L5 PROBLEM 3 (5 points possible)

The function `recurPower(base, exp)` from Problem 2 computed base^{exp} by decomposing the problem into one recursive case and one base case:

$$\begin{aligned} \text{base}^{\text{exp}} &= \text{base} \cdot \text{base}^{\text{exp}-1} && \text{if exp} > 0 \\ \text{base}^{\text{exp}} &= 1 && \text{if exp} = 0 \end{aligned}$$

Another way to solve this problem just using multiplication (and remainder) is to note that

$$\begin{aligned} \text{base}^{\text{exp}} &= (\text{base}^2)^{\frac{\text{exp}}{2}} && \text{if exp} > 0 \text{ and exp is even} \\ \text{base}^{\text{exp}} &= \text{base} \cdot \text{base}^{\text{exp}-1} && \text{if exp} > 0 \text{ and exp is odd} \\ \text{base}^{\text{exp}} &= 1 && \text{if exp} = 0 \end{aligned}$$

Write a procedure `recurPowerNew` which recursively computes exponentials using this idea.

```
def recurPowerNew(base, exp):
    '''
    base: int or float.
    exp: int >= 0

    returns: int or float; base^exp
    '''
    # Your code here

```

Unanswered

Note: In programming there are many ways to solve a problem. For your code to check correctly here, though, you must write your recursive function such that you make a recursive call directly to the function `recurPowerNew`. Thank you for understanding.

Check

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