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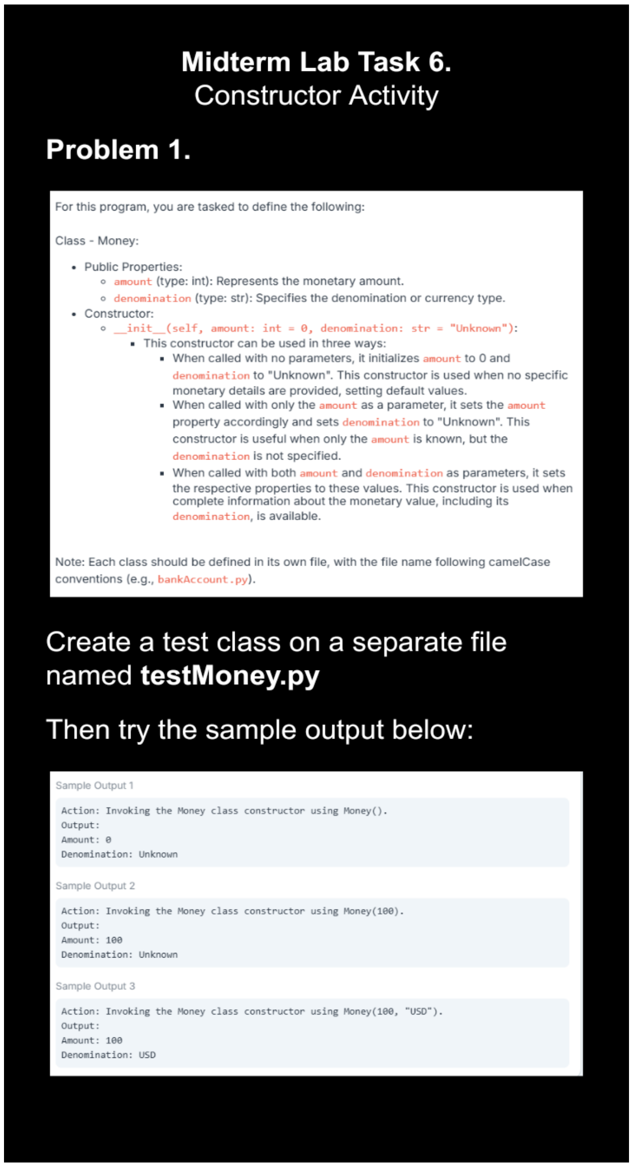
C203

Problem 1



Midterm Lab Task 6.
Constructor Activity

Problem 1.

For this program, you are tasked to define the following:

Class - Money:

- Public Properties:
  - `amount` (type: int): Represents the monetary amount.
  - `denomination` (type: str): Specifies the denomination or currency type.
- Constructor:
  - `__init__(self, amount: int = 0, denomination: str = "Unknown")`:
    - This constructor can be used in three ways:
      - When called with no parameters, it initializes `amount` to 0 and `denomination` to "Unknown". This constructor is used when no specific monetary details are provided, setting default values.
      - When called with only the `amount` as a parameter, it sets the `amount` property accordingly and sets `denomination` to "Unknown". This constructor is useful when only the `amount` is known, but the `denomination` is not specified.
      - When called with both `amount` and `denomination` as parameters, it sets the respective properties to these values. This constructor is used when complete information about the monetary value, including its `denomination`, is available.

Note: Each class should be defined in its own file, with the file name following camelCase conventions (e.g., `bankAccount.py`).

Create a test class on a separate file named **testMoney.py**

Then try the sample output below:

Sample Output 1

```
Action: Invoking the Money class constructor using Money().
Output:
Amount: 0
Denomination: Unknown
```

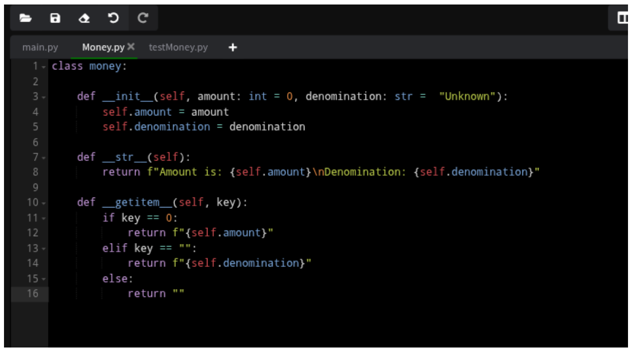
Sample Output 2

```
Action: Invoking the Money class constructor using Money(100).
Output:
Amount: 100
Denomination: Unknown
```

