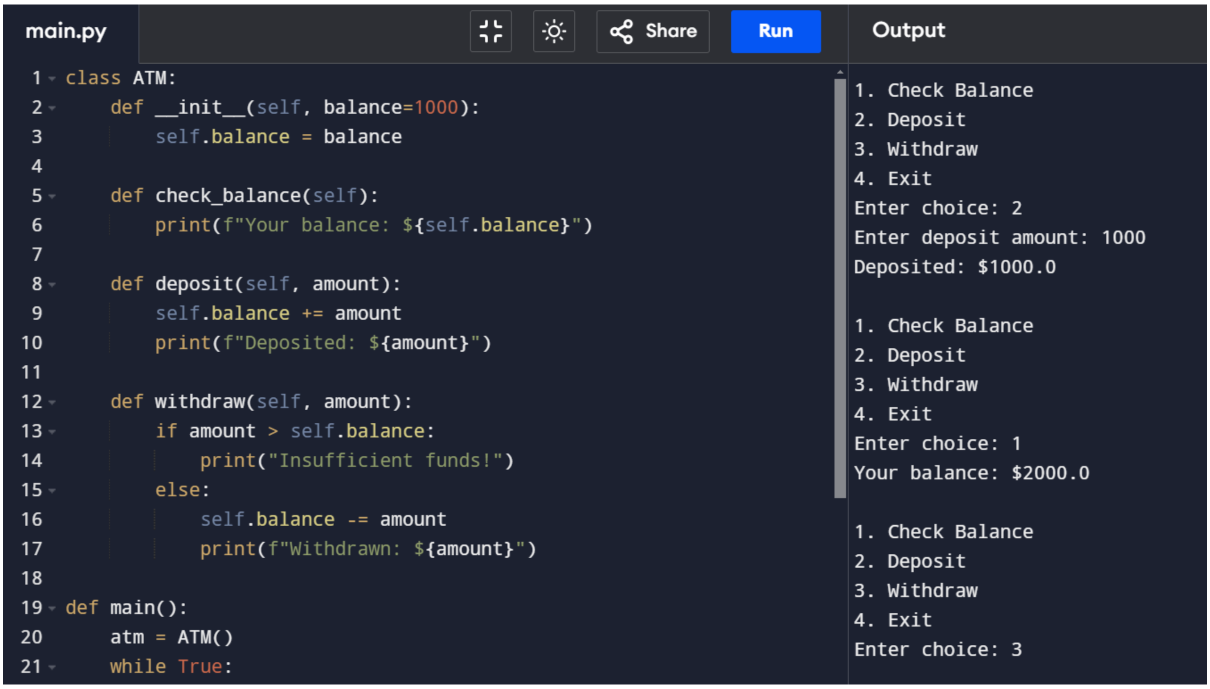
PYTHON CASE STUDIES

1. Case Study: ATM Simulation System

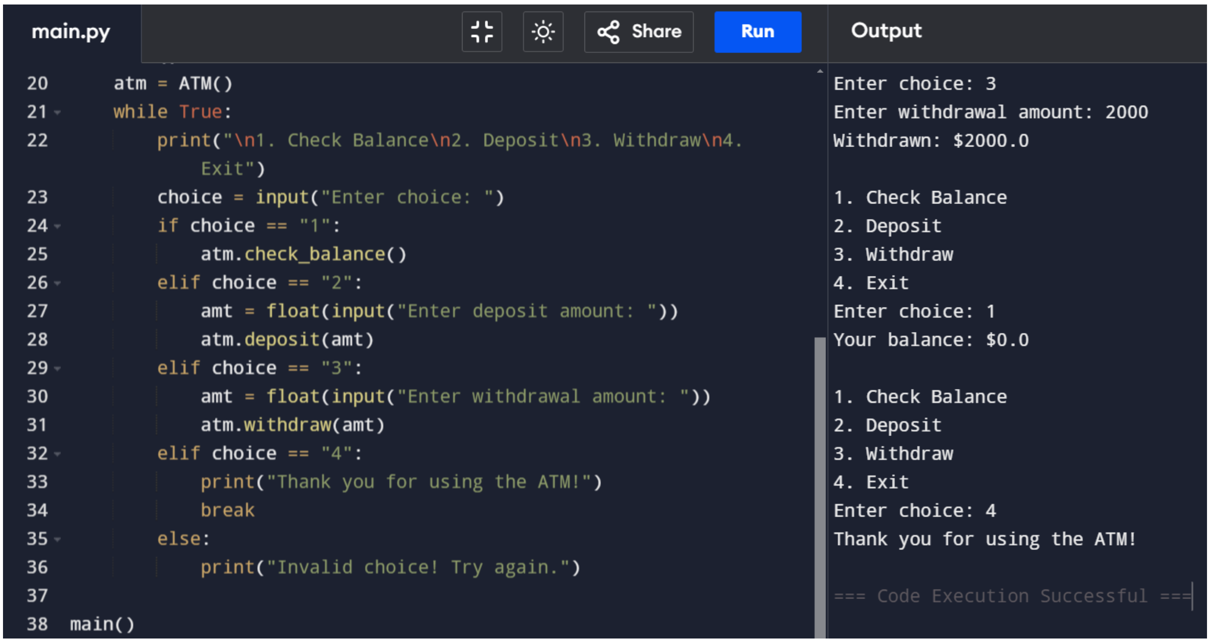
Problem Statement: Develop an ATM simulation that allows users to:

