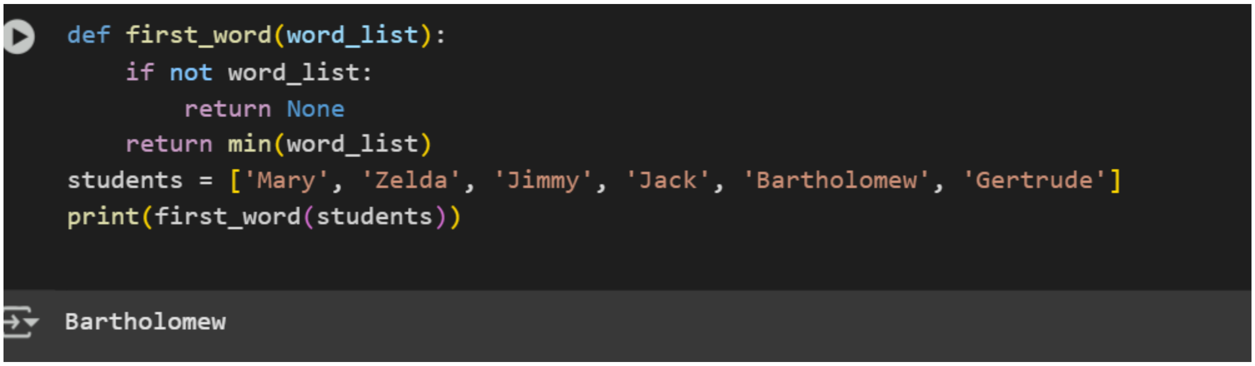
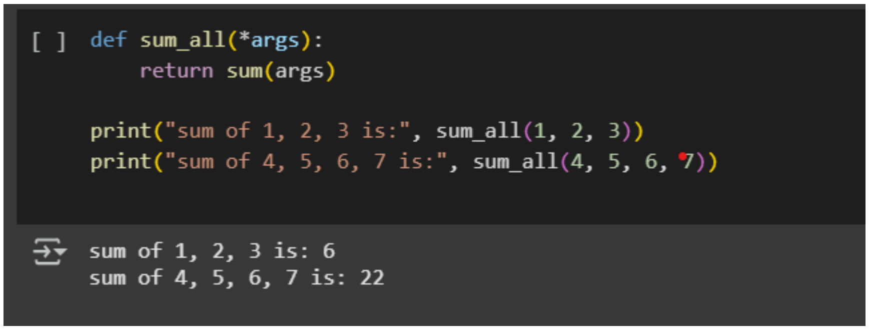


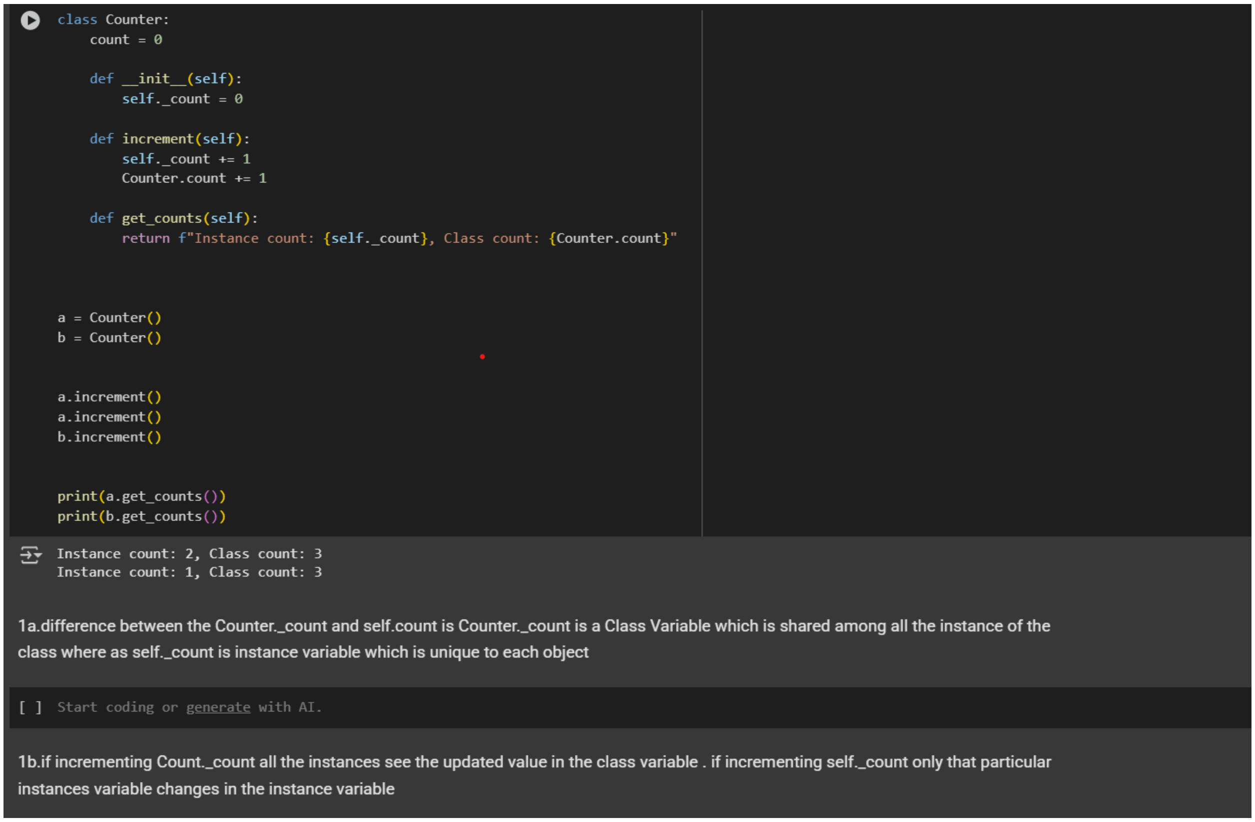
```python
def first_word(word_list):
    if not word_list:
        return None
    return min(word_list)
students = ['Mary', 'Zelda', 'Jimmy', 'Jack', 'Bartholomew', 'Gertrude']
print(first_word(students))
```

```
Bartholomew
```



```python
def sum_all(*args):
    return sum(args)

print("sum of 1, 2, 3 is:", sum_all(1, 2, 3))
print("sum of 4, 5, 6, 7 is:", sum_all(4, 5, 6, 7))
```

```
sum of 1, 2, 3 is: 6
sum of 4, 5, 6, 7 is: 22
```

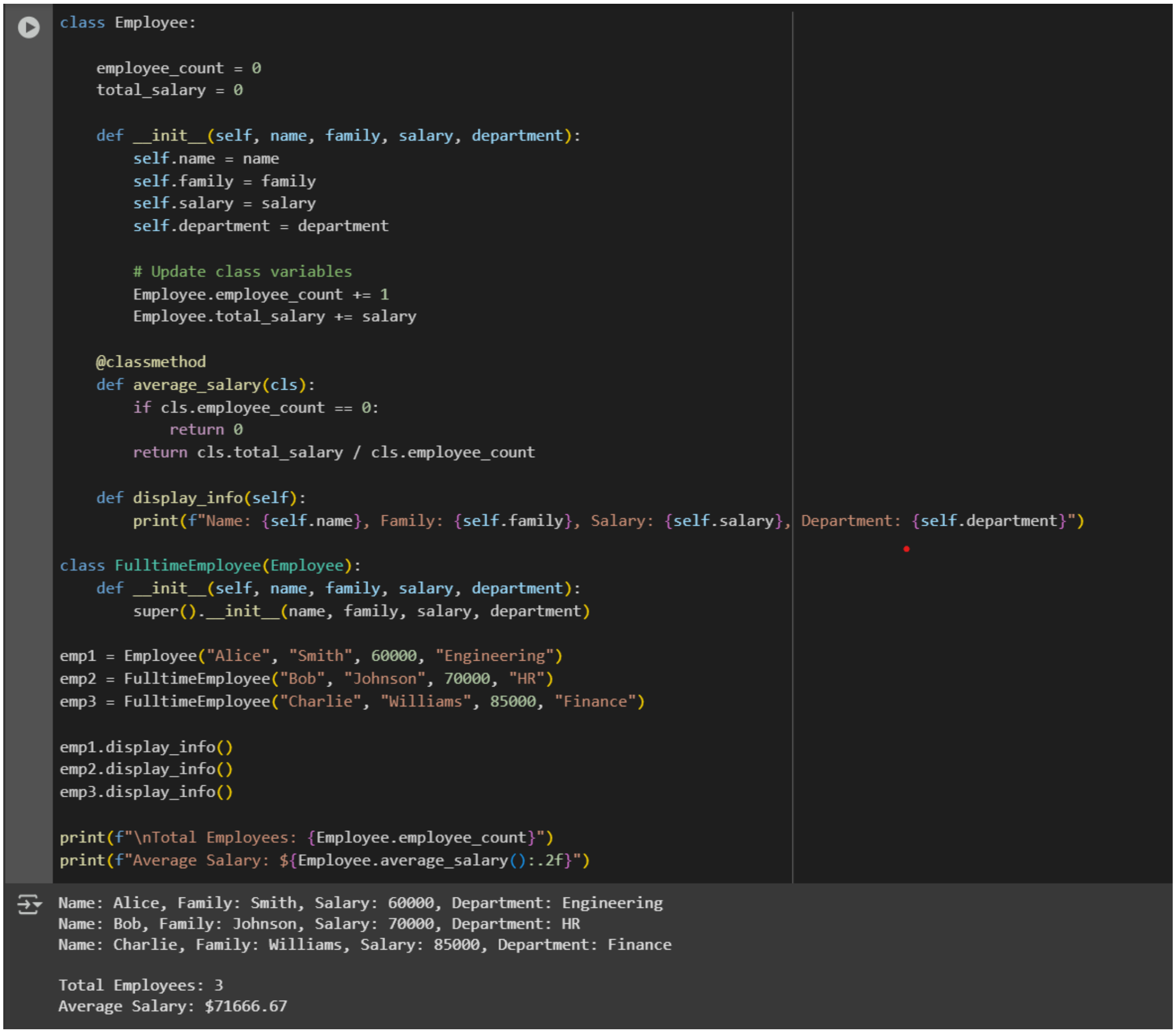


```
class Counter:
    count = 0

    def __init__(self):
        self._count = 0

    def increment(self):
        self._count += 1
        Counter.count += 1

    def get_counts(self):
        return f"Instance count: {self._count}, Class count: {Counter.count}"



a = Counter()
b = Counter()


a.increment()
a.increment()
b.increment()


print(a.get_counts())
