Learning Goals

1. Plan code from provided software requirements.
2. Practice using flowcharts and pseudocode for planning.
3. Experience an easier coding process as a result of good planning.

Business Goal

This program will be a small interactive story book, of the "choose your own ending" variety. The person at the keyboard will get some multiple-choice options for what happens next in the story. Depending on what they choose, the story changes.

Planning Steps

First, read through the story lines (next page). Practice following a story line with your finger on the page so you understand how it works. Then, start a flow chart to match the story. After you've drawn a flow chart, check that the various story lines all match between your flow chart and the original requirements, including decision points.
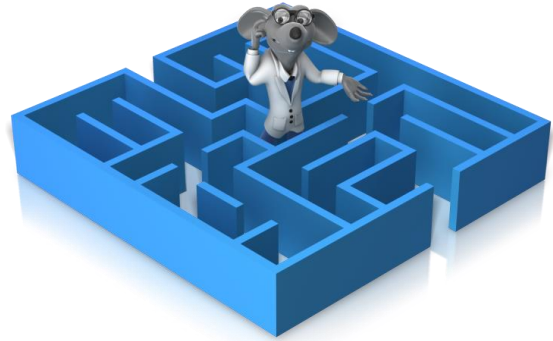
Get a new sheet of paper, and write pseudocode that matches the requirements and flow chart. Again, check that it's right as best you can.

These two written planning steps are a significant part of this assignment. The code isn't much harder than what you've already done. The purpose of this assignment is to practice with flowcharts and pseudocode. They're incredible tools to help you tackle harder challenges in the upcoming assignments.

Once you've made your flowchart and pseudocode, then start working on actual code. If your pseudocode is close enough, you should find this to be a fairly fast and easy process, with few logical mistakes. You may still have some syntax errors or typos, and that's fine. We're trying to use the pseudocode to work out the overall structure before you start writing code, so that at least the logic is correct.

Business Rules

Here are the story lines. I've put numbers on them to make it easier to explain the goal, but you won't need the numbers inside your program. To save some typing, you can copy-paste story excerpts directly from the PDF into your code, once you're ready for that.

Start at 1

1	You are a small, hungry field mouse. You find yourself standing in a mouse hole in the kitchen of a farm house. In the room is a bowl of cat food that smells really tasty. A young cat is sleeping on a rug in the middle of the room. Looking around the room, you see a wooden table with chairs, a metal floor lamp, and curtains over a window. You can smell a summer breeze blowing in. Where do you go? Options: chair table lamp food curtain
	chair - go to 2
	table - go to 3
	lamp - go to 4
	food - go to 5
	curtain - go to 6

2	You sneak quietly to the chair and climb its rough wood. The only place you can reach from here is the table, so you climb it too. Looking around from the table, you see two paths. You can walk across the countertop to the open window, or you can climb down the table leg to the floor. Where do you go? Options: window floor
	window - go to 7
	floor - go to 8

3	You sneak quietly to the table. The legs are polished and slippery, and you fall with a thump when you try to climb up. The cat woke up! He chases you around the kitchen and back into the mouse hole! Exhausted and hungry, you give up for the day. (The End)

4	You sneak quietly over to the lamp and try to climb it. The lamp buzzes slightly under your paws, and the light turns on with a click! The cat heard the lamp turn on and snaps awake. He chases you around the kitchen and back into your hole! (The End)

5	You sneak over to the cat's food dish. There's one piece of food on the floor and more in the dish. You're very hungry. What do you eat? Options: floor dish
	floor - go to 9
	dish - go to 10

6	You sneak quietly across the room to the long curtains hanging by the window. The curtains are an easy climb. The cat is still asleep. You smell a barn just outside. Where do you go? Options: down window
	down - go to 11
	window - go to 12

7	You climb out the window and down. The tall grass hides you well. You find some tasty spilled grain. By the time you get to the barn, you are well fed, and ready to take a nap in the hay. There is no cat in the barn. You're a happy mouse. (The End)

8	You try to climb down the table leg but it's too slippery. Thump! You hit the floor with a bang. The cat wakes up and chases you around the kitchen! You race back to your hole, still hungry, and hide for the rest of the day. (The End)

9	You eat a large, tasty piece of cat food that was dropped on the floor. You were very quiet. The cat hasn't woken up yet. Where do you go next? Options: dish curtain
	dish - go to 13
	curtain - go to 14

10	The cat food rattles loudly as you climb into the cat food dish. The cat wakes up! And he knows exactly where you are. He's on you in an instant! You are lunch. :(We'll be sure to notify your next of kin. (The End)

11	As you climb back down the curtain, the cat stretches and looks around the room. He notices the curtain hanging strangely and comes over to investigate. You have barely a moment to race back into your hole and try again tomorrow. (The End)

12	You smell a barn nearby with fresh grain. You climb through the window and hide in the tall grass. There's spilled grain here that makes a tasty treat. By the time you reach the barn, you are well fed, and find a quiet spot in the hay for a nap. There is no cat in the barn. You're a happy mouse! (The End)

13	The cat food rattles loudly as you climb into the cat food dish. The cat wakes up! And he knows exactly where you are. He's on you in an instant! You are lunch. :(We'll be sure to notify your next of kin. (The End)

14	You quietly sneak over to the curtain. The cat wakes up slow and groggy. You've already made it to the curtain by the time he notices you. With a burst of well-fed strength, you race up the curtain and leap out the open window! Behind you, you hear the thump of the cat hitting the window frame and not making it through. You follow a grain trail to the barn and find some warm hay to hide in for a nap. There is no cat in the barn. You're a happy mouse! (The End)

If a person types in an invalid option, you can print a message "That was an invalid option" and then the program ends. You don't have to worry about making them try again.

After the person reaches a "happy mouse" ending, the program should print "You win!" If they send the hungry mouse back into its hole, the program should print "Try again later." If the cat eats the mouse, the program should print "The world's tiniest sad trombone plays at your mouse funeral" or some other silly message you make up (have fun with it).

Test Cases

When you're finished, you should be able to compile your code one final time, and then run it several times <u>without changing the code</u>, typing in different words to test each case. When you find a bug, fix it, and then retest ALL of the test cases.

Wait, what test cases? First you need to list out all possible paths through the program. If you've got a good, reliable flowchart, this should be fairly easy. If you're struggling to find all the paths, work with a friend to write down the options.

This is similar to the kind of path analysis you will do in harder programs in the future. It's important for the software developer to be able to identify the possible options and combinations, so they make sure to test every branch.

Starter Code

```java
import static java.lang.System.out;
import java.util.Scanner;

public class CatAndMouse
{
    public static void main(String[] args)
    {
        Scanner keyboard = new Scanner(System.in);




    }
}
```