

3. This question involves the manipulation and analysis of a list of words. The following WordChecker class contains an ArrayList<String> to be analyzed and methods that are used to perform the analysis. You will write two methods of the WordChecker class.

```
public class WordChecker
{
    /** Initialized in the constructor and contains no null elements */
    private ArrayList<String> wordList;

    /**
     * Returns true if each element of wordList (except the first) contains the previous
     * element as a substring and returns false otherwise, as described in part (a)
     * Precondition: wordList contains at least two elements.
     * Postcondition: wordList is unchanged.
     */
    public boolean isWordChain()
    { /* to be implemented in part (a) */ }

    /**
     * Returns an ArrayList<String> based on strings from wordList that start
     * with target, as described in part (b). Each element of the returned ArrayList has had
     * the initial occurrence of target removed.
     * Postconditions: wordList is unchanged.
     * Items appear in the returned list in the same order as they appear in wordList.
     */
    public ArrayList<String> createList(String target)
    { /* to be implemented in part (b) */ }

    // There may be instance variables, constructors, and methods that are not shown.
}
```

- (a) Write the isWordChain method, which determines whether each element of wordList (except the first) contains the previous element as a substring. The following table shows two sample isWordChain method calls.

wordList	isWordChain Return Value	Explanation
["an", "band", "band", "abandon"]	true	Each element contains the previous element as a substring.
["to", "too", "stool", "tools"]	false	"tools" does not contain the substring "stool".

Complete the isWordChain method.

```
/**
 * Returns true if each element of wordList (except the first) contains the previous
 * element as a substring and returns false otherwise, as described in part (a)
 * Precondition: wordList contains at least two elements.
 * Postcondition: wordList is unchanged.
 */
public boolean isWordChain()
```

Begin your response at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number. If there are multiple parts to this question, write the part letter with your response.

- (b) Write the createList method, which creates and returns an ArrayList<String>. The method identifies strings in wordList that start with target and returns a new ArrayList containing each identified string without the starting occurrence of target. Elements must appear in the returned list in the same order as they appear in wordList.

Consider an example where wordList contains the following strings.

["catch", "bobcat", "catchacat", "cat", "at"]

The following table shows the ArrayList returned by some calls to createList. In all cases, wordList is unchanged.

Method Call	ArrayList Returned by createList	Explanation
createList("cat")	["ch", "chacat", ""]	Only "catch", "catchacat", and "cat" begin with "cat".
createList("catch")	["", "acat"]	Only "catch" and "catchacat" begin with "catch".
createList("dog")	[]	None of the words in wordList begin with "dog".

Complete the createList method.

```
/**
 * Returns an ArrayList<String> based on strings from wordList that start
 * with target, as described in part (b). Each element of the returned ArrayList has had
 * the initial occurrence of target removed.
 * Postconditions: wordList is unchanged.
 * Items appear in the returned list in the same order as they appear in wordList.
 */
public ArrayList<String> createList(String target)
```

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Class information for this question

```
public class WordChecker
private ArrayList<String> wordList
public boolean isWordChain()
public ArrayList<String> createList(String target)
```