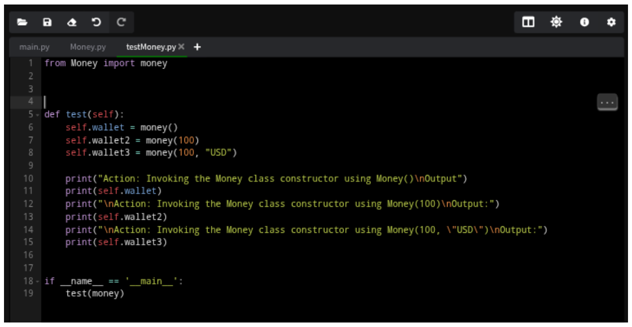
Sample Output 3

```
Action: Invoking the Money class constructor using Money(100, "USD").
Output:
Amount: 100
Denomination: USD
```

Code:

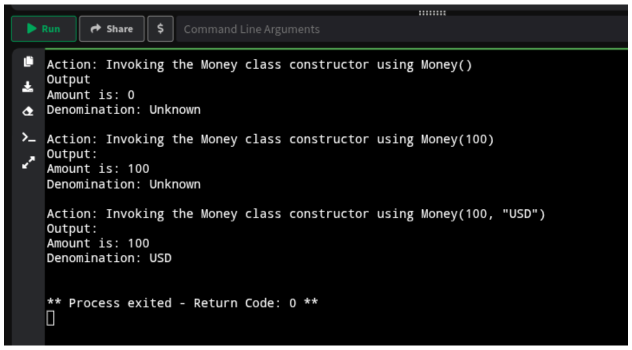


```python
class money:

    def __init__(self, amount: int = 0, denomination: str =  "Unknown"):
        self.amount = amount
        self.denomination = denomination

    def __str__(self):
        return f"Amount is: {self.amount}\nDenomination: {self.denomination}"

    def __getitem__(self, key):
        if key == 0:
            return f"{self.amount}"
        elif key == "":
            return f"{self.denomination}"
        else:
            return ""
```



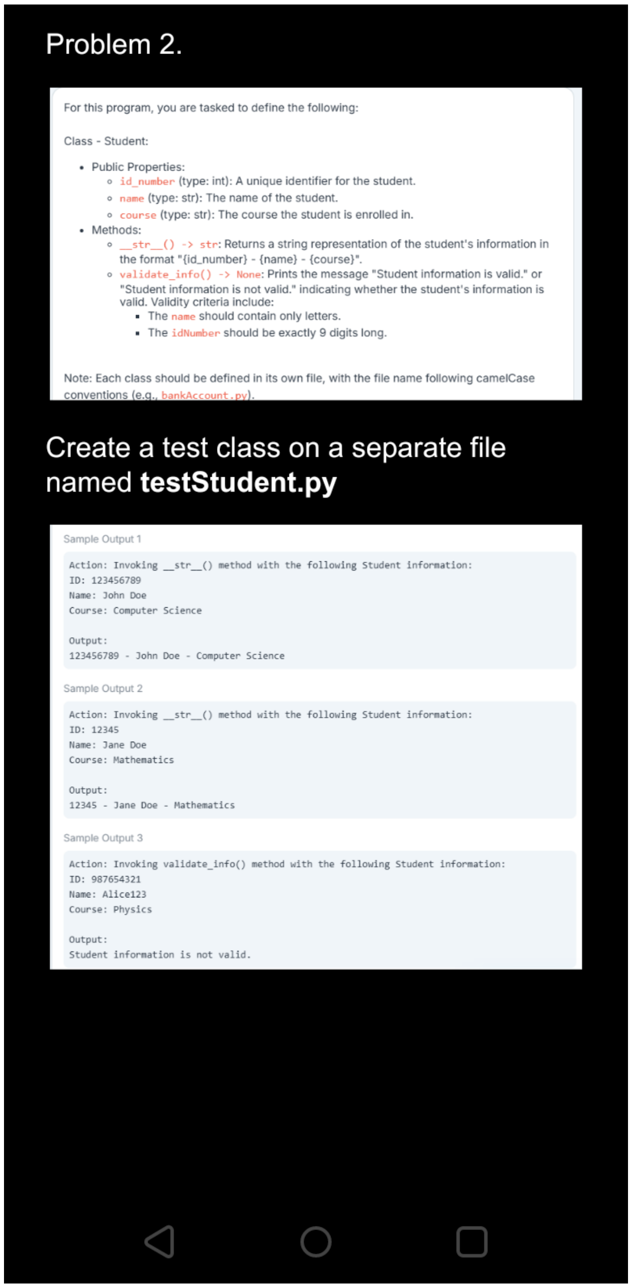
```python
from Money import money



def test(self):
    self.wallet = money()
    self.wallet2 = money(100)
    self.wallet3 = money(100, "USD")

    print("Action: Invoking the Money class constructor using Money()\nOutput")
    print(self.wallet)
    print("\nAction: Invoking the Money class constructor using Money(100)\nOutput:")
    print(self.wallet2)
    print("\nAction: Invoking the Money class constructor using Money(100, \"USD\")\nOutput:")
    print(self.wallet3)


if __name__ == '__main__':
    test(money)
```

