Gebze Technical University
Computer Engineering

**CSE 443 - 2018 Fall**

HOMEWORK III REPORT

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Q1) Problem Solution Approach

- Problem given to us wants to implement a design pattern which will help us to continue using our old interface with a new interface. We will choose Adapter Design Pattern to perform it.
- We create an adapter class implements our old interface and keeps an instance of new interface. This way when new interface wants to runs his payment method, it will goes to the adapter class then calls his payment method. Adapter's payment method calls the new interface's pay method then its done.

Q1) Class Diagrams
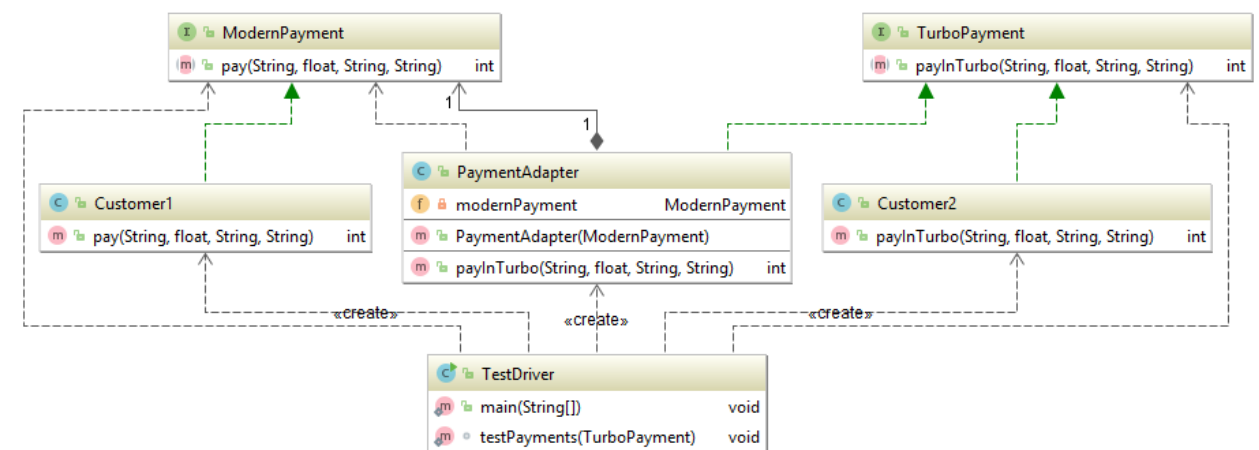
Powered by yFiles

Q1) Running Results

```
"C:\Program Files (x86)\Java\jdk1.8.0_172\bin\java.exe" ...
All about the Customer1:

Customer1 is paid as the ModernPayment, Info:
Card No: 712924973
Amount: 1250000.0
Destination: BankOfChicago
Installments: BankOfNY

All about the Customer2:

Customer2 is paid as the TurboPayment, Info:
Card No: 712924973
Amount: 1250000.0
Destination: BankOfChicago
Installments: BankOfNY


Process finished with exit code 0
```
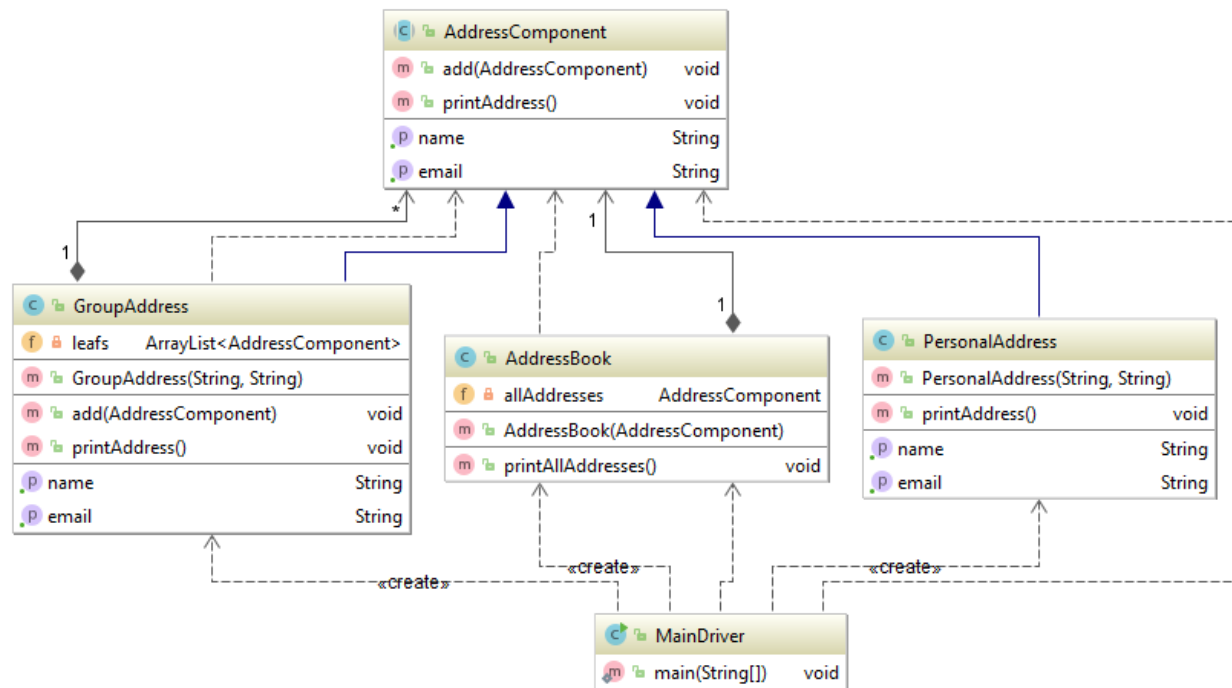
Q2) Problem Solution Approach

