## L3 PROBLEM 9  (5/5 points)

In this problem, you'll create a program that guesses a secret number!

The program works as follows: you (the user) thinks of an integer between 0 (inclusive) and 100 (not inclusive). The computer makes guesses, and you give it input - is its guess too high or too low? Using bisection search, the computer will guess the user's secret number!

Here is a transcript of an example session:

```
Please think of a number between 0 and 100!
Is your secret number 50?
Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low. Enter 'c' to indicate I
guessed correctly. l
Is your secret number 75?
Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low. Enter 'c' to indicate I
guessed correctly. l
Is your secret number 87?
Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low. Enter 'c' to indicate I
guessed correctly. h
Is your secret number 81?
Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low. Enter 'c' to indicate I
guessed correctly. l
Is your secret number 84?
Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low. Enter 'c' to indicate I
guessed correctly. h
Is your secret number 82?
Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low. Enter 'c' to indicate I
guessed correctly. l
Is your secret number 83?
Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low. Enter 'c' to indicate I
guessed correctly. c
Game over. Your secret number was: 83
```

Your program should use bisection search. So think carefully what that means. What will the first guess always be? How should you calculate subsequent guesses?

Hint: Endpoints

Python Trick: Printing on the same line

**Note:** your program should be using `raw_input` to obtain the user's input! Be sure to handle the case when the user's input is not one of `h`, `l`, or `c`.

When the user enters something invalid, you should print out a message to the user explaining you did not understand their input. Then, you should re-ask the question, and prompt again for input. For example:

```
Is your secret number 91?
Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low. Enter 'c' to indicate I
guessed correctly. y
Sorry, I did not understand your input.
Is your secret number 91?
Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low. Enter 'c' to indicate I
guessed correctly. c
```

Help

```
1  # Paste your code into this box
2  print("Please think of a number between 0 and 100!")
3
4  # At the start the highest the number could be is 100 and the lowest is 0.
5  hi = 100
6  lo = 0
7  guessed = False
8
9  # Loop until we guess it correctly
10 while not guessed:
11     # Bisection search: guess the midpoint between our current high and low guesses
12     guess = (hi + lo)/2
13     print("Is your secret number " + str(guess)+ "?")
14     user_inp = raw_input("Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too lo
15
16     if user inp == 'c':
```

Correct

```
print("Please think of a number between 0 and 100!")

# At the start the highest the number could be is 100 and the lowest is 0.
hi = 100
lo = 0
guessed = False

# Loop until we guess it correctly
while not guessed:
    # Bisection search: guess the midpoint between our current high and low guesses
    guess = (hi + lo)/2
    print("Is your secret number " + str(guess)+ "?")
    user_inp = raw_input("Enter 'h' to indicate the guess is too high. Enter 'l' to indicate the guess is too low.
 Enter 'c' to indicate I guessed correctly. ")

    if user_inp == 'c':
        # We got it right!
        guessed = True
    elif user_inp == 'h':
        # Guess was too high. So make the current guess the highest possible guess.
        hi = guess
    elif user_inp == 'l':
        # Guess was too low. So make the current guess the lowest possible guess.
        lo = guess
    else:
        print("Sorry, I did not understand your input.")

print('Game over. Your secret number was: ' + str(guess))
```

## Test results

See full output

**CORRECT**

Check    Hide Answer

**If you believe you have correct code but it is marked incorrect after clicking "Check"...**

After you submit your code, you can see every test case the graders runs on your code. They compare what your code outputs with what our answer code is supposed to output. Click the small link titled "See Full Output" below the Test Results header.

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