HW2

Deadline: 12/8/2023 23:59

5.32 (Guess the Number) Write a C program that plays the game of “guess the number” as follows: Your program chooses the number to be guessed by selecting an integer at random in the range 1 to 1000. The program then types:

```
I have a number between 1 and 1000.
Can you guess my number?
Please type your first guess.
```

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

```
1. Excellent! You guessed the number!
Would you like to play again (y or n)?
2. Too low. Try again.
3. 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.

5.34 Write a recursive function power(base, exponent) that when invoked returns

$$\text{base}^{\text{exponent}}$$

For example, $\text{power}(3, 4) = 3 * 3 * 3 * 3$. Assume that exponent is an integer greater than or equal to 1. *Hint:* The recursion step would use the relationship

$$\text{base}^{\text{exponent}} = \text{base} * \text{base}^{\text{exponent-1}}$$

and the terminating condition occurs when exponent is equal to 1 because

$$\text{base}^1 = \text{base}$$

6.31 (Palindromes) A palindrome is a string that’s spelled the same way forward and backward. Some examples of palindromes are: “radar,” “able was i ere i saw elba,” and, if you ignore blanks, “a man a plan a canal panama.” Write a recursive function testPalindrome that returns 1 if the string stored in the array is a palindrome and 0 otherwise. The function should ignore spaces and punctuation in the string.