- Check balance
- Deposit money
- Withdraw money
- Exit



```python
class ATM:
    def __init__(self, balance=1000):
        self.balance = balance

    def check_balance(self):
        print(f"Your balance: ${self.balance}")

    def deposit(self, amount):
        self.balance += amount
        print(f"Deposited: ${amount}")

    def withdraw(self, amount):
        if amount > self.balance:
            print("Insufficient funds!")
        else:
            self.balance -= amount
            print(f"Withdrawn: ${amount}")

def main():
    atm = ATM()
    while True:
```

```
1. Check Balance
2. Deposit
3. Withdraw
4. Exit
Enter choice: 2
Enter deposit amount: 1000
Deposited: $1000.0

1. Check Balance
2. Deposit
3. Withdraw
4. Exit
Enter choice: 1
Your balance: $2000.0

1. Check Balance
2. Deposit
3. Withdraw
4. Exit
Enter choice: 3
```



```python
    atm = ATM()
    while True:
        print("\n1. Check Balance\n2. Deposit\n3. Withdraw\n4. Exit")
        choice = input("Enter choice: ")
        if choice == "1":
            atm.check_balance()
        elif choice == "2":
            amt = float(input("Enter deposit amount: "))
            atm.deposit(amt)
        elif choice == "3":
            amt = float(input("Enter withdrawal amount: "))
            atm.withdraw(amt)
        elif choice == "4":
            print("Thank you for using the ATM!")
            break
        else:
            print("Invalid choice! Try again.")

main()
```

