import random

def generate\_number():

"""Generate a random 4-digit number with unique digits."""

digits = list(range(10))

random.shuffle(digits)

return ''.join(map(str, digits[:4]))

def get\_cows\_and\_bulls(secret, guess):

"""Calculate the number of cows and bulls for the given guess."""

cows = 0

bulls = 0

# Lists to track matched characters

secret\_used = [False] \* 4

guess\_used = [False] \* 4

# Check for cows (correct digit and correct position)

for i in range(4):

if guess[i] == secret[i]:

cows += 1

secret\_used[i] = True

guess\_used[i] = True

# Check for bulls (correct digit but incorrect position)

for i in range(4):

if not guess\_used[i]:

for j in range(4):

if not secret\_used[j] and guess[i] == secret[j]:

bulls += 1

secret\_used[j] = True

break

return cows, bulls

def main():

print("Welcome to the Cows and Bulls game!")

# Generate the secret number

secret\_number = generate\_number()

guess\_count = 0

while True:

# Get user guess

guess = input("Enter your 4-digit guess: ")

# Validate the input

if len(guess) != 4 or not guess.isdigit():

print("Invalid input. Please enter a 4-digit number.")

continue

guess\_count += 1

# Get cows and bulls

cows, bulls = get\_cows\_and\_bulls(secret\_number, guess)

# Display results

print(f"Cows: {cows}, Bulls: {bulls}")

# Check if the user guessed the number correctly

if cows == 4:

print(f"Congratulations! You've guessed the number {secret\_number} correctly.")

print(f"It took you {guess\_count} guesses.")

break

if \_\_name\_\_ == "\_\_main\_\_":

main()