Output:



```
Action: Invoking the Money class constructor using Money()
Output
Amount is: 0
Denomination: Unknown

Action: Invoking the Money class constructor using Money(100)
Output:
Amount is: 100
Denomination: Unknown

Action: Invoking the Money class constructor using Money(100, "USD")
Output:
Amount is: 100
Denomination: USD


** Process exited - Return Code: 0 **
```

Problem 2



Problem 2.

For this program, you are tasked to define the following:

Class - Student:

- Public Properties:
  - `id_number` (type: int): A unique identifier for the student.
  - `name` (type: str): The name of the student.
  - `course` (type: str): The course the student is enrolled in.
- Methods:
  - `__str__() -> str`: Returns a string representation of the student's information in the format "{id_number} - {name} - {course}".
  - `validate_info() -> None`: Prints the message "Student information is valid." or "Student information is not valid." indicating whether the student's information is valid. Validity criteria include:
    - The `name` should contain only letters.
    - The `idNumber` should be exactly 9 digits long.

Note: Each class should be defined in its own file, with the file name following camelCase conventions (e.g., `bankAccount.py`).

Create a test class on a separate file named **testStudent.py**

Sample Output 1

```
Action: Invoking __str__() method with the following Student information:
ID: 123456789
Name: John Doe
Course: Computer Science

Output:
123456789 - John Doe - Computer Science
```

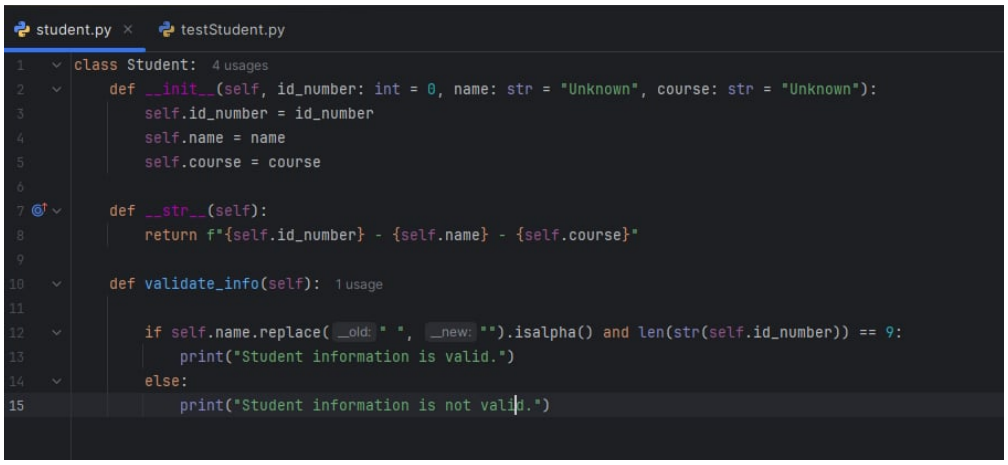
Sample Output 2

```
Action: Invoking __str__() method with the following Student information:
ID: 12345
Name: Jane Doe
Course: Mathematics

Output:
12345 - Jane Doe - Mathematics
```