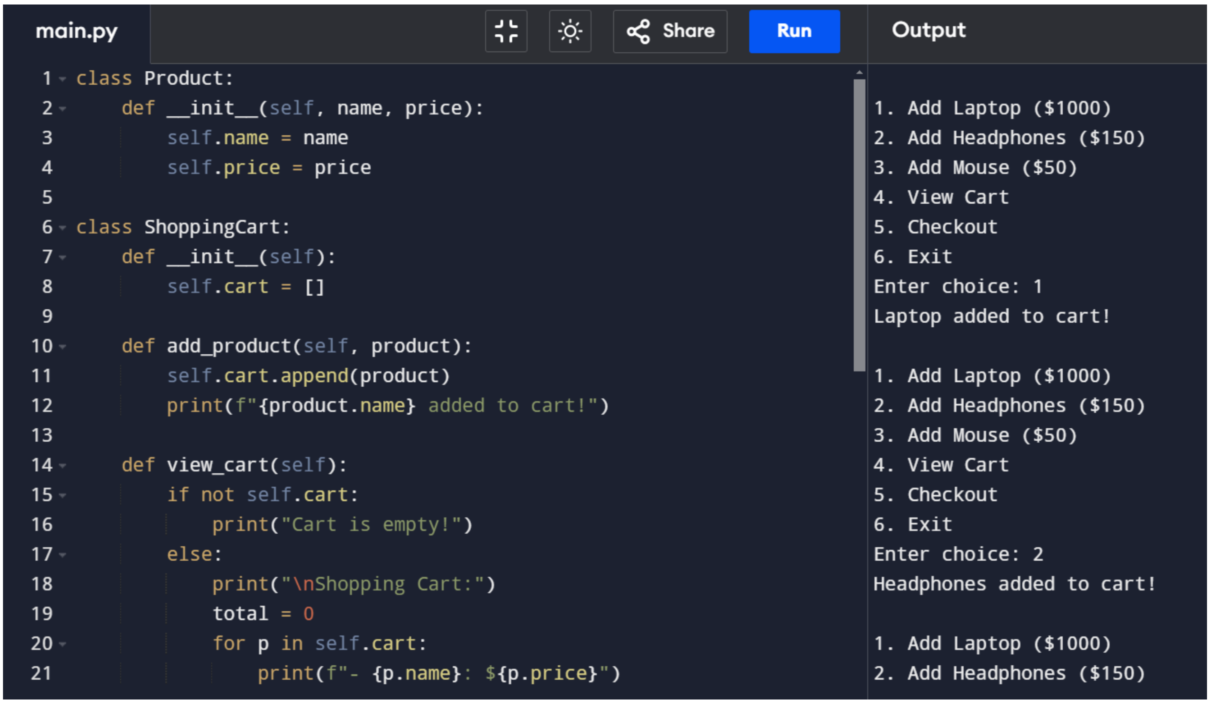
```
Enter choice: 3
Enter withdrawal amount: 2000
Withdrawn: $2000.0

1. Check Balance
2. Deposit
3. Withdraw
4. Exit
Enter choice: 1
Your balance: $0.0

1. Check Balance
2. Deposit
3. Withdraw
4. Exit
Enter choice: 4
Thank you for using the ATM!

=== Code Execution Successful ===
```

PYTHON CASE STUDIES

2. Case Study: E-commerce Order Management

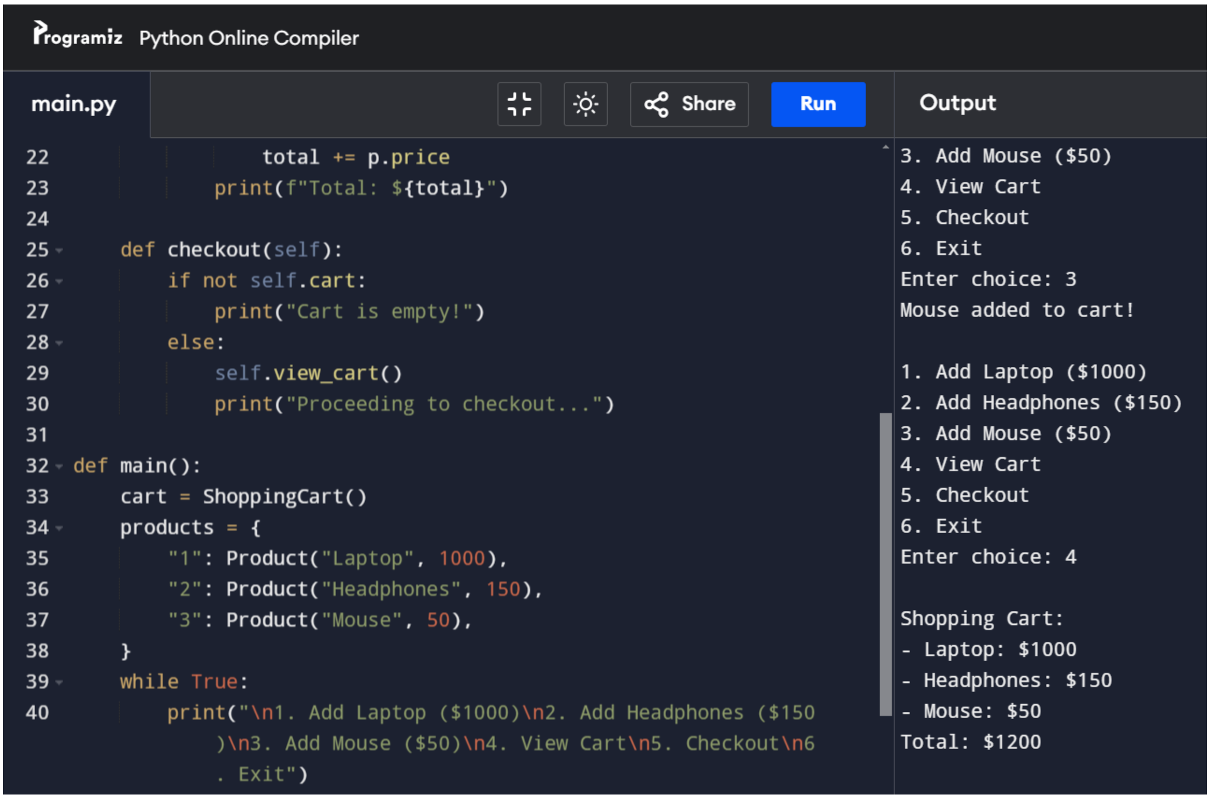
Problem Statement-Create an Order Management System for an e-commerce platform. The system should allow:

