Assignment-6.3

Name: M. Preethi Meghana

Ht.no: 2303A51584

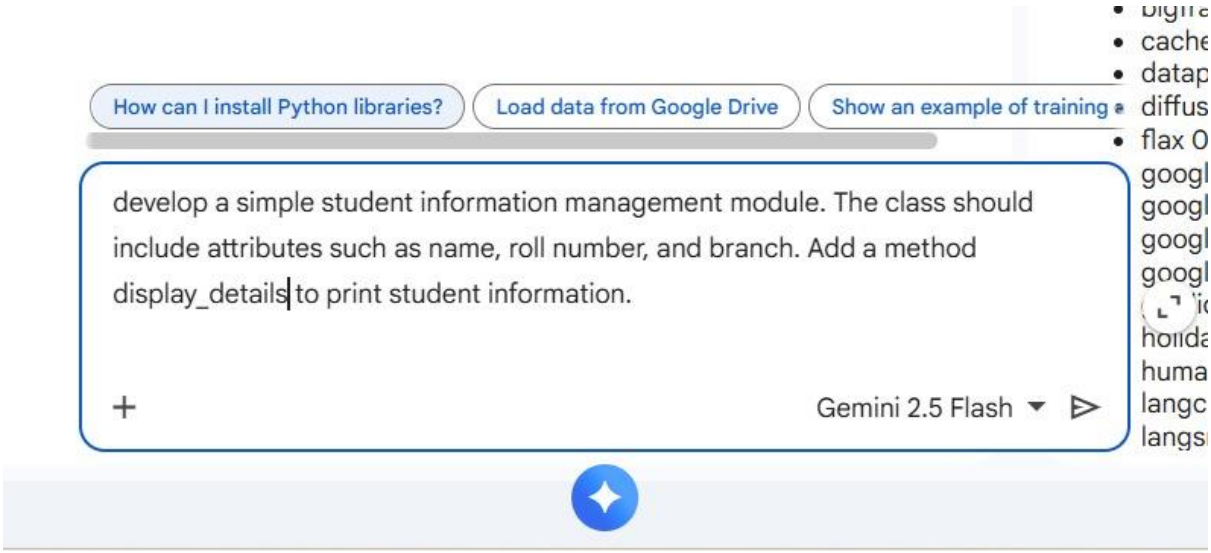
Batch: 05

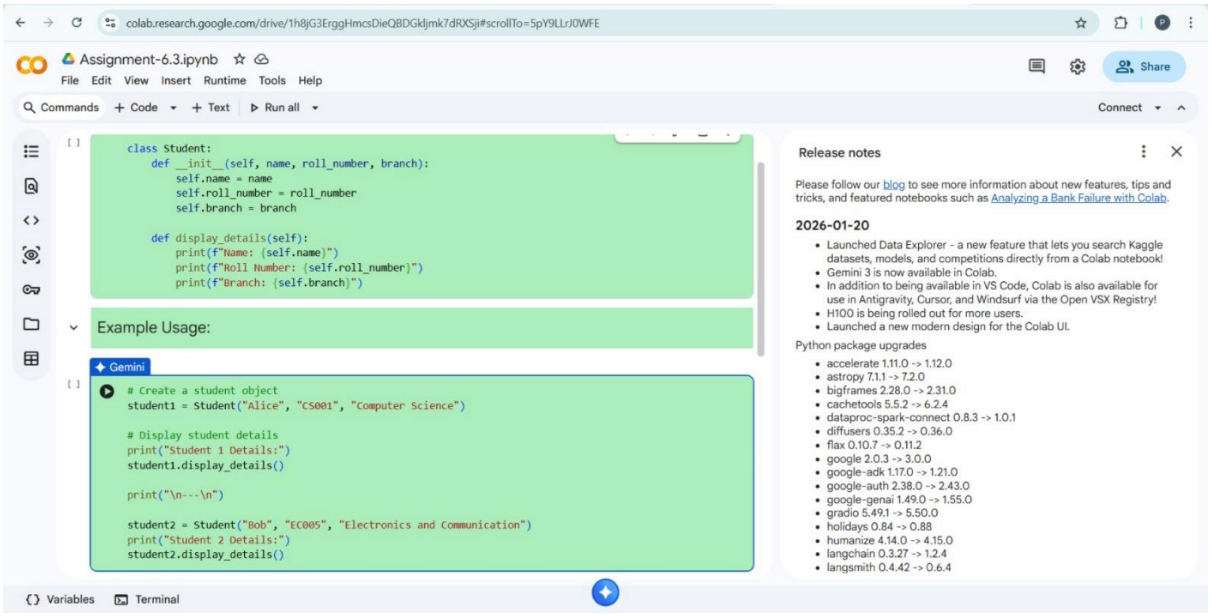
Task-01:

Classes (Student Class)

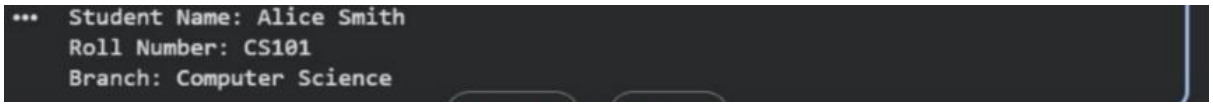
You are developing a simple student information management module.

