EECS 10: Assignment 3

October 8, 2004

Due Monday 10/18/2004 12:00pm

1 Guess the Number [20 points + 5 points (extra credit)]

Write a program that plays the game of "guess the number". In this game, the computer thinks of a number between 1 and a user specified limit and the player has to guess this number. The computer tries to help the player by giving hints on whether the guessed number is less than or more than the required number.
The format of the program should be as follows:

You first ask the user for the upper bound of the range in which the random number will be generated. Your first line of output should display something like the following:

```
Enter the upper bound of the range in which the random number will be generated:
```

Once the user has input the upper bound (say n), your program chooses the number to be guessed by selecting an integer at random in the range 1 to n. The program then displays the following:

```
This is a guessing game, I have a number
Can you guess my number ?
Please type your first number
```

The player then types a first guess. The program responds with one of the following according to the guess made:

- `Excellent, you guessed the number!`

- `Too low.  Try again!`

- `Too high.  Try again!`

If the player's guess is incorrect, your program should loop until the player finally gets the number right.
Your program should keep telling the player `Too high` or `Too low` to help the player zero in on the correct answer.
To show that your program works correctly, play it once with a range between 1 and 1000 and submit this run as your script file (guess.script)

HINT
For generating the initial number from which the guesses will be compared you have to use the function `drand48()`
This function is present in the `stdlib.h` header file and generates a random number of type `double` between 0.0 and 1.0. The `stdlib.h` is a header file like the `stdio.h`, and houses a number of function that can be used.
In this program, the following needs to be done to generate the random number for the game:
1. Include the `stdlib.h` header file (copy the following along with the other header file)
`#include<stdlib.h>`

2. Include the following line in the main function,

```
randomNumber = (int)(n*drand48()) + 1;
```

Here, n specifies the upper bound of the range in which the random number will be generated, and randomNumber is the integer variable which has the generated random number.

For **5 extra credits**:
How many steps atmost does it take for a "Good Guesser" to guess a number between 1 and 1000. Explain also why!

2 Exercise 3.17 from the textbook [20 points]

3 What to turn in

Use the submission method as for the previous assignments to submit the following files:

- `guess.c`

- `guess.script`

- `guess.extra.txt`

- `mileage.c`

- `mileage.script`