- Adding products to a cart
- Viewing the cart
- Checking out (calculating total price)



```python
class Product:
    def __init__(self, name, price):
        self.name = name
        self.price = price

class ShoppingCart:
    def __init__(self):
        self.cart = []

    def add_product(self, product):
        self.cart.append(product)
        print(f"{product.name} added to cart!")

    def view_cart(self):
        if not self.cart:
            print("Cart is empty!")
        else:
            print("\nShopping Cart:")
            total = 0
            for p in self.cart:
                print(f"- {p.name}: ${p.price}")
```

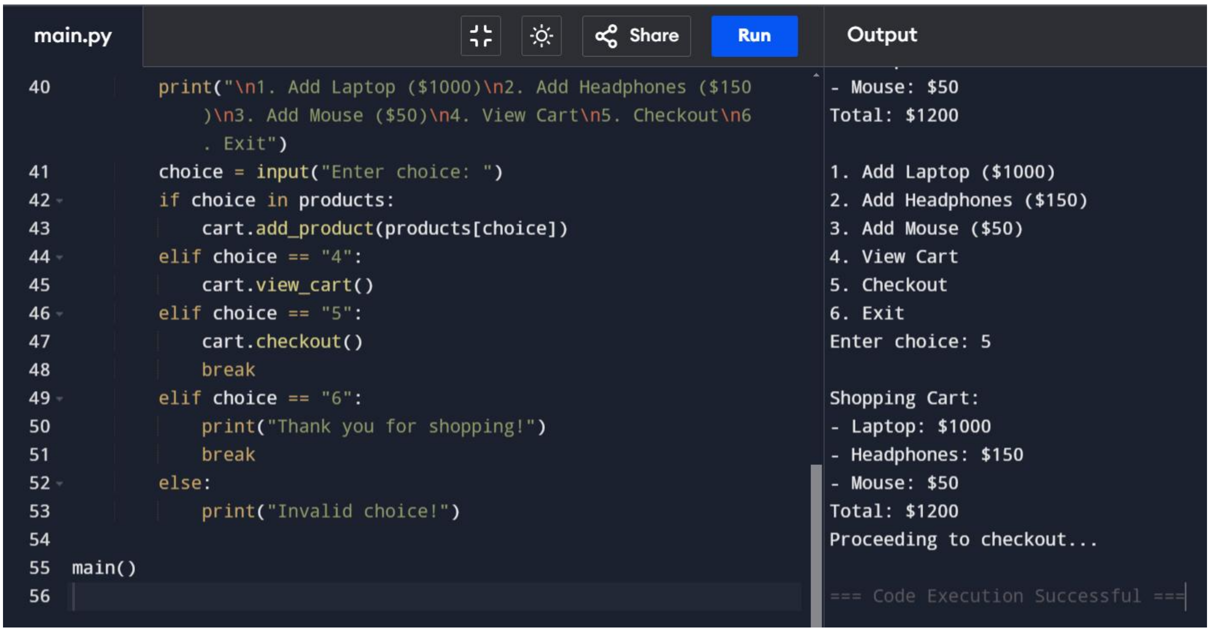
```
1. Add Laptop ($1000)
2. Add Headphones ($150)
3. Add Mouse ($50)
4. View Cart
5. Checkout
6. Exit
Enter choice: 1
Laptop added to cart!

1. Add Laptop ($1000)
2. Add Headphones ($150)
3. Add Mouse ($50)
4. View Cart
5. Checkout
6. Exit
Enter choice: 2
Headphones added to cart!

1. Add Laptop ($1000)
2. Add Headphones ($150)
```



```python
                total += p.price
            print(f"Total: ${total}")

    def checkout(self):
        if not self.cart:
            print("Cart is empty!")
        else:
            self.view_cart()
            print("Proceeding to checkout...")

def main():
    cart = ShoppingCart()
    products = {
        "1": Product("Laptop", 1000),
        "2": Product("Headphones", 150),
        "3": Product("Mouse", 50),
    }
    while True:
        print("\n1. Add Laptop ($1000)\n2. Add Headphones ($150)\n3. Add Mouse ($50)\n4. View Cart\n5. Checkout\n6. Exit")
```

```
3. Add Mouse ($50)
4. View Cart
5. Checkout
6. Exit
Enter choice: 3
Mouse added to cart!

1. Add Laptop ($1000)
2. Add Headphones ($150)
3. Add Mouse ($50)
4. View Cart
5. Checkout
6. Exit
Enter choice: 4

Shopping Cart:
- Laptop: $1000
- Headphones: $150
- Mouse: $50
Total: $1200
```

