

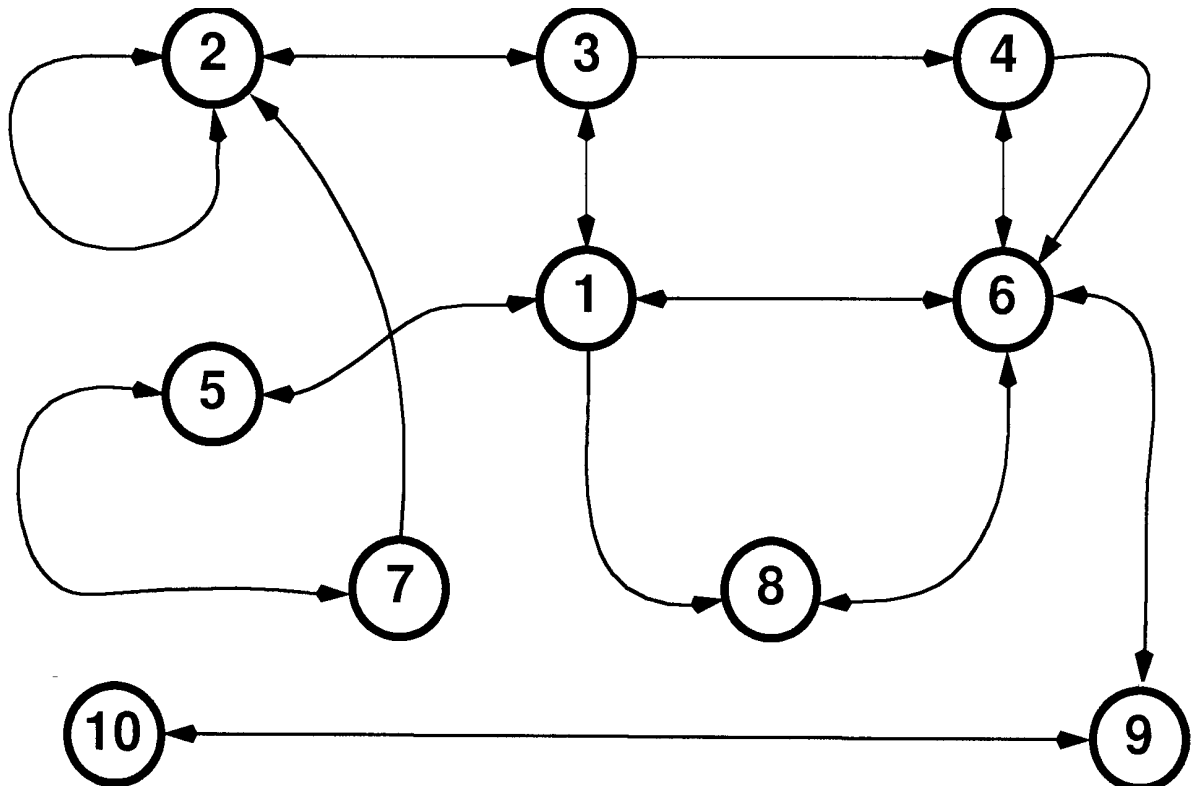
MACHINE PROBLEM 8 - "IN THE MIDDLE, A CAULDRON BOILING"
CS xxx - Fall Quarter yyyy - Dr. Estell - DUE AT CLASSTIME mm/dd/yyyy

1 Witch. Thrice the brinded cat hath mew'd.
2 Witch. Thrice; and once the hedge-pig whined.
3 Witch. Harper cries: -'tis time, 'tis time.

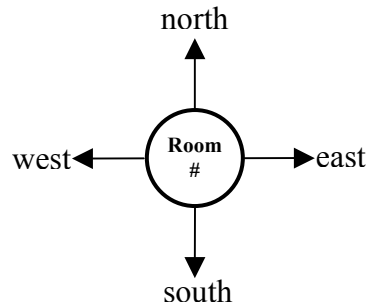
Yes, it is time to introduce the last MP: your Quarter Project. You are to write a small-scale adventure game that is based somewhat loosely on the play *Macbeth*, by William Shakespeare; specifically, a portion of the first scene in Act IV. The three witches need to make a charm; however, they are missing some key ingredients, and it is the job of the adventurer to explore the realm and find these objects for the witches' brew. The adventurer will be directed using commands typed in by the person playing the game.

1 Witch. Round about the cauldron go;
In the poison'd entrails throw. -
Toad, that under coldest stone,
Days and nights has thirty-one
Swelter'd venom sleeping got,
Boil all first i' the charmed pot.

You are to implement the following room map in your program:



The map is interpreted as follows:



Adventure games generally consist of an explorer moving from room to room through a set of interconnecting corridors. Each room has a number, and up to four corridors leaving the room. The directions for travel are indicated by position; the arrows on the end indicate the direction of travel. Normally corridors can be traversed in both directions, but not always. For example, one can travel north from room 7 to get to room 2, but there's no path from room 2 back to room 7. Moving north from room 1 leads to room 3, and going south from room 3 leads back to room 1.

Each room also has associated with it a description of the room. In some cases, more than one description is available, depending on various situations. For this assignment, part of the descriptions will be given to you; the remaining room descriptions are up to you.

Some of the rooms have objects within them. These objects can be taken by the adventurer and carried to another location, where they can then be deposited.