Prompt:





Output:



Explanation:

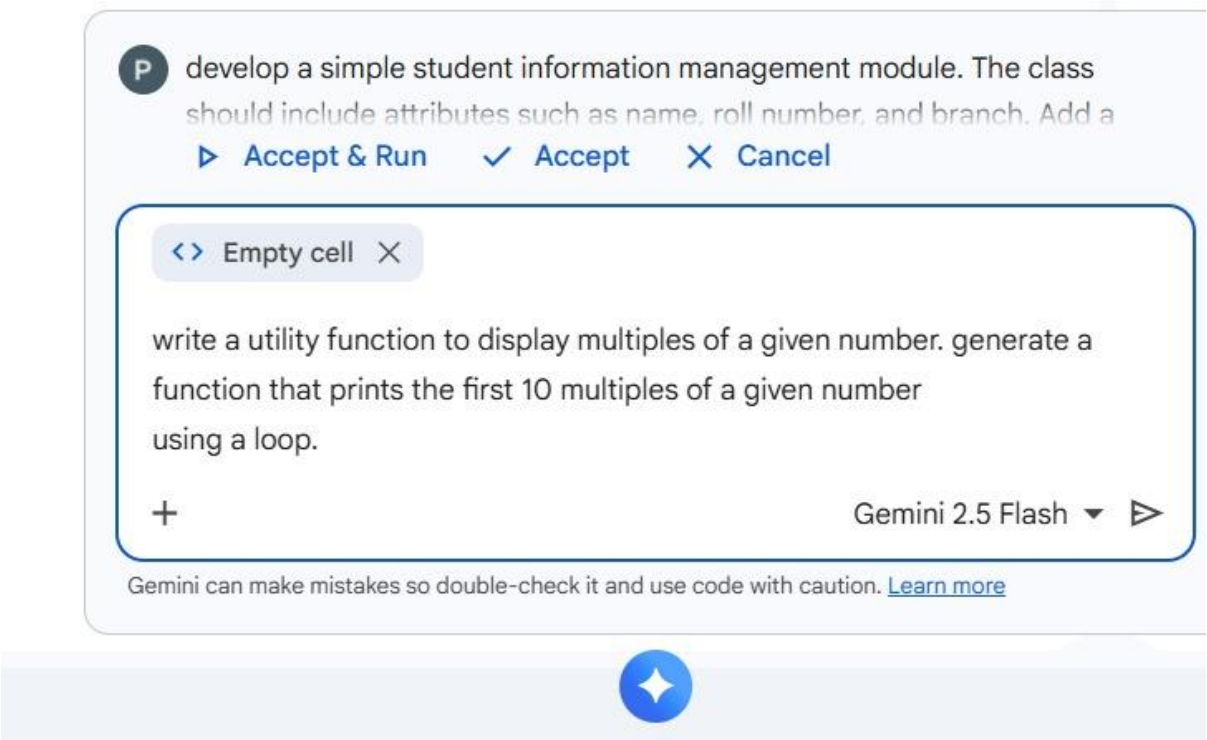
- A class named Student is created to represent student information.
- The __init__() constructor is defined and is called automatically when a Student object is created.
- The constructor initializes the student's name, roll number, and branch.
- A method display_details() is defined to print the student details.
- A Student object is created by passing values for name, roll number, and branch.
- The display_details() method is called using the object.

- The student information is displayed on the console.

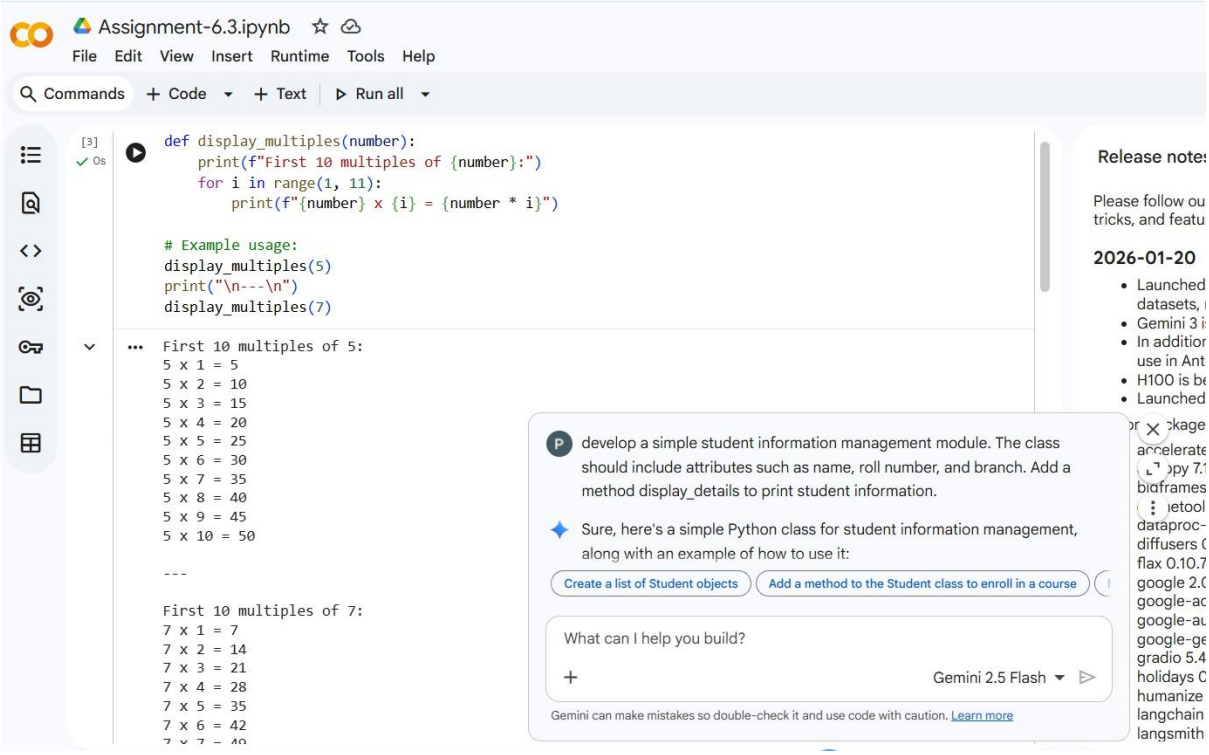
Task-02:

Loops (Multiples of a Number)
Scenario
You are writing a utility function to display multiples of a given number.

