



CS/ECE 165 – Programming 2 – Dr. Estell Winter Quarter 2001-02

MP 5 – "Escape to Pokagon"

Due by classtime on Tuesday, 5 February 2002

For this assignment, you are to write a small-scale simulation/adventure game that is based on an exploration of at least a portion of Pokagon State Park in Indiana. The adventurer will be directed using commands typed in by the person playing the game.

Adventure games generally consist of an explorer moving from room to room through a set of interconnecting corridors. Each room has a number, and (usually) up to four corridors leaving the room. The directions for travel are indicated by position; top is north, bottom is south, left is west, and right is east (see figure 1). Normally corridors can be traversed in both directions, but not always. For this particular program, instead of actual rooms there are hiking trails that need to be represented. In this case, a "room" is now a particular location on the trail, and the "corridors" are the hiking trails that lead from that location. 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, some sample room descriptions will be given to you; however, the actual room descriptions (which may incorporate the sample descriptions) are up to you.

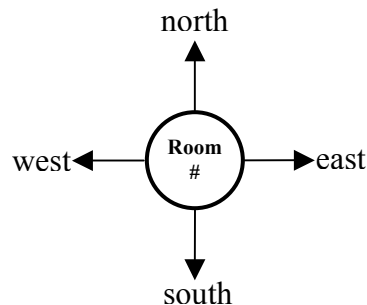


Figure 1. Typical room mapping element with directions.

A sample map of Pokagon State Park is attached to this handout; the full map of the park and its trails (for those who wish to pursue extra credit, or just want to go hiking as it is not too far away) is located on the web at:

http://www.state.in.us/dnr/parklake/maps/parks/pokagon_trail.pdf

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 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 at the location labeled "Entrance" on the provided map.

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 acorns, oak leaves, deer, hiking staff, canteen, and binoculars. In addition, the objects are initially located in specific rooms. All of these items must be deposited at the Inn in order to win the game.

3. MISCELLANEOUS

Some options are miscellaneous in nature. "QUIT" allows the user to end the simulation. "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 scoring algorithm should include visiting major park sights (such as Hell's Point), completing portions of the trail, and depositing items at the Inn.

NOTES:

You are allowed to work in groups of two on this program; however, you will be held to a higher standard and are required to incorporate the use of graphics and data files into your program.

Your code must be well documented. You are required to use objects to represent the rooms and the physical objects in the simulation.

For the simulation, you must implement the following "rooms": all of trails 3 and 6 (the rooms are shown as either open or filled circles), the entrance, the gate house, Lake Lonidaw, the parking lot, and the Inn. By some of the rooms there are objects listed: these are the rooms where the given objects are to be initially located.

This program is worth a total of 100 points. Extra credit is available, at the discretion of the instructor, up to a maximum of an additional 150 points. To receive extra credit one must successfully implement a feature that is clearly beyond what is called for in the specifications. Examples would be a larger vocabulary, using data files (see next page), having consumable items, adding additional "rooms," using the random number generator to simulate being "lost in the woods" if one strays off the trail, displaying graphical images of rooms (and objects), assigning weights to objects and having a maximum capacity on the amount of stuff you can carry, or a save and restore game feature. You must make a proposal in writing by classtime on Tuesday, 22 January 2002, outlining what feature(s) you wish to add for extra credit.

The best approach to writing this type of program is to create an adventure "engine" where data files are used to specify the rooms, their descriptions, and their interconnections; and another one is used for describing the objects. For this program, one is allowed to "hardcode" the filenames for the descriptive databases then specify in the documentation that they are to be present within the same folder as the executable source code. For example, if we were to go with an extra credit grabbing full-blown implementation that included photographs of the scenery, we might go with the following format for the room database:

Line 1: data in comment form containing room number. Rooms are sequentially enumerated beginning at zero.
Line 2: six integers indicating the ability to travel (in order) north, south, east, west, up, or down from the current room. The value **-1** is used to indicate that one cannot travel in that direction; any other value indicates the room number of the room that would be visited if one travels in that direction.
Line 3: points received for visiting this room.
Line 4: name of image file used by your graphics package to illustrate where you are. Make sure there is no whitespace in the filename.
Line 5: one line (i.e. short) description of where you are. Short descriptions are often used when revisiting a room.
Line 6: start of (long) descriptive room text. Text will be formatted on the display exactly as it appears in the data file. Multiple lines are permitted; you may assume that a single line of input contains no more than 100 characters. The word **END** at the beginning of a line is used to indicate the end of the descriptive text.

