  
        }  
    }  
}
```

# Project Directions

1. Create a Method called Search
2. Search should take in an array and a char and return the index of the letter in the array. If the letter is not in the array the method should return -1
3. The tricky part is to figure out how to keep track of the index of the letter if you find it. Ask for a hint if you need help!
4. Use for-loop inside the method to search for the letter