Prompt:



Code:


Assignment-6.3.ipynb
File Edit View Insert Runtime Tools Help
Commands + Code + Text Run all
[3] 0s
def display_multiples(number):
print(f"First 10 multiples of {number}:")
for i in range(1, 11):
print(f"{number} x {i} = {number * i}")
# Example usage:
display_multiples(5)
print("\n---\n")
display_multiples(7)
First 10 multiples of 5:
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50

First 10 multiples of 7:
7 x 1 = 7
7 x 2 = 14
7 x 3 = 21
7 x 4 = 28
7 x 5 = 35
7 x 6 = 42
develop a simple student information management module. The class should include attributes such as name, roll number, and branch. Add a method display_details to print student information.
Sure, here's a simple Python class for student information management, along with an example of how to use it:
Create a list of Student objects
Add a method to the Student class to enroll in a course
What can I help you build?
Gemini 2.5 Flash
Gemini can make mistakes so double-check it and use code with caution. Learn more
Release notes
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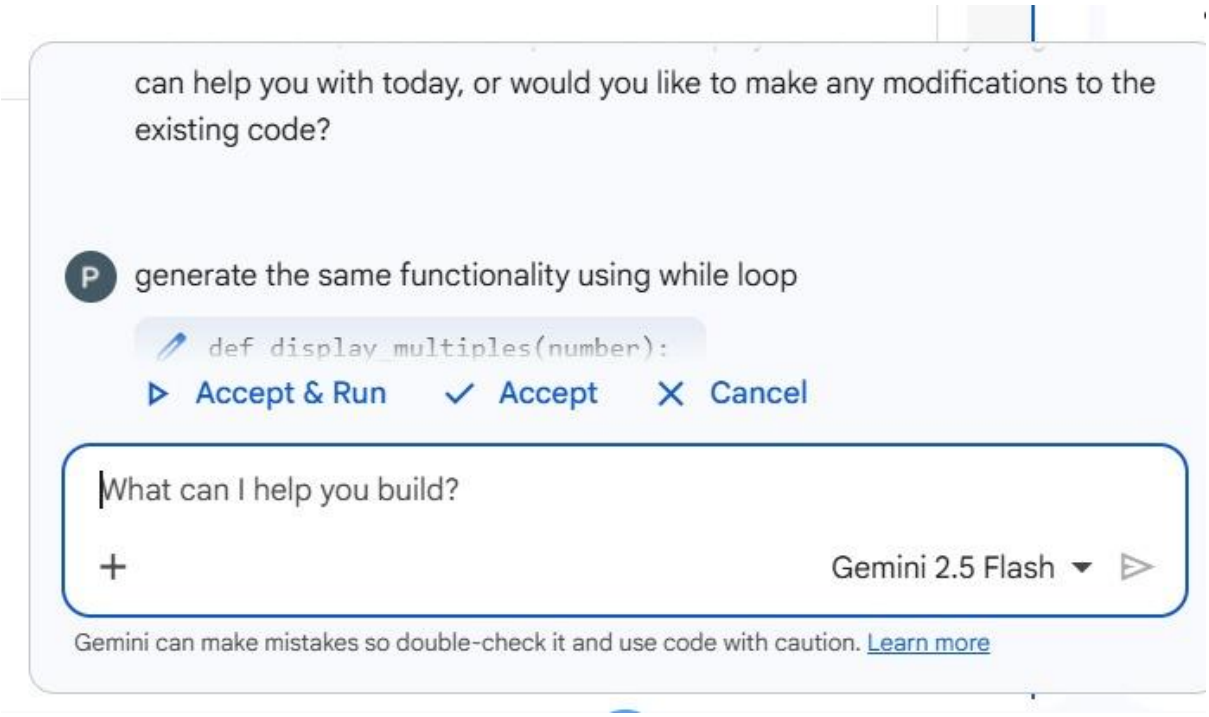
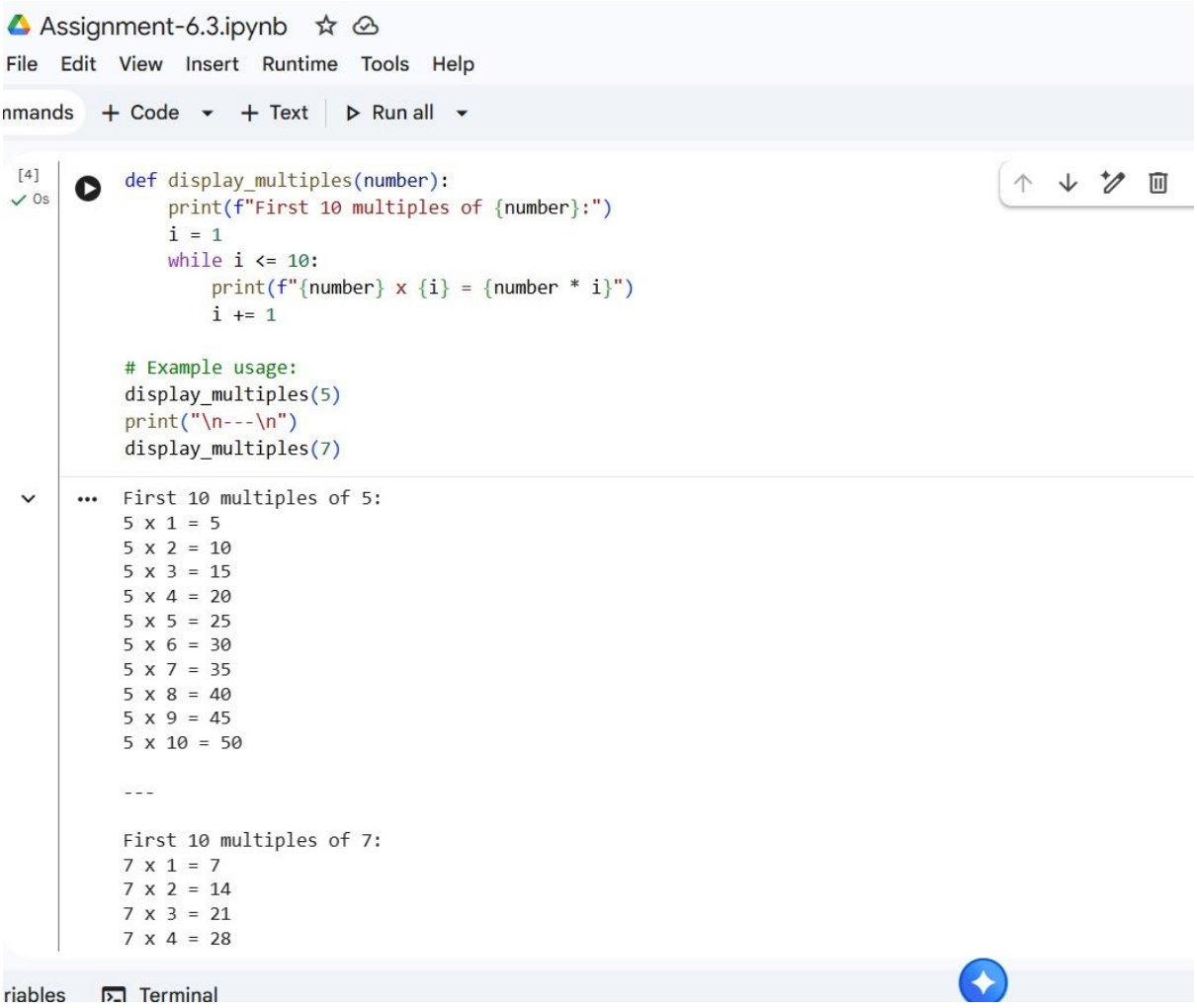

