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Software individual assignment Part 2

Understanding of the requirement

1. System should support three different file formats: JSON, CSV, XML
2. Output file format should be same as input file format
3. Validate credit as per validation rules.
4. Integrating part 1 requirement, create new instance of credit card as per the input card type

Design

I am designing this system in **Decorator** Pattern to support different file format and uses **Factory** Pattern for creating credit card instance as per type. Decorator pattern helps to attach responsibilities to the object at runtime.

As per the input file request, the system will call the particular decorator class for file reading and writing. The system can support additional file format by adding new classes for the file types which implements ICreditCard Interface.

Application workflow

- CreditCardApplication reads the input file and output file, verifies whether both the input and output file paths are equal.
- As per the input file type, the system calls the corresponding file decorator to read the input file
- System will use superclass for credit card validations
- Application uses factory method to create instance of particular credit card type
- Each File specific decorator will write the credit card information in output file.

Please refer the below diagram for Design pattern.

CreditCardCreatorApplication

+ creditCardDecorator() : ICreditCard
+ parseInputFile(inputFile : String) : void
+ writeOutputFile(outputFile : String) : void

asks

<<interface>>
ICreditCard

+ *parseInputFile(filename : String) : void*
+ *validateCreditCardicardNumber String : int) : String*
+ *writeOutputFile(filename : String) : void*
+ *createCreditCardByType(cardType : String, cardNumber : long, cardholderName : String) : CreditCard*

implements   *implements*

CreditCard

– cardNumber : int
– expirationDate : int
– cardHolderName : char

+ getInstance() : void

extends   *extends*   *extends*   *extends*

MasterCard

+ getInstance() : void

VisaCard

+ getInstance() : void

AmExCard

+ getInstance() : void

DiscoverCard

+ getInstance() : void

creates

CreditCardFactory

+ createCreditCardByType() : CreditCard

asks

CreditCardDecorator

validateCreditCard(number : long) : String
createCreditCardByType() : void
readInputFile(filename : int) : void
+ writeOutputFile(outfileName : int) : void

SimpleCreditCardDecorator

extends   *extends*   *extends*

JSONFileDecorator

+ readJSONFile(filename : String) : void
+ writeJSONFile(outfilename : String) : void

XMLFileDecorator

+ readXMLfile(filename : String) : void
+ writeXMLFile(outFilename : String) : void

CSVileDecorator

+ readCSVFile(filename : String) : void
+ writeCSVFile(outFilename : String) : void