Create a program that will play the “cows and bulls” game with the user. The game works like this:

Randomly generate a 4-digit number. Ask the user to guess a 4-digit number(Digits should not be repeated). For every digit that the user guessed correctly in the correct place, they have a “cow”. For every digit the user guessed correctly in the wrong place is a “bull.” Every time the user makes a guess, tell them how many “cows” and “bulls” they have. Once the user guesses the correct number, the game is over. Keep track of the number of guesses the user makes throughout teh game and tell the user at the end.

Say the number generated by the computer is 1038. An example interaction could look like this:

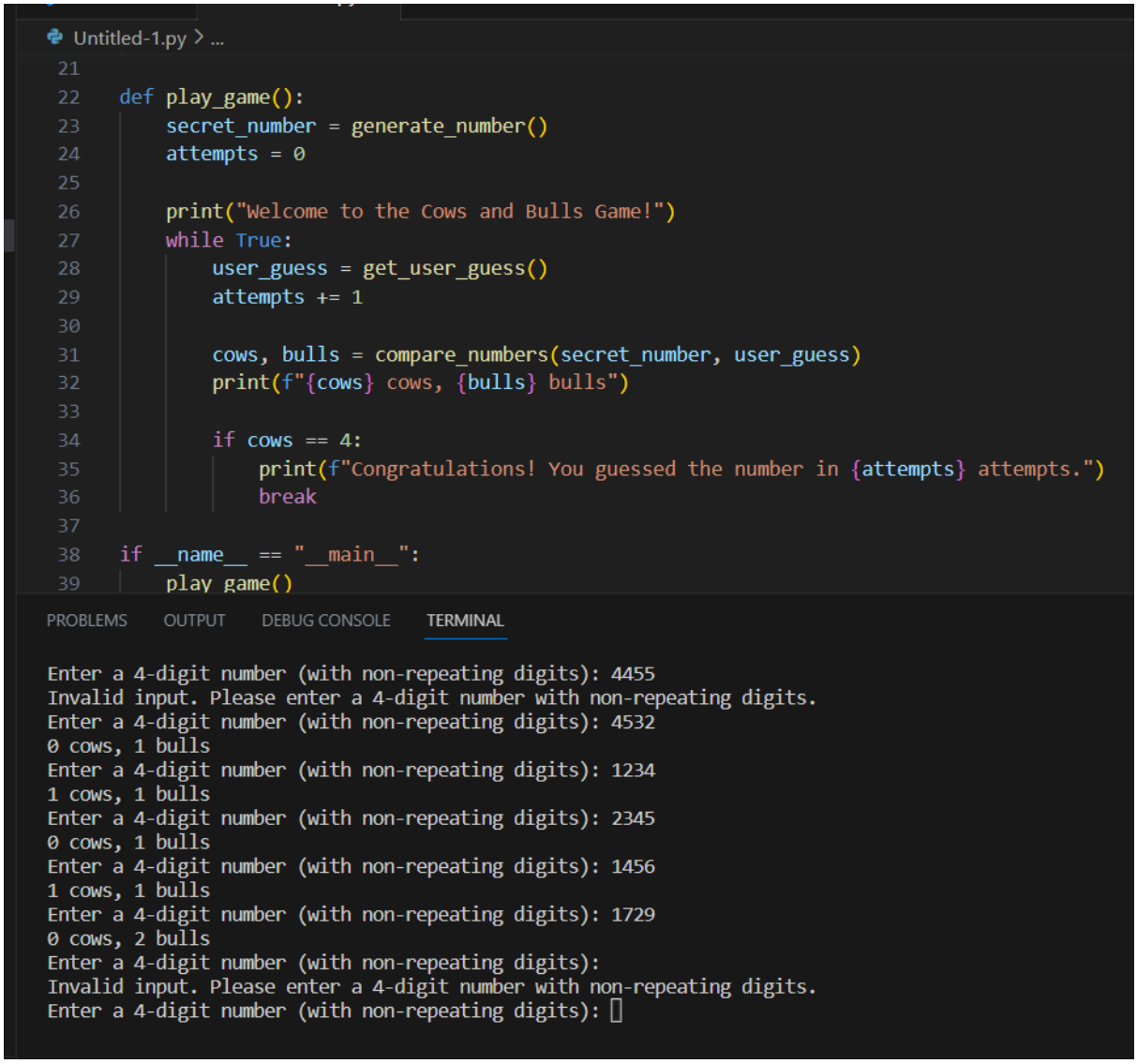
Welcome to the Cows and Bulls Game!
Enter a number:
>>> 1234
2 cows, 0 bulls
>>> 1250
1 cow, 1 bull
...
Until the user guesses the number.

ANS:

```
import random

def generate_number():
    return random.sample(range(10), 4)

def get_user_guess():
    while True:
        user_input = input("Enter a 4-digit number (with non-repeating
digits): ")
        if user_input.isdigit() and len(user_input) == 4 and
len(set(user_input)) == 4:
            return [int(digit) for digit in user_input]
        print("Invalid input. Please enter a 4-digit number with
non-repeating digits.")

def compare_numbers(secret_number, user_guess):
    cows, bulls = 0, 0
```

```
    for i in range(4):
        if secret_number[i] == user_guess[i]:
            cows += 1
        elif user_guess[i] in secret_number:
            bulls += 1
    return cows, bulls

def play_game():
    secret_number = generate_number()
    attempts = 0

    print("Welcome to the Cows and Bulls Game!")
    while True:
        user_guess = get_user_guess()
        attempts += 1

        cows, bulls = compare_numbers(secret_number, user_guess)
        print(f"{cows} cows, {bulls} bulls")

        if cows == 4:
            print(f"Congratulations! You guessed the number in {attempts}
attempts.")
            break

if __name__ == "__main__":
    play_game()
```

OUTPUT:


Untitled-1.py > ...
21
22 def play_game():
23 secret_number = generate_number()
24 attempts = 0
25
26 print("Welcome to the Cows and Bulls Game!")
27 while True:
28 user_guess = get_user_guess()
29 attempts += 1
30
31 cows, bulls = compare_numbers(secret_number, user_guess)
32 print(f"{cows} cows, {bulls} bulls")
33
34 if cows == 4:
35 print(f"Congratulations! You guessed the number in {attempts} attempts.")
36 break
37
38 if __name__ == "__main__":
39 play_game()
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Enter a 4-digit number (with non-repeating digits): 4455
Invalid input. Please enter a 4-digit number with non-repeating digits.
Enter a 4-digit number (with non-repeating digits): 4532
0 cows, 1 bulls
Enter a 4-digit number (with non-repeating digits): 1234
1 cows, 1 bulls
Enter a 4-digit number (with non-repeating digits): 2345
0 cows, 1 bulls
Enter a 4-digit number (with non-repeating digits): 1456
1 cows, 1 bulls
Enter a 4-digit number (with non-repeating digits): 1729
0 cows, 2 bulls
Enter a 4-digit number (with non-repeating digits):
Invalid input. Please enter a 4-digit number with non-repeating digits.
Enter a 4-digit number (with non-repeating digits):