- We are wanted to design and implement an email address book. This book contains two different types of address. Personal and Group addresses.
- Every group address can be contain also personal address.
- We use composite pattern here as wanted in the part.

Q2) Class Diagrams

Q2) Running Results

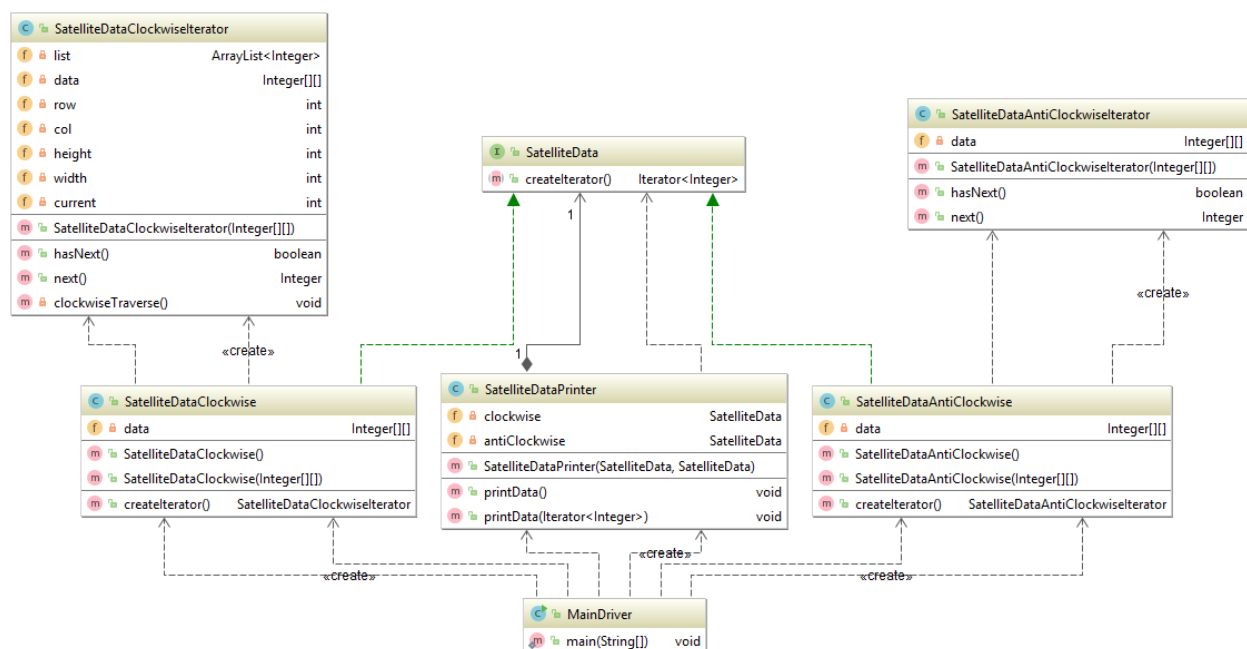## Q3) Problem Solution Approach

- In this part we are wanted to write iterator which will iterate over the 2D arrays clockwise or anti-clockwise. I have used Iterator Pattern to perform it.
- I provided the an interface and two classes implements it. This interface involves a createIterator method and classes implements it to return the true iterator for their iterator.
- For these both two classes , I implemented two classes for each one which implements generic Iterator class.
- We are wanted to Show only one of these iterator, thats why I have implemented only clockwise iterator classes' hasNext and next methods. It performs iteration over the 2D arrays and print it to the console.

Q3) Class Diagrams

Q3) Running Results

Q4) Problem Solution Approach

- In this part we are wanted to implement DFT and DCT classes which will have 4 operations. 2 of them are same and the other are different from each other.
- I used template pattern here and made an abstract class which implements two common method and makes the other to let ites concrete classes to implement them according to the their specific needs.
- Then created two concrete class inherited from this abstract class and each of them implements two remained method how they needed.

