Software Engineering: Assignment 1

Assignment 1.py

"""

Program Title : Near Misses

Name of the file : Assignment 1

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Explanation of the Program : the Program searchs for near miss with the value of n and K. the n value should be between 2 and 12 , and k value should be

greater than 10. if theses two conditions are statisfied then it will search for near misses. it works on the formula given

in the requirement to calculate the near misses

"""

```
# the n and k values are set to be 1
n_value = 1
k_value = 1


def main1():


    while True:
        # getting input from the user
        n_value = int(input("Enter value for n such that 2 < n < 12: "))
```

```
    # the loop has been create to check the condition
    if ((n_value <= 2) or (n_value >= 12)):
        print("Invalid input! enter a number between 2 and 12")
    else:
        # getting k value from the user
        k_value= int(input("Enter upper limit k for x and y (k > 10): "))
        if k_value >= 10:
            past_miss=None
            for x in range(10, k_value+1):
                for y in range(x,k_value+1):
                    pow_var = pow(x, n_value) + pow(y, n_value)
                    z = int(pow(pow_var, 1/n_value))
                    pow_of_z = pow(z, n_value)
                    pow_z = pow(z+1, n_value)
                    miss_value = min( pow_var - pow_of_z, pow_z - pow_var)
                    miss_rel = miss_value/pow_var
                    rel_mis = miss_rel
                    print("\nx = {} y = {}  z = {}  Miss = {}  Relative Miss = {}%".format(x, y, z, miss_value,
round(rel_mis*100,2)))
            break
        else:
            print("Invalid input!!!! enter a number greater than 10")


main1()
```

Output

```
Enter value for n such that 2 < n < 12: 3
Enter upper limit k for x and y (k > 10): 11

x = 10 y = 10  z = 12  Miss = 197  Relative Miss = 9.85%

x = 10 y = 11  z = 13  Miss = 134  Relative Miss = 5.75%

x = 11 y = 11  z = 13  Miss = 82  Relative Miss = 3.08%
```