**Assignment 7 (a two-week assignment)**

**The Problem Description:**

You are to simulate a simple voicemail system. There are two different kinds of users – those who leave messages, and those who retrieve messages (among other things). More specifically,

1. To leave a voice mail:

* User dials a (7-digit) number (with a key panel), and then pushes “Dial” button;
* The system displays (if the number the person dialed was correct) a greeting message: You have reached mailbox XXXX (the last 4 digits of the number), please leave a message; when done, push button “Save” to save the message. (The system displays: You dialed a wrong number, when the number dialed doesn’t exist.)
* Person enters a message in a text area (provided), and clicks “Save” button;
* System then saves the message, and displays: Your message has been saved.

1. Owner of a voicemail box is able to do multiple things, but must log in first:

***Log in***

1. Mailbox owner enters the mailbox number (the last 4 digits of the phone number) through a keypad, and then clicks the “Dial” button;
2. The system displays prompt (if the mailbox number existed): Enter the passcode
3. The mailbox owner enters passcode (through the keypad), and pushes “Log in” button.
4. The system displays a message depending on whether the passcode was valid. If valid, the system displays: You may retrieve messages, change the greeting message, or change the passcode. If not valid, the system displays: Passcode was incorrect, try again. (User can repeat the log-in process, or simply quit.)

*Once log-in is successful, user may do the following (one or more) until he/she chooses to quit:*

1. ***Retrieve Message***
2. The user clicks “retrieve message” button;
3. The system displays the following:

Press 1 to read message (or the next message)

Press 2 to delete the current message

1. The user presses 1 or 2 as appropriate;
2. The system displays current (or the next) message, or deletes the current (being displayed) message as instructed;
3. Steps 2-4 may repeat until the system displays: No more messages, or until user selects a different action or quits (by clicking the “Quit” button).
4. ***Change greeting message***
5. The user clicks “change greeting message” button
6. The system displays prompt: Enter new greeting message, and press “star” key to save
7. The user types the new greeting in the text area, and presses “star” button
8. The system sets the new greeting message (which replaces the old).
9. ***Change the passcode***
10. The user clicks “change passcode” button
11. The system displays prompt: Enter new passcode, and press “#” key to save
12. The user types the new greeting in the text area, and presses “#” button
13. The system sets the new passcode.

**Interface for mailbox owners (this is just an example, and you feel free to design your own interface):**

**1**

**4**

**3**

**2**

**5**

**6**

**7**

**8**

**9**

**0**

**\***

**#**

**Dial**

**Log in**

**Change passcode**

**Change greeting**

**Retrieve message**

Press 1 to read message (or the next message)

Press 2 to delete the current message

**QUIT**

**Interface for a user to leave a message (this is just an example, and you feel free to design your own interface):**

**1**

**4**

**3**

**2**

**5**

**6**

**7**

**8**

**9**

**0**

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**#**

**Dial**

**Save**

Hello, I’d like to speak with you about the academic programs you offer. I would appreciate if you could call me back at 231-234-9845. Thanks!

***Here are the requirements:***

1. Design and implement the voicemail system described above.
   1. Next week’s deliverables: 1) Architectural diagrams (views), 2) the portion of the system that allows someone to leave a message should be working, 3) a 5-minute presentation
   2. The following week’s deliverable: 1) the entire working program, and 2) updated architectural diagrams (views)
2. Messages can be into and retrieved from a text file, but your design should take it into consideration that you may use a different means (such as a database) to store messages.

***Notes:***

1. The above problem description may not address all practical questions you might run into, so make your own assumptions if needed to.
2. Perhaps this assignment gives you a good practice on controller/manager design: messages need to be managed; separate access to the system (person who leaves message vs. person who retrieves messages) needs a control, and access to different mailbox functions also needs a control. You want controls to be centralized or distributed? You probably need an iterative, and perhaps a trial-and-error process to figure it out.

***Presentation suggestions:***

1. Place your diagrams on PP slides with good readability.
2. Describe some general thought on the design, and then illustrate it with diagrams. (Give some rationale to support the design you came up with… any alternatives you thought about?)
3. Do not use the code to explain the design, it won’t serve the purpose well.