

## Question 1

[9 marks]

Consider the following class definition:

---

```
package exam7;
import java.lang.String;

public class Name {
    private String _firstName;
    private String _lastName;

    public Name(String fn, String ln) {
        _firstName = fn;
        _lastName = ln;
    }
}
```

---

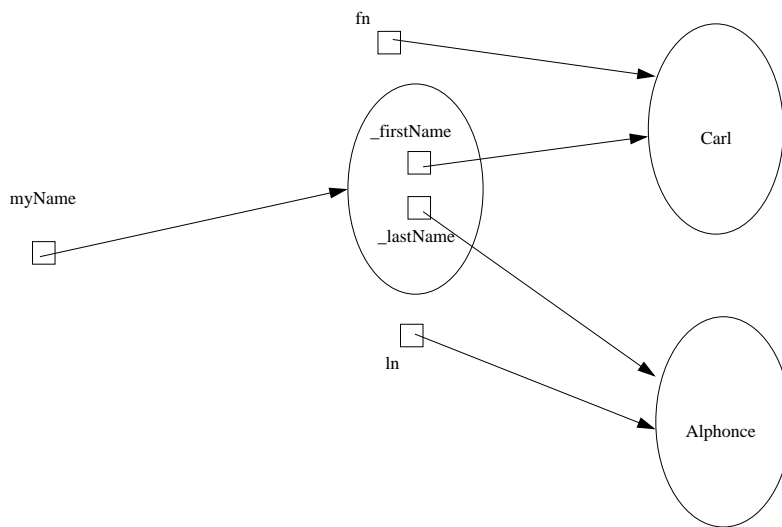
Draw an object diagram below to show the program state after the following code has been executed:

---

```
exam7.Name myName = new exam7.Name("Carl","Alphonse");
```

---

1. Be sure to add to the diagram any local variables (including parameters) that are created during the execution of this code, and their values!
2. Assume that the variable `myName` is a local variable.
3. Recall that a quoted sequence of characters creates a new `String` object.



## Question 2

[9 marks]

You have been hired by the local schoolboard to automate part of their hearing screening tests that they run at the start of every school year. During this screening test each student in the school is placed in a quiet room, headphones are placed over their ears, and they are given a handheld device with a single button on it. Tones at various frequencies are presented to their ears via the headphones; students are to press the button if they hear the tone.

Because there are many students to be processed, the schoolboard wants to automate at least part of the process: it wants student responses to be noted automatically when they press the button. You have been given the code below to complete. Assume that `EventHandler` is the class which will handle button-press events on the push-button device the students are using to register their response to the tone presentation. Note that you may **add code** only to the constructor and to the `actionPerformed` method of the `EventHandler` class. You may not add any instance variables, nor may you modify the interfaces in any way, nor may you remove any existing code.

```
public interface IPresenter {
    /* This method returns the last Frequency which was presented
     * to a student via the headphones.
     */
    public Frequency getPresentedFrequency();
}
public interface IRecorder {
    /* This method records a Frequency to indicate that a student
     * responded to this Frequency when it was presented to them
     * via the headphones.
     */
    public void recordResponse(Frequency freq);
}
public class EventHandler implements ActionListener {
    private IPresenter _presenter;
    private IRecorder _recorder;

    public EventHandler(IPresenter p, IRecorder r) {

        _presenter = p;
        _recorder = r;
    }
}
\end{verbatim}
\end{quote}
%
%Grading: 2 points per statement * 2 = 4
% -----
% TOTAL:                                4
\vspace*{\fill}

\begin{quote}
\begin{verbatim}
    }
    public void actionPerformed(ActionEvent e) {
```

```
Frequency frequency = _presenter.getPresentedFrequency();  
_recorder.recordResponse(frequency);
```

```
}  
}
```

SOLUTION #7 — 2.5%

Name (print, surname first): \_\_\_\_\_

Monday, October 29, 2007

Signature: \_\_\_\_\_

20 minutes

Person #: \_\_\_\_\_

 B1 (T@4) B2 (F@10) B3 (R@10) B4 (F@2)

**This assessment has 4 pages. Check that you have a complete paper.**

**Each candidate should be prepared to produce, upon request, his or her SUNY/UB card.**

**This examination has 2 questions. Answer all 2 questions.**

**READ AND OBSERVE THE FOLLOWING RULES:**

- ▷ Write the following, in ink, in the space provided above,
  - ◊ your name, surname first,
  - ◊ your usual signature, and
  - ◊ your UB person number,
- ▷ All of your writing must be handed in. This booklet must not be torn or mutilated in any way, and must not be taken from the examination room.
- ▷ Show all of your work in arriving at an answer, unless instructed otherwise. Partial credit will be awarded as appropriate.
- ▷ Candidates are not permitted to ask questions of the invigilators, except in cases of supposed errors or ambiguities in examination questions.
- ▷ **CAUTION** — Candidates guilty of any of the following, or similar, dishonest practices shall be immediately dismissed from the examination and shall be liable to disciplinary action.
  - ◊ Making use of any books, papers or memoranda, calculators or computers, audio or visual cassette players, or other memory aid devices, other than those *explicitly authorised* by the examiners.
  - ◊ Speaking or communicating with other candidates.
  - ◊ Purposely exposing written papers to the view of other candidates. The plea of accident or forgetfulness shall not be received.

*Do not write below this line!*

Question	Points
1	/9
2	/9
TOTAL	/18