Partial (i.e. fragmentary) example of a room data file:

```
// ROOM 3
-1 -1 -1 0 -1 -1
5
LakeLonidaw.bmp
You are at the shores of Lake Lonidaw.
You are at the shores of Lake Lonidaw, a kettle lake
formed by a glacier from the last ice age over
12,000 years ago. It's quiet and peaceful here.
A path leads to the west.
END
// ROOM 4
5 2 -1 -1 -1 -1
0
ParkingLot.bmp
You are in the parking lot.
You are in the parking lot. There are a lot of cars here;
fortunately, there are still a couple of parking places available.
The trailhead for trail 3 is to the north; the entrance to the
Potawatomi Inn is to the south.
END
```

Objects can also be represented in a data file. For this example, one could use a one line per object format:

```
4 2 5 hiking staff
3 0 3 deer
2 0 6 can of Spam
```

In this example, there are four fields: three integers followed by a string. The first field is where the object is initially located; please note that it is possible to have more than one object present in a room. The second field is the room where the object is to be deposited for credit. The third field is the number of points received for depositing the object in the "credit room." The last field contains the name of the object. Please note that these are examples; you are free to design your own format specifications for your data files.

To submit your assignment, please turn in to Dr. Estell an electronic copy (via email, CD, or zip disk) of all of your source code files. In addition, you are to hand in at classtime a printout of your source code, plus a sample run that visits all of the rooms, illustrates all options, and successfully completes the game. Some students will be asked to demonstrate their programs at the final laboratory session.

The following section consists of sample text that illustrates how the descriptive text is written, as well as the "look and feel" of the simulation. Sample user input is shown in ***bold italics***. You are to write the room description text for this simulation, using the provided trail descriptions as a guide. Room descriptions that get into the spirit of things may receive an extra point at the instructor's discretion, up to a total of 10 points (one point per room).

SAMPLE ROOM DESCRIPTIONS WITH EXAMPLE COMMANDS

Room 0 (Entrance):

You're driving on highway 727. To the right there is a sign:
WELCOME TO POKAGON STATE PARK
Gate house ahead - be prepared to stop
The road continues to the west.
> ***GO WEST***

Room 2 (Gatehouse):

You are at the gatehouse to the Park.
On the front of the gate house there is a sign:

ENTRANCE FEE: \$2 PER CAR

Inside the gate house there is a park attendant
looking at you.
> ***GO WEST***

Room 2 (Gatehouse, after trying to drive through without paying the entrance fee):

You are at the gatehouse to the Park.
On the front of the gate house there is a sign:

ENTRANCE FEE: \$2 PER CAR

Inside the gate house there is a park attendant.
The attendant sternly admonishes you for trying to pass
without paying the entrance fee. In the distance you see
a bear whose attention has been attracted by the commotion.
> ***PAY FEE***

Room 3 (Lake Lonidaw):

You are at the shores of Lake Lonidaw, a kettle lake
formed by a glacier from the last ice age over
12,000 years ago. It's quiet and peaceful here.
A path leads to the west.
> ***SWIM***

Room 4 (Parking Lot):

You are in the parking lot. There are a lot of cars here;
fortunately, there are still a couple of parking places available.
The trailhead for trail 3 is to the north; the entrance to the
Potawatomi Inn is to the south.
> ***SOUTH***

Room 5 (Potawatomi Inn):

You are at the Potawatomi Inn. From the registration desk you can see both the kitchen and the dining room. In the dining room you see many patrons reaching for bottles of Pepto-Bismol while trying to stomach the latest version of the Chef's Surprise. In the kitchen you see an old friend: the Chef who used to work at the University cafeteria. You watch with fond memories as he finishes dumping fresh meat into his 50 quart stewing pot. There are several clumps of cat hair on the butcher's block. You hear the Chef muttering to himself, "Prepared properly, cat tastes much like chicken..."

> **ENTER KITCHEN**

Room 6 (Somewhere on Trail 3):

You are in the midst of a deep hardwood forest. Massive tall oaks surround you in all directions. In the distance you hear squirrels barking. The trail continues north and south.

> **EAST**

You cannot travel in that direction.

