

ANALYSIS OF VOICEMAIL SYSTEM

Reaching an Extension

At the outset, the mail message system awaits the input of a four-digit extension number. Some numbers belong to active extensions; others do not. We will see subsequently how active extensions are created. If an inactive extension has been dialed, an error message is generated, and the system reverts to its initial state. If an active extension has been reached, the mailbox greeting is played. Unless changed by the owner, the greeting is this:

You have reached extension xxx. Please leave a message now.

At this point, the caller can type in a message by entering the message text on the keyboard. At the end of the message, an "H" should be entered on a single line to denote hanging up the telephone. Only non-empty messages should be stored.

Alternatively, callers can press the "#" key to access their own mailboxes.

Accessing a Mailbox

To restrict access to a mailbox to its owner, the system prompts for a passcode. After the mailbox owner has entered the correct passcode, he or she can retrieve messages from the mailbox or change mailbox settings. The user options menu is displayed:

You have n new messages and s saved messages.

Press 1 to retrieve your messages.

Press 2 to change your greeting.

Press 3 to change your passcode.

(The first command prompt is shown only when messages are pending.) When the caller presses "1" the system enters the message retrieval loop.

If the caller presses "2" to change the greeting, the system prompts to record a new greeting. If the caller presses "3" to enter a new passcode, the system prompts to enter a new passcode. Passcodes must be four digits long. Invalid passcodes cause an error message. On completion of a greeting or password change, the main menu is displayed again. If the user hangs up instead of entering a greeting or passcode, no change is recorded.

Retrieving Messages

The first message is displayed. Then the message options menu appears:

Press 1 to delete the current message.

Press 2 to save the current message.

After the selection is processed, the next message is played. This cycle repeats until all messages are played. Then the user options menu appears again. At any time, the caller may hang up by pressing "H". New messages are played in the order in which they were received. After all new messages are played, the saved messages are played in the order in which they were saved.

Adding New Mailboxes

When first started, the mail system has one special mailbox, with extension 9999 and passcode 1728, belonging to the administrator and no other active extensions. The administrator mailbox works the same way as all other mailboxes, but it has an additional option in the main menu:

Press 4 to add a new extensions.

When the administrator press "4" the system prompts to enter the new four-digit extension number and then prompts for a four-digit passcode. The extension is activated, and the main menu is displayed again.

Simulation of Voice Data and Telephone Equipment

In our program, we need to simulate the three distinct input events that occur in a real telephone system: speaking, pushing a button on the telephone pad, and picking up and hanging up the telephone. We use the following convention for input: An "H" on a line by itself denoted hanging up the telephone. A sequence of keys "1"... "9" on a line with no other characters denotes a dialed number. A "#" or "*" denotes pushing one of the command keys on the pad. Any other text denotes voice input.

To quit the program, access mailbox 0000 by typing "0000".

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