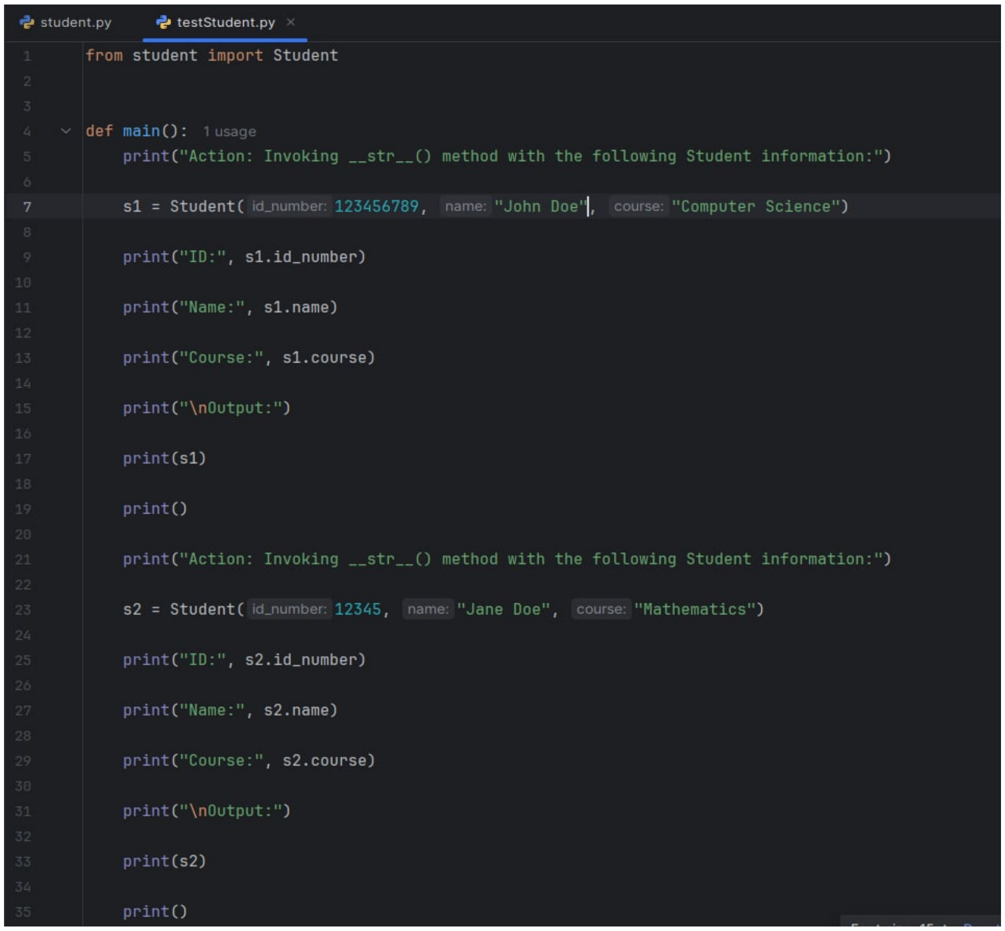
Sample Output 3

```
Action: Invoking validate_info() method with the following Student information:
ID: 987654321
Name: Alice123
Course: Physics

Output:
Student information is not valid.
```

