# Credit Card Problem

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**Design patterns:**

- Chain of Responsibility.
- Factory method.

## 1. Describe what is the primary problem you try to solve.

- **Determining credit card number** is the primary problem. Each credit card has its own specific criteria. Though current problem lists only a few credit card types, design should support any number of credit cards.

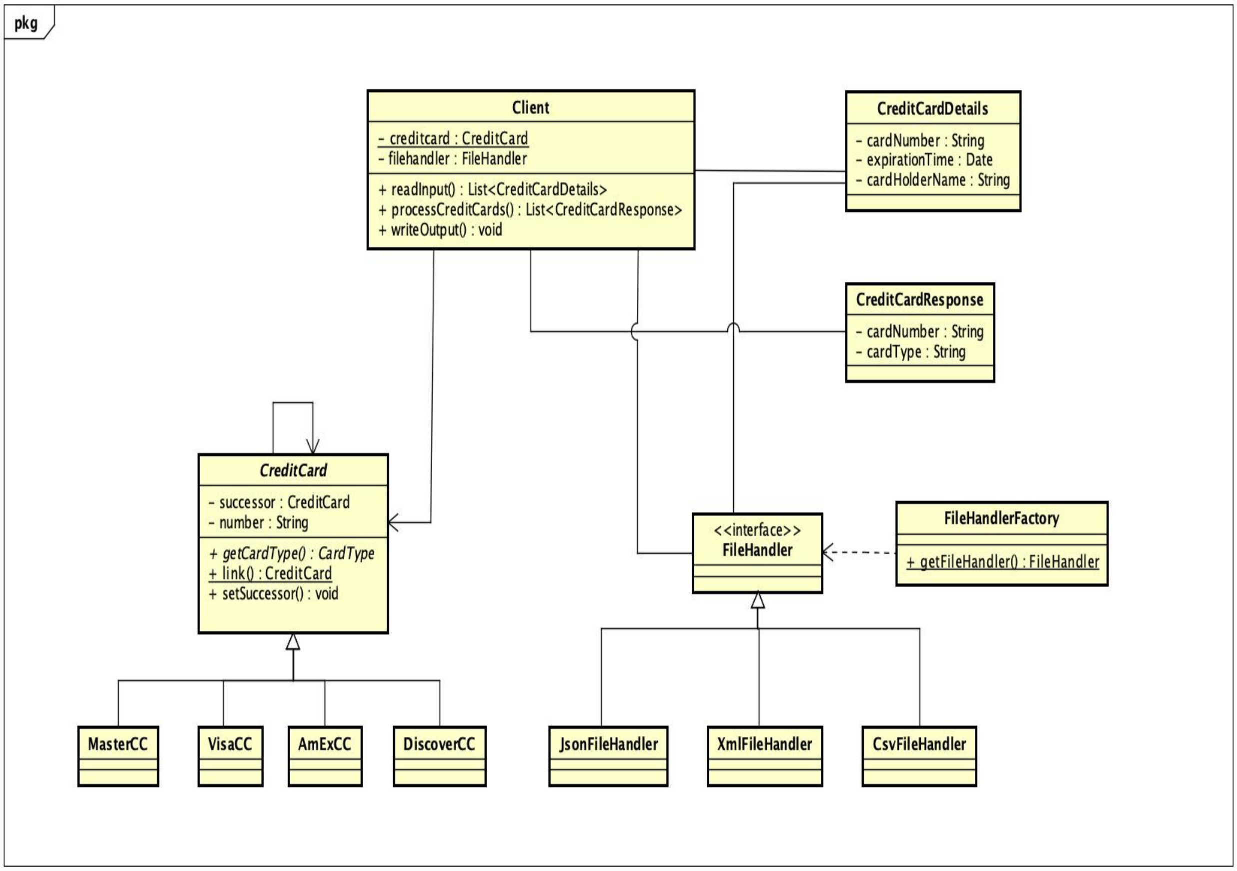
## 2. Describe what are the secondary problems you try to solve (if there are any).

- Application should **accept multiple file formats**. It should support multiple file parsers or handlers. And they are determined on runtime.

## 3. Describe what design pattern(s) you use how (use plain text and diagrams).

- Application is implemented using **Chain of Responsibility** Behavioral pattern and **Factory method** creational design pattern.
- Primary problem of determining credit card type is tackled with Chain of Responsibility.
- Created abstract class CreditCard with subclasses of different credit cards like MasterCC, VisaCC, AmExCC and DiscoverCC. While CreditCard acts as Handler with link to successor CreditCard.
- Each subclass overrides a Handler method getCardType to define their own criteria using which creditcard type is determined.
- CreditCard class has a method link to define chain of objects.
- For the secondary problem, Factory method is implemented. Interface FileHandler is created which declares methods to read from and write to files. Similarly, there exists a filehandler for each file format. A filehandler is determined based on input and output file's extension and factory method is used to create handler class object.

## Class Diagram:



4. **Describe the consequences of using this/these pattern(s).**

- Using these patterns, application can be easily updated to supports any number of different credit cards.
- Also, newer file formats can be easily added.
- Since each credit card defines its own characteristics, defining identity becomes its own responsibility.