Room 7 (Somewhere on Trail 3 - example of describing the presence of an object):

You are in the midst of a deep hardwood forest. Massive tall oaks surround you in all directions. There are beautifully colored oak leaves on the trees; however, they are too high for you to reach. The trail continues north and south.

There is a stray cow here.

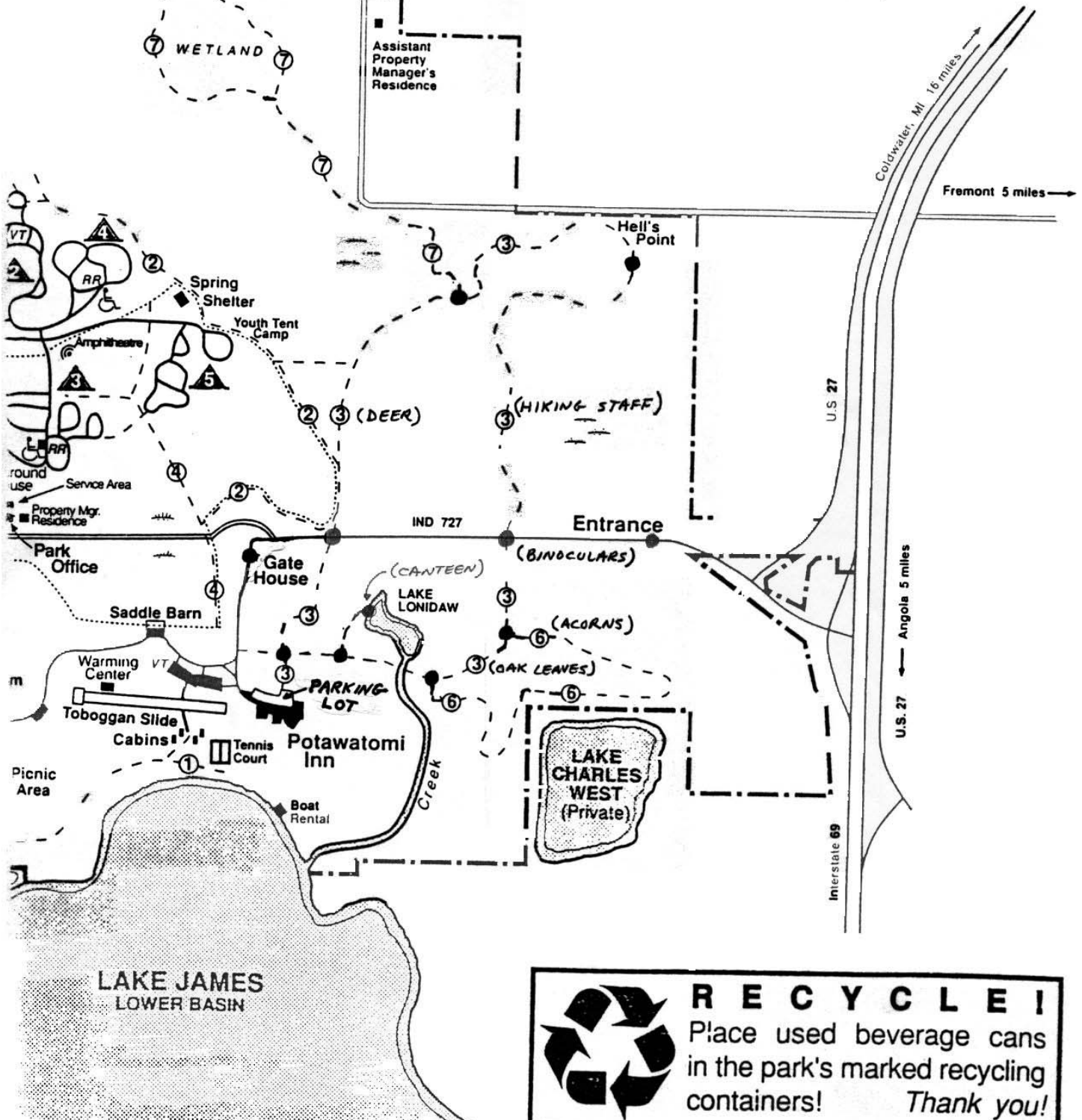
> **TAKE STRAY COW**

Have fun, and good luck!

POKAGON

Angola,
1,203 Acres

OFFICIAL Room MAP



RECYCLE!
Place used beverage cans
in the park's marked recycling
containers! Thank you!