print(b.get_counts())
```

```
Instance count: 2, Class count: 3
Instance count: 1, Class count: 3
```

1a.difference between the Counter._count and self.count is Counter._count is a Class Variable which is shared among all the instance of the class where as self._count is instance variable which is unique to each object

1b.if incrementing Count._count all the instances see the updated value in the class variable . if incrementing self._count only that particular instances variable changes in the instance variable



```python
class Employee:

    employee_count = 0
    total_salary = 0

    def __init__(self, name, family, salary, department):
        self.name = name
        self.family = family
        self.salary = salary
        self.department = department

        # Update class variables
        Employee.employee_count += 1
        Employee.total_salary += salary

    @classmethod
    def average_salary(cls):
        if cls.employee_count == 0:
            return 0
        return cls.total_salary / cls.employee_count

    def display_info(self):
        print(f"Name: {self.name}, Family: {self.family}, Salary: {self.salary}, Department: {self.department}")

class FulltimeEmployee(Employee):
    def __init__(self, name, family, salary, department):
        super().__init__(name, family, salary, department)

emp1 = Employee("Alice", "Smith", 60000, "Engineering")
emp2 = FulltimeEmployee("Bob", "Johnson", 70000, "HR")
emp3 = FulltimeEmployee("Charlie", "Williams", 85000, "Finance")

emp1.display_info()
emp2.display_info()
emp3.display_info()

print(f"\nTotal Employees: {Employee.employee_count}")
print(f"Average Salary: ${Employee.average_salary():.2f}")
```

```
Name: Alice, Family: Smith, Salary: 60000, Department: Engineering
Name: Bob, Family: Johnson, Salary: 70000, Department: HR
Name: Charlie, Family: Williams, Salary: 85000, Department: Finance

Total Employees: 3
Average Salary: $71666.67
```