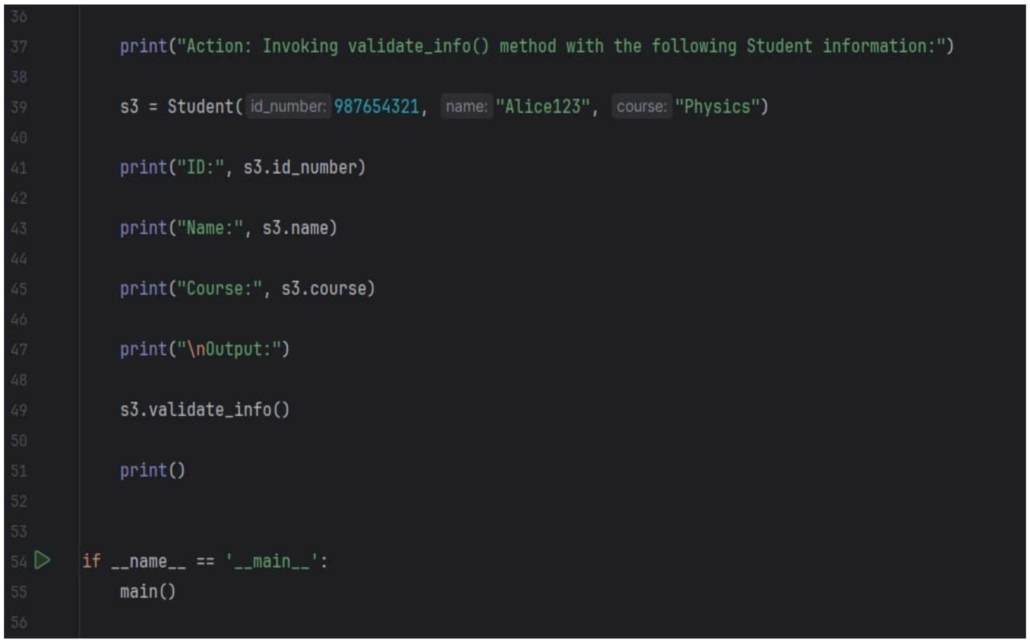
Code



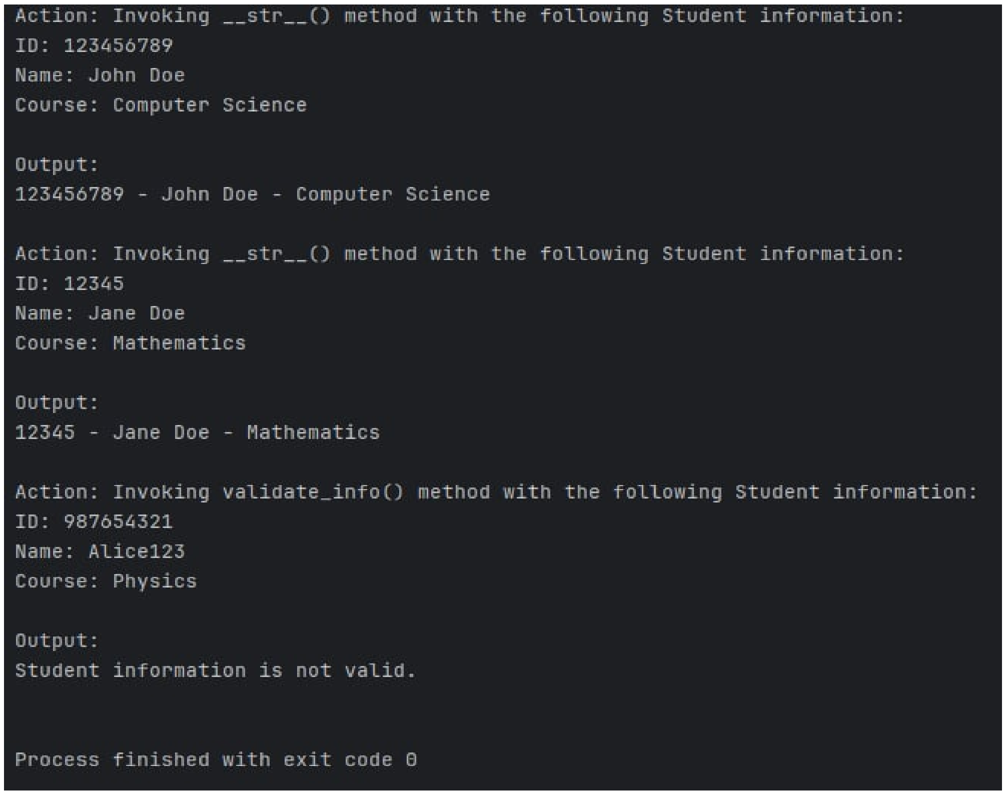
```python
class Student:
    def __init__(self, id_number: int = 0, name: str = "Unknown", course: str = "Unknown"):
        self.id_number = id_number
        self.name = name
        self.course = course

    def __str__(self):
        return f"{self.id_number} - {self.name} - {self.course}"

    def validate_info(self):

        if self.name.replace(" ", "").isalpha() and len(str(self.id_number)) == 9:
            print("Student information is valid.")
        else:
            print("Student information is not valid.")
```



```python
from student import Student


def main():
    print("Action: Invoking __str__() method with the following Student information:")

    s1 = Student(123456789, "John Doe", "Computer Science")

    print("ID:", s1.id_number)

    print("Name:", s1.name)

    print("Course:", s1.course)

    print("\nOutput:")

    print(s1)

    print()

    print("Action: Invoking __str__() method with the following Student information:")

    s2 = Student(12345, "Jane Doe", "Mathematics")

    print("ID:", s2.id_number)

    print("Name:", s2.name)

    print("Course:", s2.course)

    print("\nOutput:")

    print(s2)

    print()
```


```python

    print("Action: Invoking validate_info() method with the following Student information:")

    s3 = Student(id_number: 987654321, name: "Alice123", course: "Physics")

    print("ID:", s3.id_number)

    print("Name:", s3.name)

    print("Course:", s3.course)

    print("\nOutput:")

    s3.validate_info()

    print()


if __name__ == '__main__':
    main()

```

Output:


```
Action: Invoking __str__() method with the following Student information:
ID: 123456789
Name: John Doe
Course: Computer Science

Output:
123456789 - John Doe - Computer Science

Action: Invoking __str__() method with the following Student information:
ID: 12345
Name: Jane Doe
Course: Mathematics

Output:
12345 - Jane Doe - Mathematics

Action: Invoking validate_info() method with the following Student information:
ID: 987654321
Name: Alice123
Course: Physics

Output:
Student information is not valid.


Process finished with exit code 0
```