can help you with today, or would you like to make any modifications to the existing code?
generate the same functionality using while loop
def display_multiples(number):
Accept & Run
Accept
Cancel
What can I help you build?
Gemini 2.5 Flash
Gemini can make mistakes so double-check it and use code with caution. Learn more

Output:



Explanation:

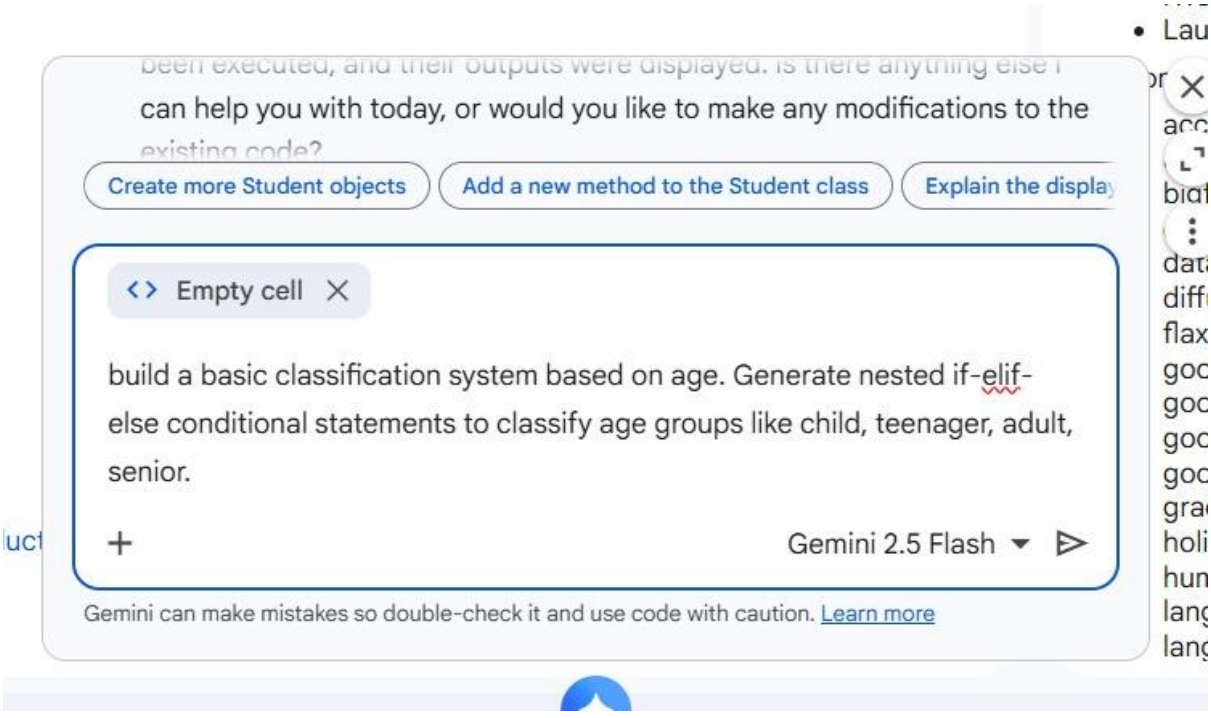
- A function is defined that accepts a number as input.
- A loop is used to repeat the process 10 times.
- In each iteration, the input number is multiplied by the loop counter.
- The result of the multiplication gives one multiple of the number.
- Each multiple is printed on the console.

- The loop continues until the first 10 multiples are displayed.
- When the loop ends, the program stops execution.

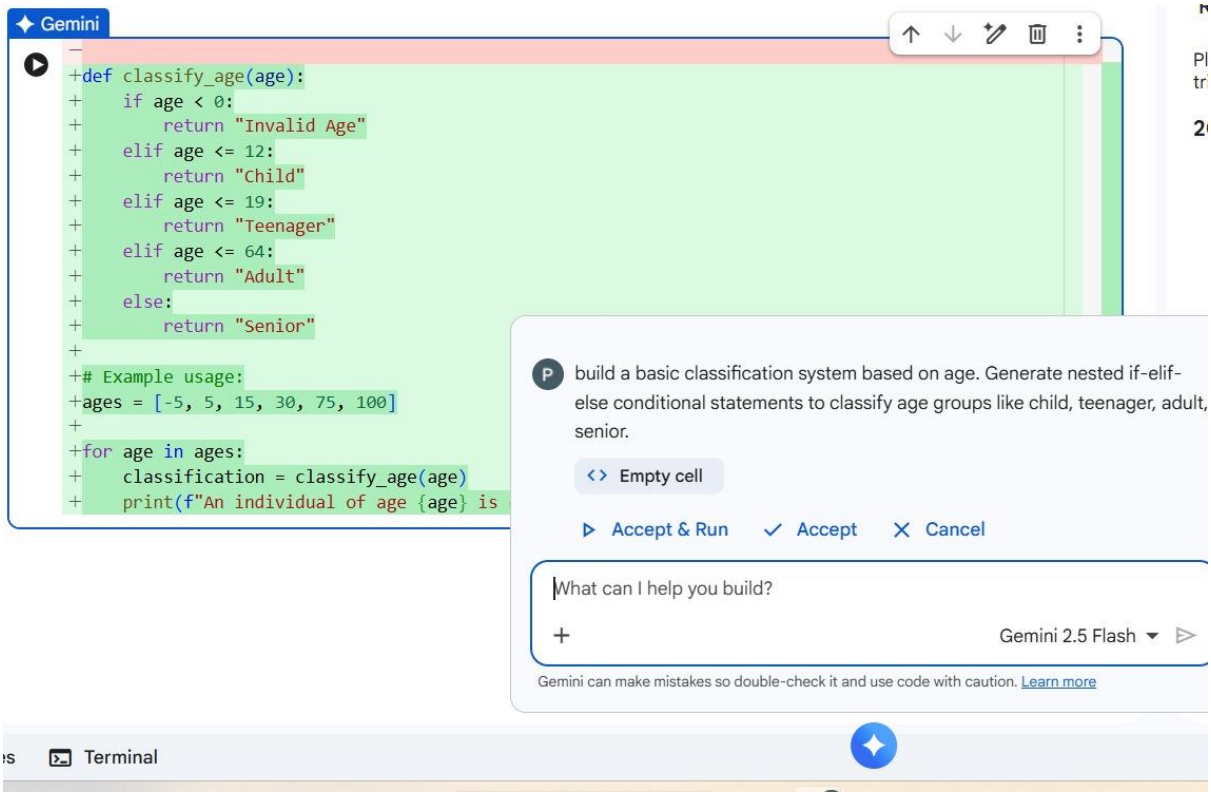
Task-03:

Conditional Statements (Age Classification)
Scenario
You are building a basic classification system based on age.

Prompt:



Code:


Gemini
+def classify_age(age):
+ if age < 0:
+ return "Invalid Age"
+ elif age <= 12:
+ return "Child"
+ elif age <= 19:
+ return "Teenager"
+ elif age <= 64:
+ return "Adult"
+ else:
+ return "Senior"
+
+# Example usage:
+ages = [-5, 5, 15, 30, 75, 100]
+
+for age in ages:
+ classification = classify_age(age)
+ print(f"An individual of age {age} is
P
build a basic classification system based on age. Generate nested if-elif-else conditional statements to classify age groups like child, teenager, adult, senior.
Empty cell
Accept & Run
Accept
Cancel
What can I help you build?
Gemini 2.5 Flash
Gemini can make mistakes so double-check it and use code with caution. Learn more
Terminal

mmands + Code + Text ▷ Run all

[6] ✓ 0s

```
def classify_age(age):
    if age < 0:
        return "Invalid Age"

    age_categories = [
        {'upper_bound': 12, 'label': 'Child'},
        {'upper_bound': 19, 'label': 'Teenager'},
        {'upper_bound': 64, 'label': 'Adult'}
    ]

    for category_info in age_categories:
        if age <= category_info['upper_bound']:
            return category_info['label']

    return "Senior" # If age is greater than all upper bounds

# Example usage:
ages = [-5, 5, 15, 30, 75, 100]

for age in ages:
    classification = classify_age(age)
    print(f"An individual of age {age} is classified as: {classification}")
```

```
An individual of age -5 is classified as: Invalid Age
An individual of age 5 is classified as: Child
An individual of age 15 is classified as: Teenager
An individual of age 30 is classified as: Adult
An individual of age 75 is classified as: Senior
An individual of age 100 is classified as: Senior
```

Output:

```
def classify_age(age):
    if age < 0:
        return "Invalid Age"
    elif age <= 12:
        return "Child"
    elif age <= 19:
        return "Teenager"
    elif age <= 64:
        return "Adult"
    else:
        return "Senior"

# Example usage:
ages = [-5, 5, 15, 30, 75, 100]

for age in ages:
    classification = classify_age(age)
    print(f"An individual of age {age} is classified as: {classification}")
```

```
An individual of age -5 is classified as: Invalid Age
An individual of age 5 is classified as: Child
An individual of age 15 is classified as: Teenager
An individual of age 30 is classified as: Adult
An individual of age 75 is classified as: Senior
An individual of age 100 is classified as: Senior
```

Explanation:

A function is defined that accepts age as an input value.

- The program checks the age using if-elif-else conditions.
- If the age is less than a certain value, it is classified as a child.
- If the age falls in the next range, it is classified as a teenager.
- If the age is in the adult range, it is classified as an adult.
- If the age is above the adult range, it is classified as a senior.
- Only one condition is executed because once a condition is true, the remaining checks are skipped.
- The function returns or prints the appropriate age group.

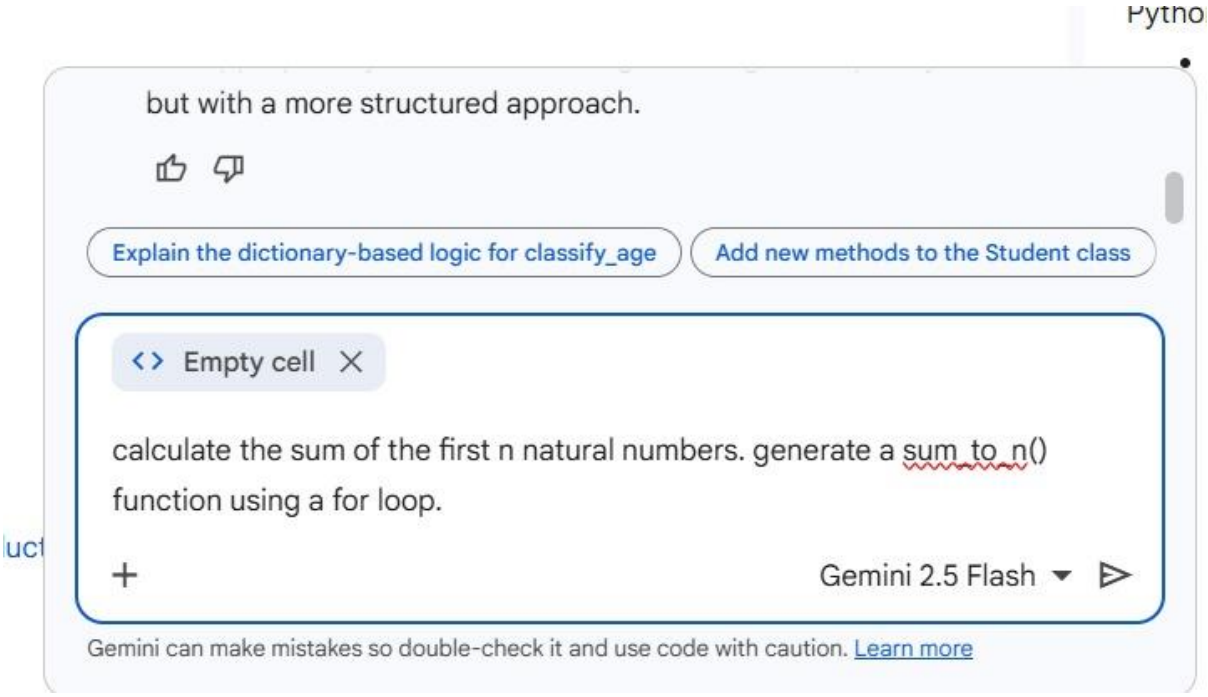
Task-04:

For and While Loops (Sum of First n Numbers)

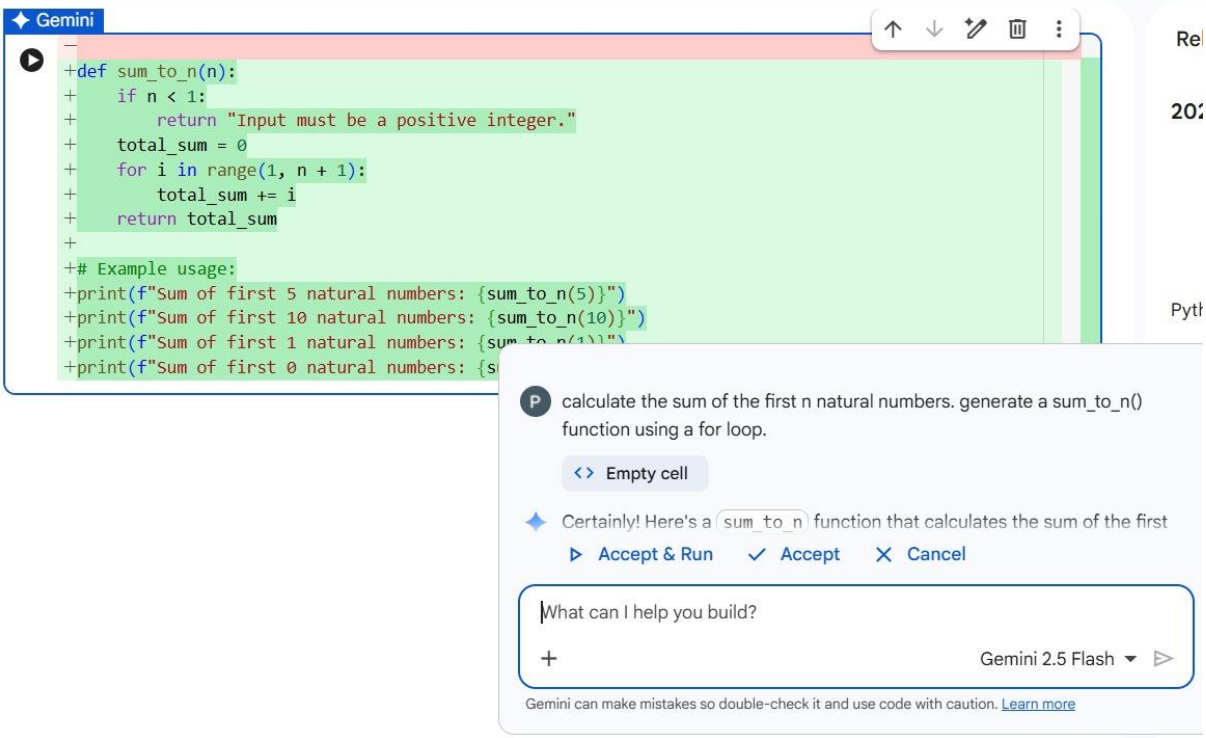
Scenario
You need to calculate the sum of the first n natural numbers.

a)UsingFor Loop:

Prompt:



Code:



Output:

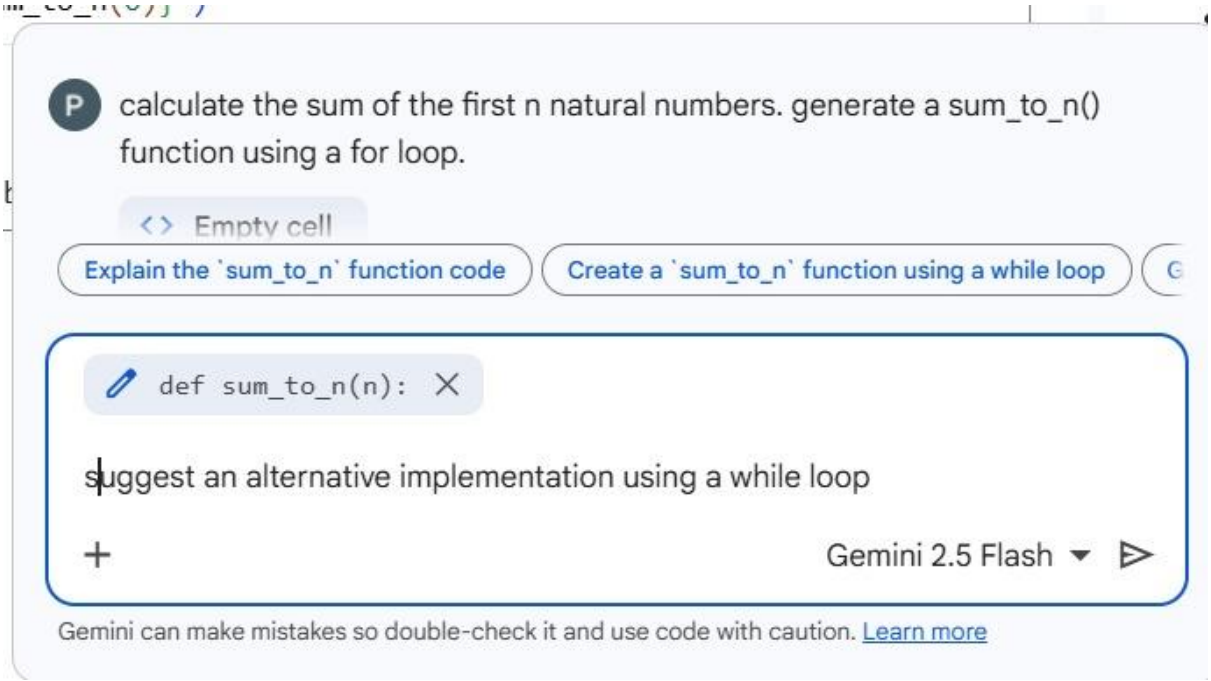
```python
def sum_to_n(n):
    if n < 1:
        return "Input must be a positive integer."
    total_sum = 0
    for i in range(1, n + 1):
        total_sum += i
    return total_sum

# Example usage:
print(f"Sum of first 5 natural numbers: {sum_to_n(5)}")
print(f"Sum of first 10 natural numbers: {sum_to_n(10)}")
print(f"Sum of first 1 natural numbers: {sum_to_n(1)}")
print(f"Sum of first 0 natural numbers: {sum_to_n(0)}")
```