Q4) Class Diagrams

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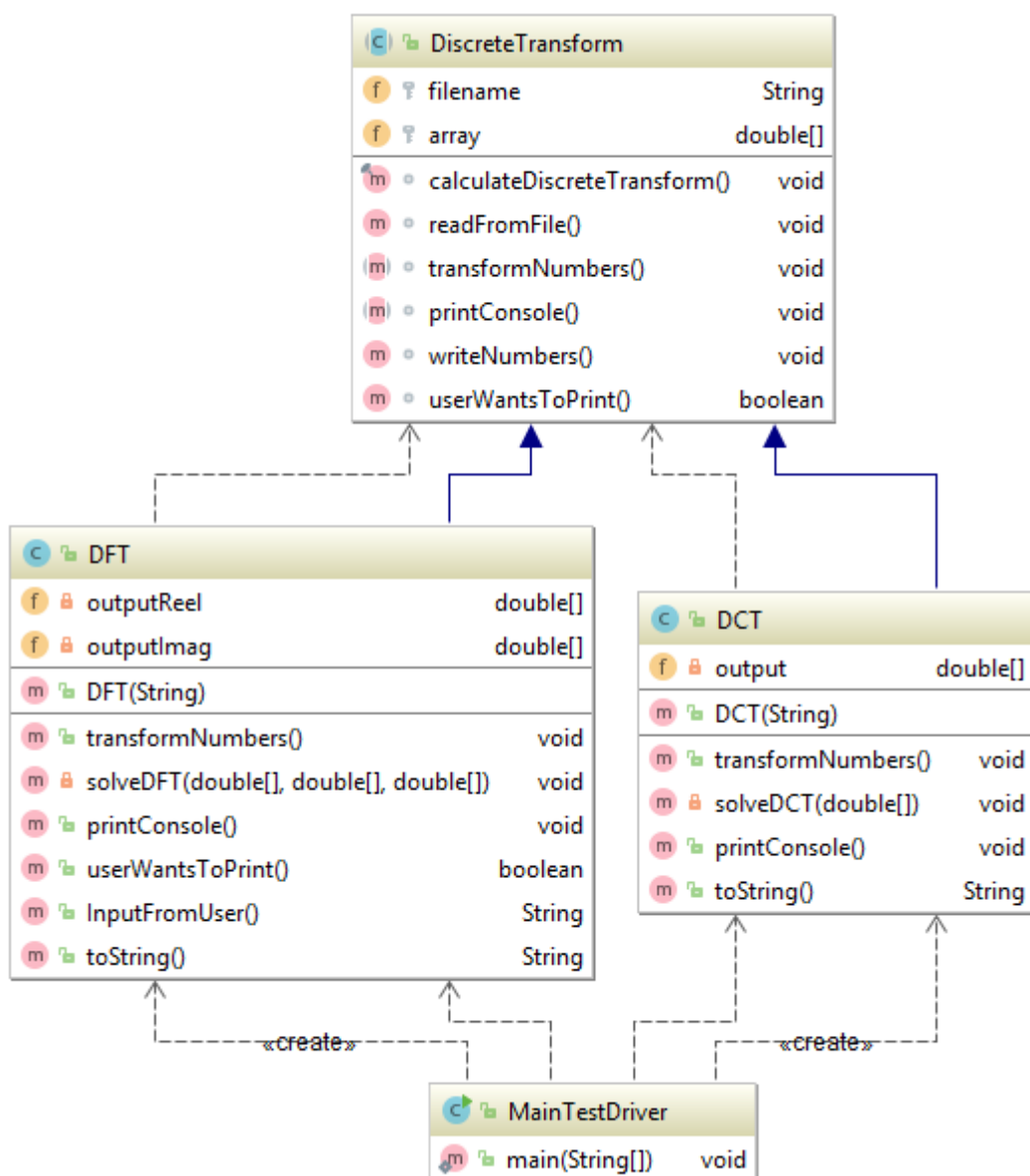
Q4) Running Results

```
"C:\Program Files (x86)\Java\jdk1.8.0_172\bin\java.exe" ...
Calculating for DCT
Numbers Written to output.txt....
Output:  28.3 -2.464720137605018 -10.565509926170153 0.6363961030678937 0.7999999999999965 0.5051283433784801

Calculating for DFT
Numbers Written to output.txt....
Would you like to print the time of execution to the console (y/n)? y
Execution time is 0.0013
Reel:  28.3 -10.399999999999999 -0.19999999999999862 0.10000000000000009 -0.20000000000000528 -10.400000000000002
Imaginer:  0.0 -3.117691453623982 1.0392304845413247 -4.6673898582792265E-15 -1.0392304845413314 3.117691453623959


Process finished with exit code 0
```