PYTHON CASE STUDIES



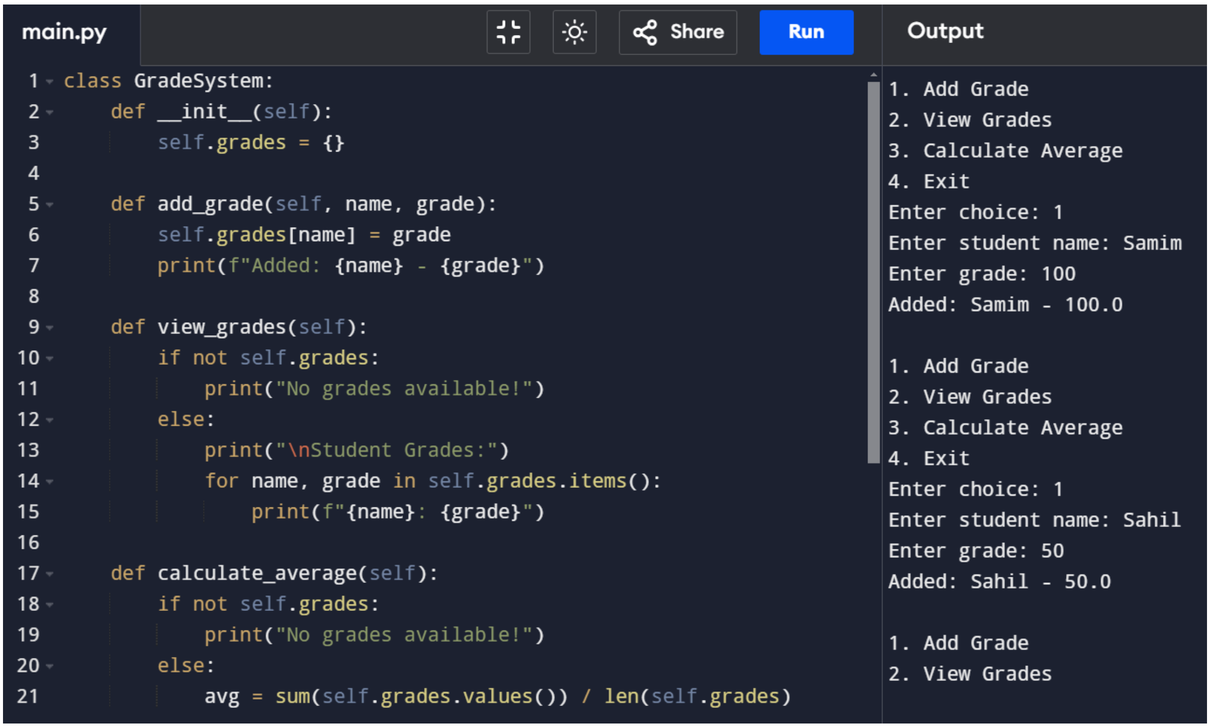
```python
        print("\n1. Add Laptop ($1000)\n2. Add Headphones ($150)\n3. Add Mouse ($50)\n4. View Cart\n5. Checkout\n6. Exit")
        choice = input("Enter choice: ")
        if choice in products:
            cart.add_product(products[choice])
        elif choice == "4":
            cart.view_cart()
        elif choice == "5":
            cart.checkout()
            break
        elif choice == "6":
            print("Thank you for shopping!")
            break
        else:
            print("Invalid choice!")

main()
```

```
- Mouse: $50
Total: $1200

1. Add Laptop ($1000)
2. Add Headphones ($150)
3. Add Mouse ($50)
4. View Cart
5. Checkout
6. Exit
Enter choice: 5

Shopping Cart:
- Laptop: $1000
- Headphones: $150
- Mouse: $50
Total: $1200
Proceeding to checkout...

=== Code Execution Successful ===
```

