Activity 3

The class was shown this code,

```
public int mystery(ArrayList<String> list, int limit) {
    int howMany = 0;
    for (int i = 0; i < list.size(); i = i + 1) {
        String s = list.get(i);
        if (s.length() <= limit) {
            howMany = howMany + 1;
        }
    }
    return howMany;
}
```

and was given these questions to discuss:

Assume list is [“Fred”, “Wilma”, “Pebbles”, “Betty”, “Barney”, “BamBam”, “Dino”].

Q1: What does mystery(list,5) return?
Q2: What does mystery(list,4) return?
Q3: Give a value Y for which mystery(list,Y) will return 0.
Q4: Give a value Y for which mystery(X,Y) will return 0, regardless of the contents of the list X.

The mystery method takes in a list of Strings, list, and an integer, limit, and returns how many of those strings have length less than or equal to limit.

Q1 is asking how many of the Strings in the list have length less than or equal to 5. The following Strings meet the requirement: **“Fred”, “Wilma”, “Betty”, “Dino”.** The answer is therefore 4.

Q2 is asking how many of the Strings in the list have length less than or equal to 4. The following Strings meet the requirement: **“Fred”, “Dino”.** The answer is therefore 2.

Q3 is asking for a value of limit for mystery(list,limit) returns 0. The key here is choosing limit which is strictly less than the length of any of the Strings in list. Many answers are possible. Since the shortest String is of length 4, any value strictly less than 4 will work, such as 3.

Q4 asks the same question as Q3, but for ANY list whatsoever. Since the shortest possible String has length zero (the String “”), any value strictly less than 0 will work, such as -1.

Assessment 1

The class was shown this code,

```
public int question1(ArrayList<String> list, int limit) {
    int howMany = 0;
    for (int i = 0; i < list.size(); i = i + 1) {
        String s = list.get(i);
        if (s.length() == limit) {  // <-- note change!
            howMany = howMany + 1;
        }
    }
    return howMany;
}
```

And was told,

Assume people **is**
[“Mary”, “Sybil”, “Matthew”, “Violet”, “Tom”, “Edith”, “Robert”, “Cora”]

The class had to answer this question:

What does question1(people,5) return?

The question1 method counts for many Strings from list have exactly the length specified by limit. In this case the answer is 2: **“Sybil”, “Edith”.**

Assessment 2

The class was shown this code,

```
public int question2(ArrayList<String> list, int limit) {
    int howMany = 0;
    for (int i = 0; i < list.size(); i = i + 1) {
        String s = list.get(i);
        if (s.length() >= limit) {  // <-- note change!
            howMany = howMany + 1;
        }
    }
    return howMany;
}
```

And was told,

> **Assume characters is**
> **[“Phryne”, “Jack”, “Dorothy”, “Hugh”, “Prudence”, “Bert”, “Cec”]**

The class had to answer this question:

> What does question2(characters,5) return?

The question2 method counts for many Strings from list have a length greater than or equal to limit. In this case the answer is 3: **“Phryne”, “Dorothy”, “Prudence”**

Activity 2

The class was shown this information,

```
public ArrayList<String> mystery(ArrayList<String> list,
int limit) {
    ArrayList<String> matches = new ArrayList<String>();
    for (int i = 0; i < list.size() ; i = i + 2) {
        String s = list.get(i);
        if (s.length() <= limit) {
            matches.add(s);
        }
    }
    for (int i = list.size() - 1; i >= 0 ; i = i - 2) {
        String s = list.get(i);
        if (s.length() >= limit) {
            matches.add(s);
        }
    }
    return matches;
}
```

and was given these questions to discuss:

Assume list1 is
[“Fred”, “Wilma”, “Pebbles”, “Betty”, “Barney”, “BamBam”]

Q1: What does mystery(list1,4) return?

Assume list2 is
[“Fred”, “Wilma”, “Pebbles”, “Betty”, “Barney”, “BamBam”, “Dino”]

Q2: What does mystery(list2,4) return?

Here the method mystery counts how many Strings at indices 0, 2, 4, etc have length <= limit, AND how many Strings at indices list.size()-1, list.size()-3, list.size()-5, etc have length >= limit.

For Q1 the answer is [“Fred”, “BamBam”, Betty”, “Wilma”]. “Fred” from the first loop, “BamBam”, Betty”, “Wilma” from the second.

For Q2 the answer is [“Fred”, “Dino”, “Dino”, “Barney”, “Pebbles”, “Fred”]. [“Fred”, “Dino”] from the first loop, [“Dino”, “Barney”, “Pebbles”, “Fred”] from the second.

Assessment 3

The class was shown this information,

```
public ArrayList<String> question3(ArrayList<String> list,
int limit) {
    ArrayList<String> matches = new ArrayList<String>();
        for (int i = 0; i < list.size() ; i = i + 1) {
        String s = list.get(i);
        if (s.length() <= limit) {
            matches.add(s);
        }
    }
    return matches;
}
```

And was told:

> **Assume** people **is**
> **[“Mary”, “Sybil”, “Matthew”, “Violet”, “Tom”, “Edith”, “Robert”, “Cora”]**

The class had to answer this question:

> For which value of X does question3(people,X) return the list ["Mary", "Sybil", "Tom", "Edith", "Cora"]?

The method question3 returns an ArrayList<String> containing those Strings from list that have length less than or equal to limit.

The longest Strings in the given answer have length 5 (“Sybil” and “Edith”). There is a String in the input of length 6 (“Robert”) which is not included in the output, so therefore limit must be 5.

Assessment 4

The class was shown this information,

```
public ArrayList<String> question4(ArrayList<String> list,
int limit) {
    ArrayList<String> matches = new ArrayList<String>();
    for (int i = list.size() - 1; i >= 0 ; i = i - 1) {
        String s = list.get(i);
        if (s.length() == limit) {
            matches.add(s);
        }
    }
    return matches;
}
```

And was told:

Assume characters is
[“Phryne”, “Jack”, “Dorothy”, “Hugh”, “Prudence”, “Bert”, “Cec”]

The class had to answer this question:

Which list does question4(characters,4) return?

The method question4 returns an ArrayList<String> containing those Strings from list that have length equal to limit. The loop moves from high indices to low indices, starting at list.size() – 1 and moving down to 0 in decrements of 1.

The Strings of length 4 that are encountered and entered into the result are “Bert”, “Hugh”, and “Jack”, in that order.