The explorer maneuvers through the rooms by using one or two word commands. The commands generally consist of an action followed by an object. You have to implement, as a minimum, the following commands and objects:

1. MOVEMENT

Movement is performed by using either one of the action words "GO" or "MOVE", followed by the direction. The allowed directions are "NORTH", "SOUTH", "EAST", and "WEST". If the adventurer can move in that direction, the movement is performed and the description of the new room is displayed. If the movement is impossible, an error message must be displayed. In addition, if an object is present in the room, the user must be told of this. As a shorthand notation, the direction words can also be used as action words; for example, "NORTH", "GO NORTH", and "MOVE NORTH" all have the same meaning. The explorer starts in room 1.

2. OBJECTS

There are two actions for handling objects: "TAKE" and "DROP". TAKE allows the explorer to pick up an object that is present in the room while DROP allows an object being carried to be placed in a room. The objects available in this game are a lizard's leg, owl's wing, cat hair, eye of newt, and toe of frog. In addition, the objects are initially located in specific rooms. The cat hair is in room 10, the eye of newt is in room 2, the toe of frog is in room 7, the lizard's leg is in room 4, and the owl's wing is in room 8. The object words that you must use are "HAIR" for cat hair, "EYE" for eye of newt, "TOE" and "FROG" for toe of frog, "LEG" for lizard's leg, and "WING" for owl's wing. All of these items must be deposited in room 1 in order to win the game.

3. MISCELLANEOUS

Some options are miscellaneous in nature. "QUIT" allows the user to exit the program. "LOOK" is used to reprint the room descriptor text. "INVENTORY" gives a list of what the explorer is currently carrying. "SCORE" is used to print out the current score. The default scoring algorithm to be employed is one point for each item deposited in room 1 plus one point for each room visited by the explorer. This results in a possible score of 15 points. Note that with this scoring algorithm it is theoretically possible to win the game without scoring all 15 possible points.

The next two pages consist of text that is to be used for some of the rooms. You are to write the room description text for those rooms not given. Room descriptions that get into the spirit of things may receive an extra point at the discretion of the grader, up to a total of five points (one point per room).

NOTES:

For your data structures you should definitely think about records and pointers.

This program is worth a total of 100 points. Additional points are available, at the discretion of the instructor, up to a maximum of 25 points. To receive extra points one must successfully implement a feature that is beyond what is called for in the specifications. Examples would be a larger vocabulary or a save and restore game feature. You must make a proposal in writing outlining what feature(s) you wish to add for extra credit.

Hand in a copy of the source code of your program plus a sample run that visits all of the rooms and successfully completes the game.

**2 *Witch*. Fillet of a fenny snake,
In the cauldron boil and bake;
Eye of newt, and toe of frog,
Wool of bat, and tongue of dog,
Adder's fork, and blind-worm's sting,
Lizard's leg, and owl's wing,
For a charm of powerful trouble,
Like a hell-broth boil and bubble.**

ROOM DESCRIPTIONS

Room 1 -all versions start with the following text:

You are in a dark cave. In the middle, there is a cauldron boiling. With a clasp of thunder, three witches suddenly appear before you.

Room 1 -first visit text:

The witches speak in unison:

"Mortal, we have summoned thee, make haste!
And go forth into the farrow'd waste.
Find eye of newt, and toe of frog,
And deliver thus to this Scottish bog.
Lizard 's leg, and owlet's wing,
And hair of cat that used to sing.
These things we need t' brew our charm;
Bring them forth -and suffer no 'arm.
Leave us and go!
'Tis no more to be said,
Save if you fail, then thou be stricken, dead."

Room 1 later visit text:

The witches stand before you, glaring; they seem to be expecting something from you.

Room 1 winning text (when all five items have been deposited in room 1):

The witches look at your items with suspicion, but decide to go through with the incantation of the spell:

"Take lizard's leg and owlet's wing,
And hair of cat that used to sing.
In the cauldron they all shall go;
Stirring briskly, to and fro.
When the color is of a hog,
Add eye of newt and toe of frog.
Bubble all i' the charmed pot;
Bubble all 'til good and hot.
Pour the broth into a cup of stone,
And stir it well with a mummy's bone."

You take the resulting broth offered to you and drink...
As the fog clears, you find yourself at a computer terminal;
your adventure is at an end.

Room 2 – both versions start with the following text:

You're transported back in time ... you find yourself in Georgia during the midst of a congressional campaign.

Room 2 pre-action text:

There is a campaign poster of Newt Gingrich, the Speaker of the House of Representatives, on the wall, with his large eyes looking right at you.

Room 2 post-action text:

There is a defaced poster of Newt Gingrich on the wall.

Room 7:

You find yourself walking into a scene where the cast of Monty Python's Flying Circus is performing the "Crunchy Frog" sketch. You see the confectioner as he replies, "If we took the bones out it wouldn't be crunchy now, would it?" You see a box of "Crunchy Frog" chocolates, the contents of which contains a dozen nicely cleaned whole frogs that have been carefully hand-dipped in the finest chocolate.

Room 9:

As you step through the time portal, your head begins to spin you're disoriented and then awaken. You find yourself at the outside door of a dormitory kitchen. Listening, you hear the Chef yelling, "Stop! Stop!" while several cats inside are singing a serenade of the "Meow Mix" commercial theme. Suddenly, the repeated thump of a cleaver puts an abrupt end to the music.

Room 10:

You are in the kitchen. Looking out into the cafeteria, you see students reaching for Pepto-Bismol while trying to stomach the latest version of the Chef's Surprise. You see the Chef as he finishes dumping fresh meat into his 50-quart stewing pot. There are clumps of cat hair on the butcher's block. You hear the Chef muttering to himself, "Prepared properly, cat tastes much like chicken..."

**All: Double, double toil and trouble,
Fire, burn; and, cauldron, bubble.**