3.Case Study: Student Grade Management System

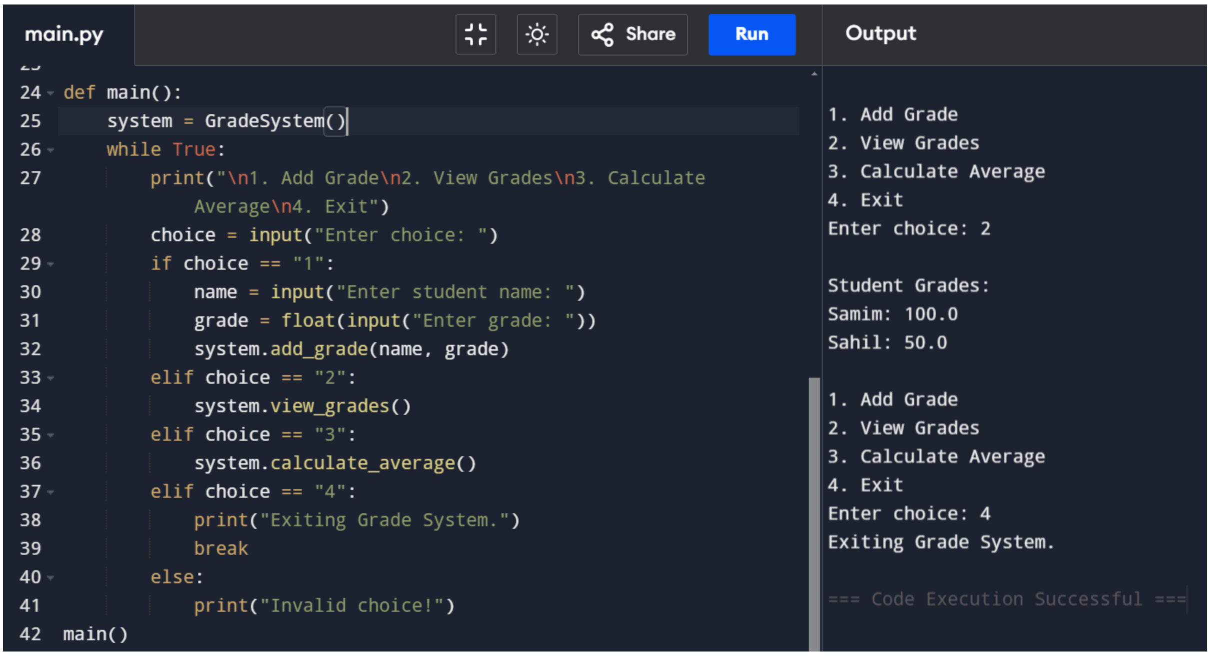
Problem Statement- Develop a system to manage student grades:

- Add student grades
- View student grades
- Calculate the average grade



```python
class GradeSystem:
    def __init__(self):
        self.grades = {}

    def add_grade(self, name, grade):
        self.grades[name] = grade
        print(f"Added: {name} - {grade}")

    def view_grades(self):
        if not self.grades:
            print("No grades available!")
        else:
            print("\nStudent Grades:")
            for name, grade in self.grades.items():
                print(f"{name}: {grade}")

    def calculate_average(self):
        if not self.grades:
            print("No grades available!")
        else:
            avg = sum(self.grades.values()) / len(self.grades)
```

```
1. Add Grade
2. View Grades
3. Calculate Average
4. Exit
Enter choice: 1
Enter student name: Samim
Enter grade: 100
Added: Samim - 100.0

1. Add Grade
2. View Grades
3. Calculate Average
4. Exit
Enter choice: 1
Enter student name: Sahil
Enter grade: 50
Added: Sahil - 50.0

1. Add Grade
2. View Grades
```



