Mini Project 1 - FizzBuzz Game (Lab 2)

Objective:

The objective of this program is to create a FizzBuzz game where a random number is generated, and the user must determine whether it is divisible by 3 (Fizz), 5 (Buzz), both (FizzBuzz), or neither (None).

Code Explanation:

1. A random number between 1 and 100 is generated.
2. The user is prompted to guess whether the number is divisible by 3, 5, both, or none.
3. The correct answer is determined using conditional checks.
4. If the user input matches the correct answer, a new random number is generated, and the game continues.
5. If the user input is incorrect, the game ends with a 'Game Over' message.
6. The program also demonstrates a 'state transition' by adding the previous and new numbers together.

Code:

```
import random

def fizzbuzz_game():
    number = random.randint(1, 100)
    print(f"Number Generated: {number}")

    while True:
        print(f"\nCurrent Number: {number}")
        user_input = input("Enter your answer (fizz, buzz, fizzbuzz,
none): ")

        if number % 3 == 0 and number % 5 == 0:
            correct_answer = "fizzbuzz"
        elif number % 3 == 0:
            correct_answer = "fizz"
        elif number % 5 == 0:
            correct_answer = "buzz"
        else:
            correct_answer = "none"

        if user_input == correct_answer:
            print(f"Correct! Your input '{user_input}' matches →
{correct_answer}")
```

```
        else:
            print(f"Incorrect! You entered '{user_input}', "
                f"but the correct answer is '{correct_answer}'.")
            print("Game Over ! ")
            break

        new_number = random.randint(1, 100)
        print(f"→ New Random Number Generated: {new_number}")

        total = number + new_number
        print(f"→ State Transition: Previous Number ({number}) + "
            f"New Number ({new_number}) = Next State ({total})")

        number = total

fizzbuzz_game()
```

Output/Usage:

The program continuously challenges the user to determine divisibility. Each correct answer generates a new random number, while an incorrect answer ends the game immediately.

Mini Project 2 - Movies Budget Analysis (Lab 2)

Objective:

This program is designed to analyze a dataset of movies and calculate the number of movies with a budget higher than the average budget.

Code Explanation:

1. A dataset of movies is considered (not shown in this snippet).
2. The program calculates the average budget of all movies.
3. It then counts how many movies have a budget higher than this average.
4. Finally, it prints the result.

Code:

```
print("\nNumber of movies with budget higher than average:", count_higher_budget)
```

Output/Usage:

The output displays the number of movies whose budgets are greater than the calculated average budget.