Part A) Power Function – 6 points

Suppose Python had no operator ** for raising a number to a power, as is the case with some other programming languages.   Also assume there is no built in power function. For this assignment you are to write a power function and test it out.

The function should accept a decimal number and an integer as arguments. **These numbers must be entered in the main section and screened for errors.** The value returned by the function should be a decimal, the result of raising the decimal number to the integer power. For example,

power(3.0,4) should return the decimal value 81.0, as 3.0 to the 4th power is 81.

power(247.5,0) should return the value 1.0, as anything raised to the 0 power is 1.
   NOTE -- although 0 to the 0 power is undefined in mathematical analysis,
            we will assume it is one

power(-34.2, -3) should return the value -0.000025 (approximate), as a number raised to the -3 power is the same as 1 divided by the number cubed.

The power function probably will contain a loop with multiplications for doing the calculation and some ifs**. You may not use any existing power operators or power functions or power methods. You may NOT use any other math functions.** This function will just compute and return the result given the arguments. If the user does not enter appropriate numbers for input the program should give its own error message.

You might want to try your program on the three examples given above and on

-1.43   to the 26 power
0.7155 to the -17 power
4123.6 to the 1 power
5.6 to the hello power

Note: It is not enough just to get the program to work. You must use a separate function to compute power as described exactly above.

In this program, the computer will create a 4-digit, nonnegative integer and the user's task is to figure out the number using the reports from the computer. The user will input an initial guess (assume correct input) and the computer will tell the user if a digit appears in the number, and, if so, in what position it appears (See the sample output below). The user will then use the information in the report to enter another number, and continue until the number entered is a WINNER.

Suggestions: Create a function called **getRandom,** where the random number is generated. Put the rest of the code in the main section. In the function, use a WHILE loop to make sure the computer produces a random number with no repeats. Then, in the main section use a WHILE loop containing a FOR loop to play the game. **Use only <u>one</u> user created function in this program,**

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Guess the 4- digit random nonnegative integer - no repeats
As the program proceeds, the computer will tell you
if a digit appears in the number, and, if it does what its position is
Good Luck

Enter a 4 -digit number with no repeats: 1234
YES 1 is present
YES 2 is present
3 not present
4 not present
Enter another number: 0512
0 not present
YES 5 is present
and in correct position
YES 1 is present
YES 2 is present
Enter another number: 6521
6 not present
YES 5 is present
and in correct position
YES 2 is present
and in correct position
YES 1 is present
and in correct position
Enter another number: 7521
YES 7 is present
and in correct position
YES 5 is present
and in correct position
YES 2 is present
and in correct position
YES 1 is present
and in correct position
WINNER
```