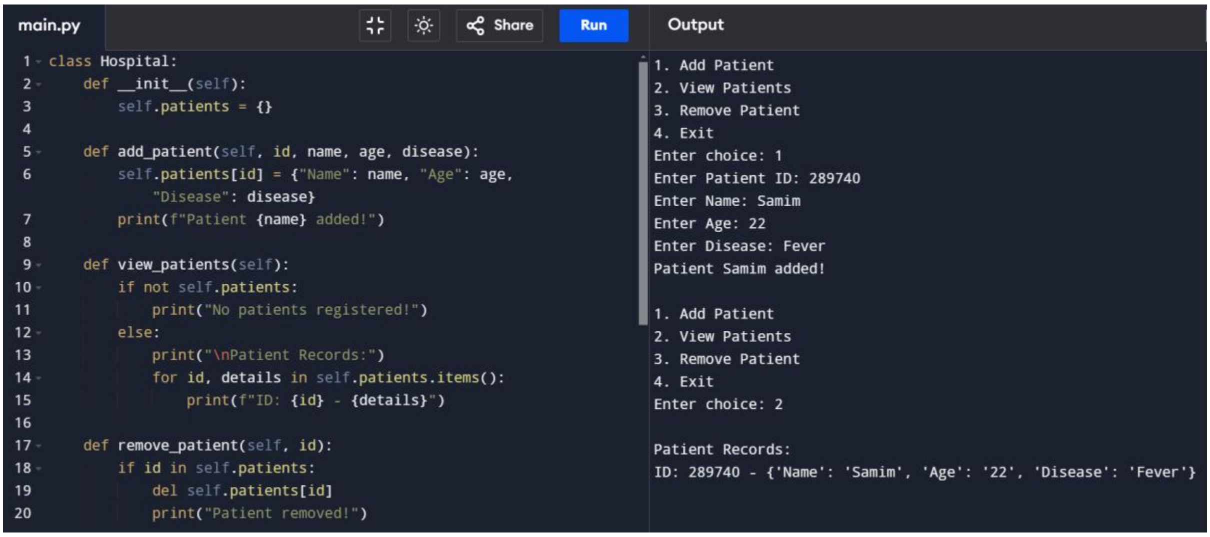
```python
def main():
    system = GradeSystem()
    while True:
        print("\n1. Add Grade\n2. View Grades\n3. Calculate Average\n4. Exit")
        choice = input("Enter choice: ")
        if choice == "1":
            name = input("Enter student name: ")
            grade = float(input("Enter grade: "))
            system.add_grade(name, grade)
        elif choice == "2":
            system.view_grades()
        elif choice == "3":
            system.calculate_average()
        elif choice == "4":
            print("Exiting Grade System.")
            break
        else:
            print("Invalid choice!")
main()
```

```
1. Add Grade
2. View Grades
3. Calculate Average
4. Exit
Enter choice: 2

Student Grades:
Samim: 100.0
Sahil: 50.0

1. Add Grade
2. View Grades
3. Calculate Average
4. Exit
Enter choice: 4
Exiting Grade System.

=== Code Execution Successful ===
```

4. Case Study: Hospital Patient Management

Problem Statement- Create a hospital management system that:

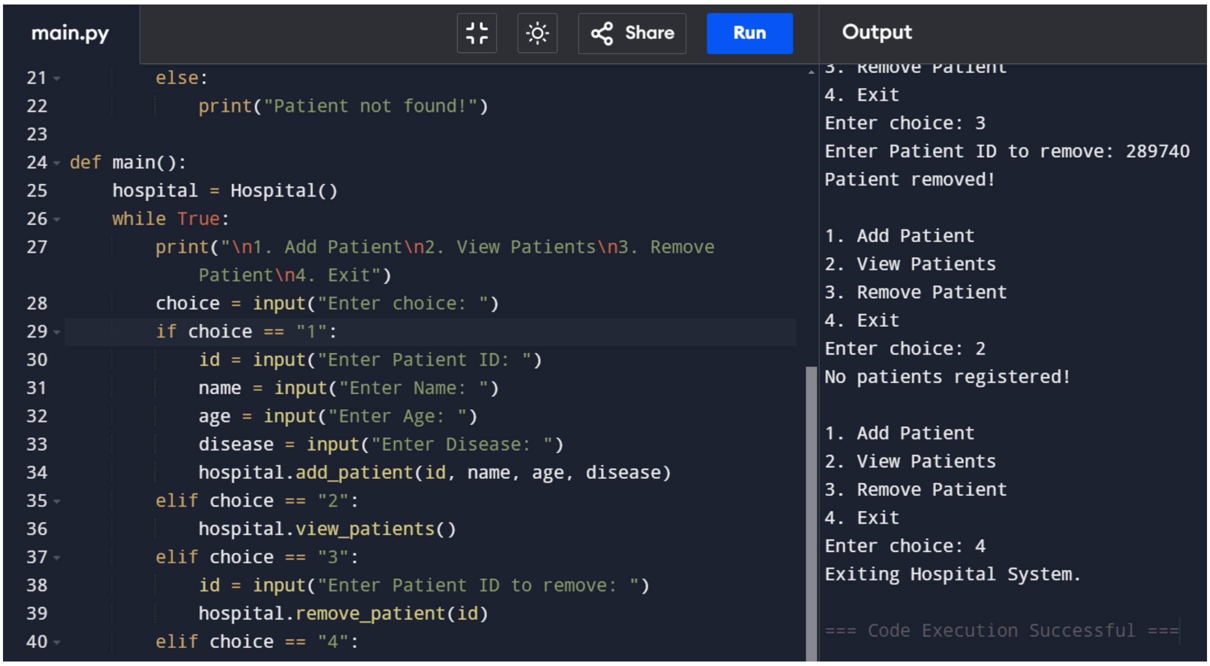
- Adds new patients
- Displays patient details
- Deletes patients



```python
class Hospital:
    def __init__(self):
        self.patients = {}

    def add_patient(self, id, name, age, disease):
        self.patients[id] = {"Name": name, "Age": age, "Disease": disease}
        print(f"Patient {name} added!")

    def view_patients(self):
        if not self.patients:
            print("No patients registered!")
        else:
            print("\nPatient Records:")
            for id, details in self.patients.items():
                print(f"ID: {id} - {details}")

    def remove_patient(self, id):
        if id in self.patients:
            del self.patients[id]
            print("Patient removed!")
```

```
1. Add Patient
2. View Patients
3. Remove Patient
4. Exit
Enter choice: 1
Enter Patient ID: 289740
Enter Name: Samim
Enter Age: 22
Enter Disease: Fever
Patient Samim added!

1. Add Patient
2. View Patients
3. Remove Patient
4. Exit
Enter choice: 2

Patient Records:
ID: 289740 - {'Name': 'Samim', 'Age': '22', 'Disease': 'Fever'}
```

PYTHON CASE STUDIES



```python
        else:
            print("Patient not found!")

def main():
    hospital = Hospital()
    while True:
        print("\n1. Add Patient\n2. View Patients\n3. Remove
            Patient\n4. Exit")
        choice = input("Enter choice: ")
        if choice == "1":
            id = input("Enter Patient ID: ")
            name = input("Enter Name: ")
            age = input("Enter Age: ")
            disease = input("Enter Disease: ")
            hospital.add_patient(id, name, age, disease)
        elif choice == "2":
            hospital.view_patients()
        elif choice == "3":
            id = input("Enter Patient ID to remove: ")
            hospital.remove_patient(id)
        elif choice == "4":
```

```
3. Remove Patient
4. Exit
Enter choice: 3
Enter Patient ID to remove: 289740
Patient removed!

1. Add Patient
2. View Patients
3. Remove Patient
4. Exit
Enter choice: 2
No patients registered!

1. Add Patient
2. View Patients
3. Remove Patient
4. Exit
Enter choice: 4
Exiting Hospital System.

=== Code Execution Successful ===
```