3. A high school club maintains information about its members in a `MemberInfo` object. A `MemberInfo` object stores a club member's name, year of graduation, and whether or not the club member is in *good standing*. A member who is in good standing has fulfilled all the responsibilities of club membership.

   A partial declaration of the `MemberInfo` class is shown below.

```
public class MemberInfo
{
    /** Constructs a MemberInfo object for the club member with name name,
     *  graduation year gradYear, and standing hasGoodStanding.
     */
    public MemberInfo(String name, int gradYear, boolean hasGoodStanding)
    {  /* implementation not shown */  }

    /** Returns the graduation year of the club member. */
    public int getGradYear()
    {  /* implementation not shown */  }

    /** Returns true if the member is in good standing and false otherwise. */
    public boolean inGoodStanding()
    {  /* implementation not shown */  }

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

   The `ClubMembers` class maintains a list of current club members. The declaration of the `ClubMembers` class is shown below.

```
public class ClubMembers
{
    private ArrayList<MemberInfo> memberList;

    /** Adds new club members to memberList, as described in part (a).
     *  Precondition: names is a non-empty array.
     */
    public void addMembers(String[] names, int gradYear)
    {  /* to be implemented in part (a) */  }

    /** Removes members who have graduated and returns a list of members who have graduated
     *  and are in good standing, as described in part (b).
     */
    public ArrayList<MemberInfo> removeMembers(int year)
    {  /* to be implemented in part (b) */  }

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

(a) Write the `ClubMembers` method `addMembers`, which takes two parameters. The first parameter is a `String` array containing the names of new club members to be added. The second parameter is the graduation year of all the new club members. The method adds the new members to the `memberList` instance variable. The names can be added in any order. All members added are initially in good standing and share the same graduation year, `gradYear`.

Complete the `addMembers` method.

```
/** Adds new club members to memberList, as described in part (a).
 *  Precondition: names is a non-empty array.
 */
public void addMembers(String[] names, int gradYear)
```

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 `ClubMembers` method `removeMembers`, which takes the following actions.

- Returns a list of all students who have graduated and are in good standing. A member has graduated if the member's graduation year is less than or equal to the method's `year` parameter. If no members meet these criteria, an empty list is returned.
- Removes from `memberList` all members who have graduated, regardless of whether or not they are in good standing.

The following example illustrates the results of a call to `removeMembers`.

The `ArrayList memberList` before the method call `removeMembers(2018)`:

"SMITH, JANE"	"FOX, STEVE"	"XIN, MICHAEL"	"GARCIA, MARIA"
2019	2018	2017	2020
false	true	false	true

The `ArrayList memberList` after the method call `removeMembers(2018)`:

"SMITH, JANE"	"GARCIA, MARIA"
2019	2020
false	true

The `ArrayList` returned by the method call `removeMembers(2018)`:

"FOX, STEVE"
2018
true

Complete the `removeMembers` method.

```
/** Removes members who have graduated and returns a list of members who have graduated and are
 *  in good standing, as described in part (b).
 */
public ArrayList<MemberInfo> removeMembers(int year)
```

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.

Class information for this question

```
public class MemberInfo

public MemberInfo(String name, int gradYear, boolean hasGoodStanding)
public int getGradYear()
public boolean inGoodStanding()

public class ClubMembers

private ArrayList<MemberInfo> memberList

public void addMembers(String[] names, int gradYear)
public ArrayList<MemberInfo> removeMembers(int year)
```