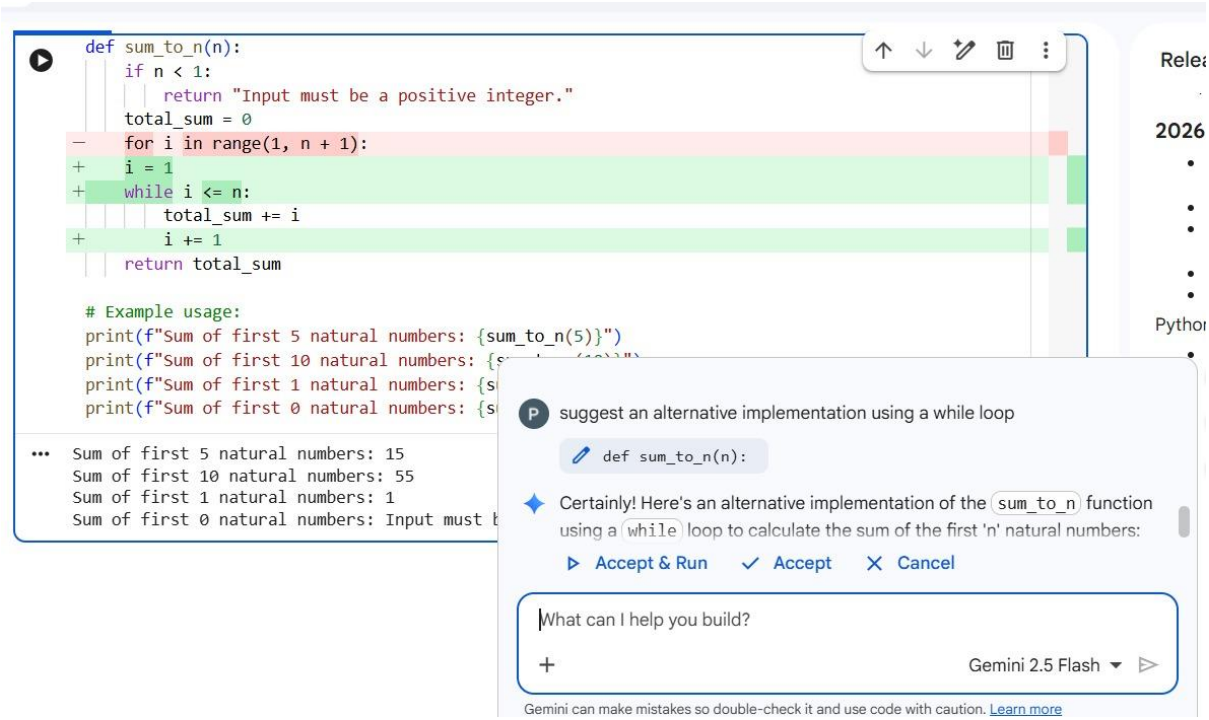
```
Sum of first 5 natural numbers: 15
Sum of first 10 natural numbers: 55
Sum of first 1 natural numbers: 1
Sum of first 0 natural numbers: Input must be a positive integer.
```

b)using While Loop:

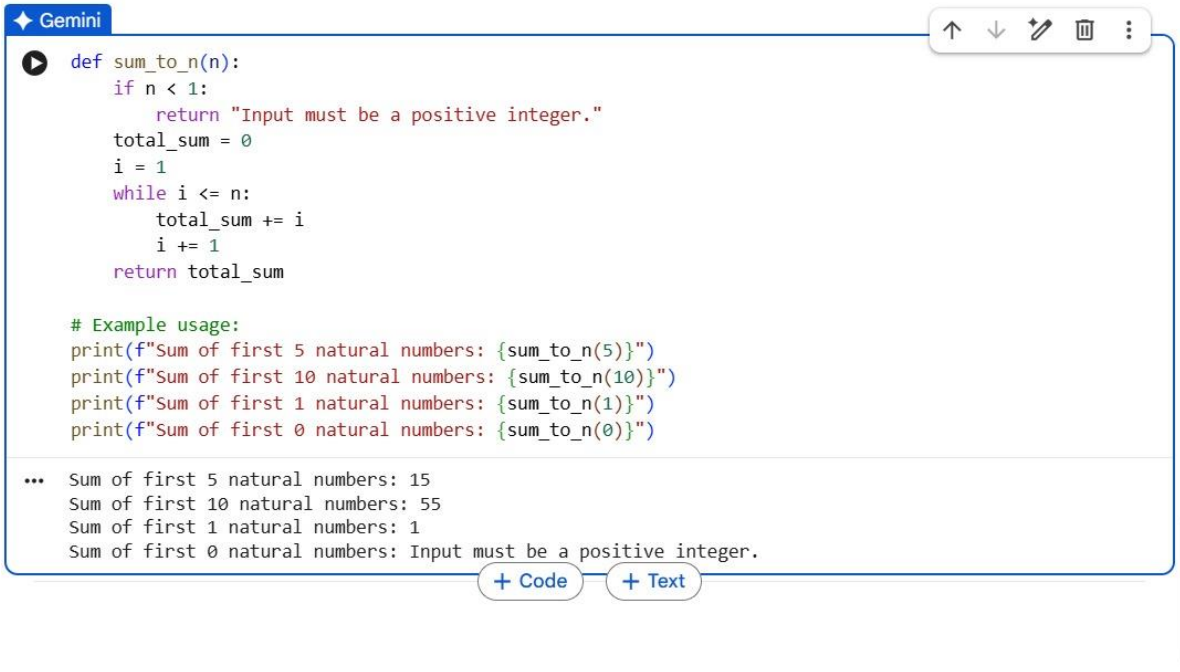
Prompt:



Code:



Output:



Explanation:

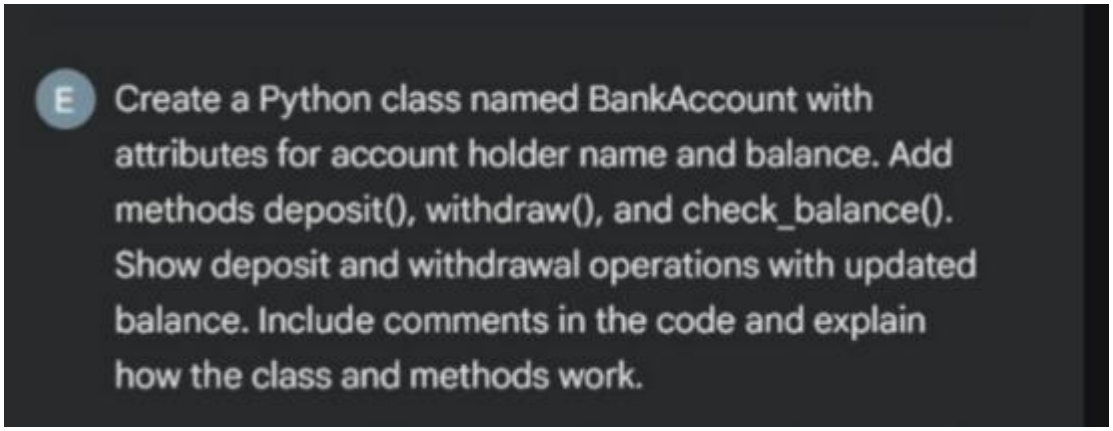
- A function named sum_to_n() is defined to calculate the sum of natural numbers.

- The function takes an integer n as input.
- A variable (for example, total) is initialized to 0 to store the sum.
- A for loop runs from 1 to n.
- In each iteration, the current number is added to total.
- After the loop finishes, total contains the sum of the first n natural numbers.
- The function returns or prints the final sum.
- The output is displayed for the given sample input.

Task-05:

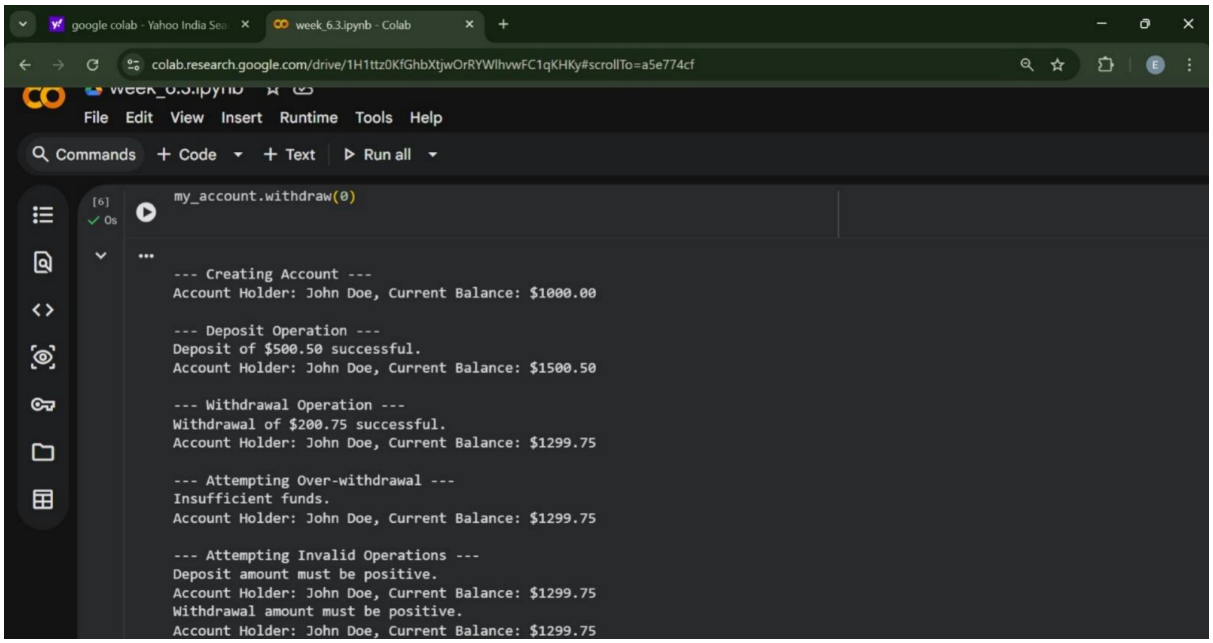
Classes (Bank Account Class)
Scenario
You are designing a basic banking application.

Prompt:



Code:

Output:



Explanation:

- A class named BankAccount is created to represent a bank account.
- The constructor (__init__) initializes the account holder's name and the starting balance.

- The deposit() method is used to add a given amount to the current balance.
- The withdraw() method subtracts an amount from the balance after checking if sufficient funds are available.
- If the balance is not enough, the withdrawal is not allowed and a message is shown.
- The check_balance() method displays the current account balance.
- An object of the BankAccount class is created to perform banking operations.
- Deposit and withdrawal methods are called, and the updated balance is shown after each operation.