Group 1

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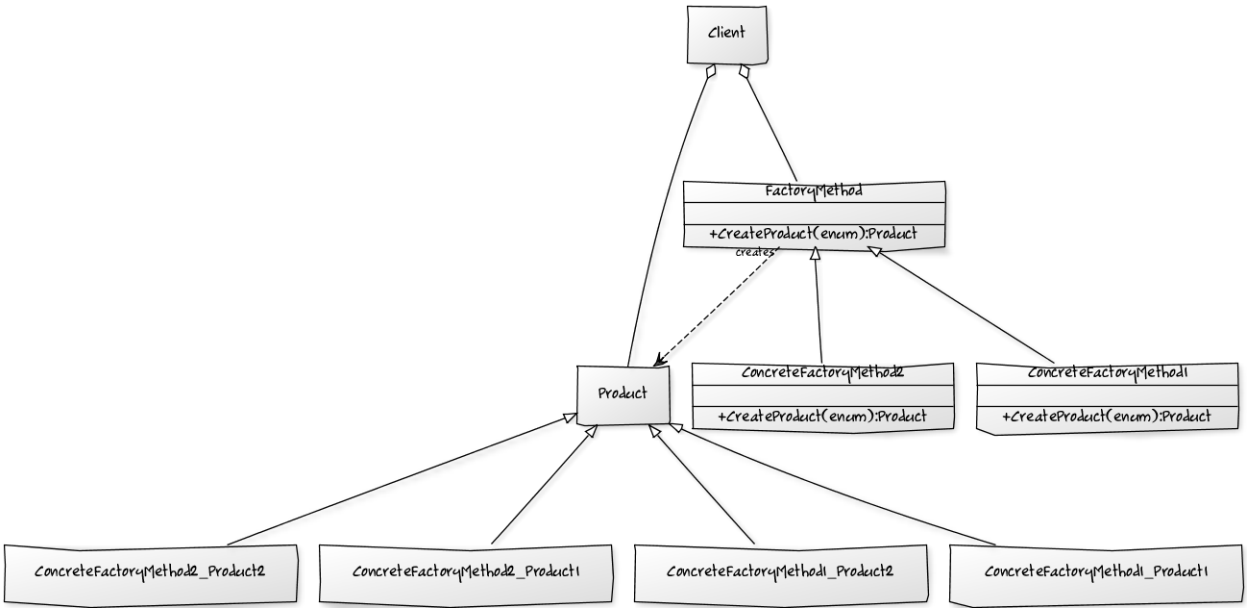
Abstract Factory

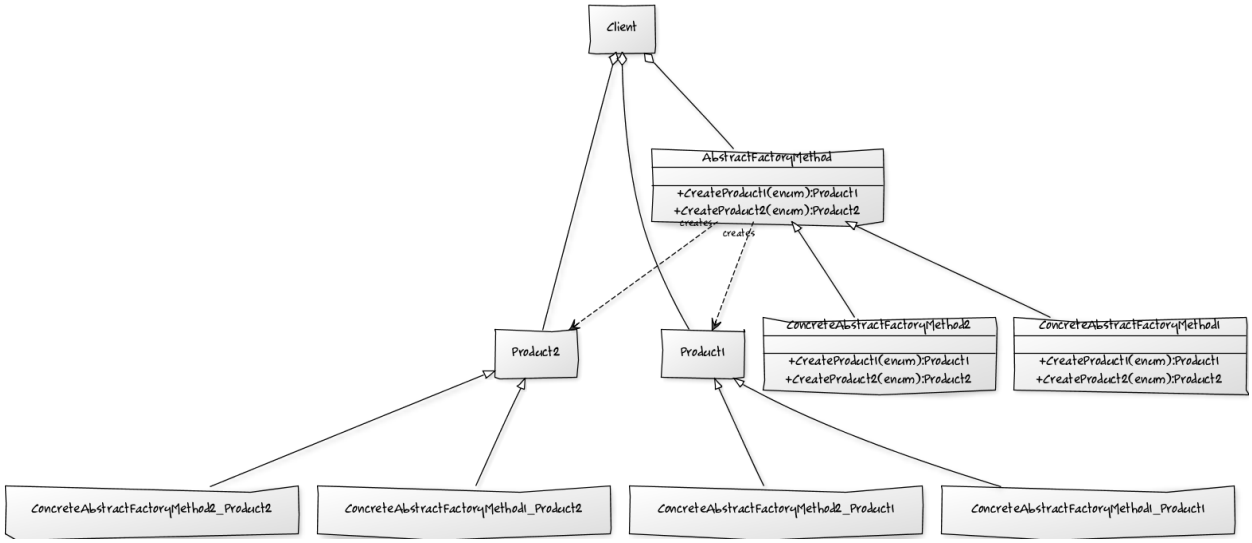
Definition:

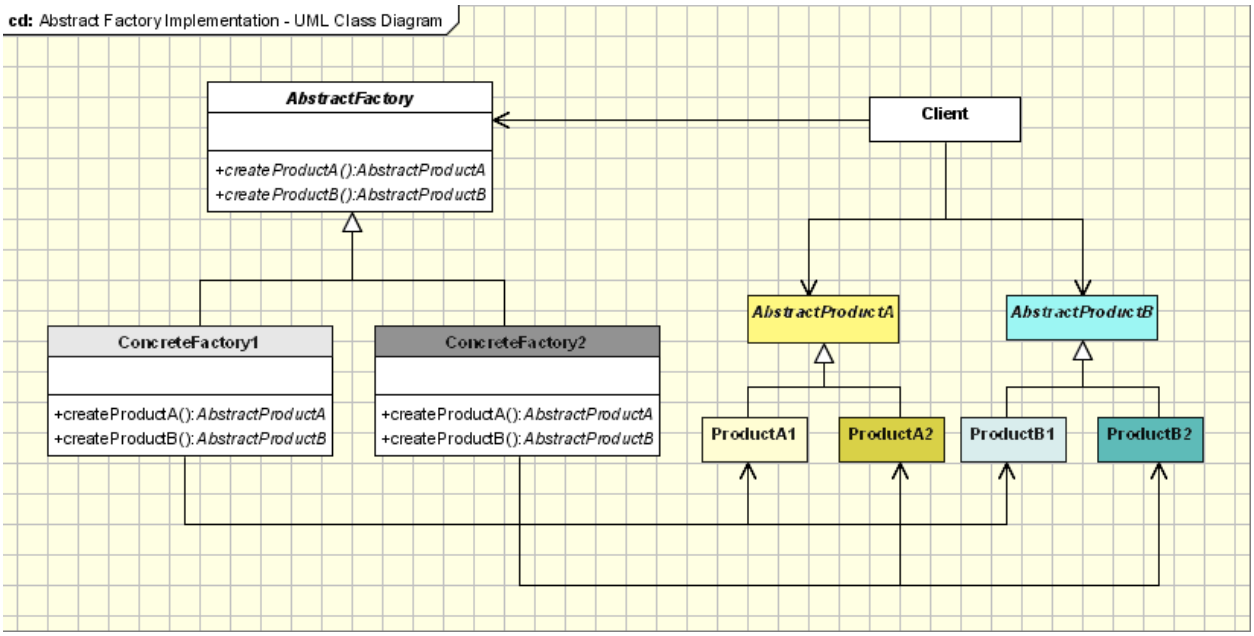
- The abstract factory pattern provides a way to encapsulate a group of individual factories that have a common theme without specifying their concrete classes or provide an interface for creating families of related or dependent objects without specifying their concrete classes

Differences between Factory method and abstract factory:

- Factory method is just a method which can be overridden by subclasses. Abstract factory is an object which contains multiple factory method.
- The factory method creates objects through inheritances and abstract factory creates object through composition.
- Factory method contains method to produce the products of its type. Abstract factory method contains family of types and method to produce.







Example for using abstract factory method:

This specification for the disks to prepare different types of pasta in a pasta maker is the Abstract Factory, and each specific disk is a Factory. all Factories (pasta maker disks) inherit their properties from the abstract Factory. Each individual disk contains the information of how to create the pasta, and the pasta maker does not.

Example for using factory method:

The toy company corresponds to the Creator, since it may use the factory to create product objects. The division of the toy company that manufactures a specific type of toy (horse or car) corresponds to the ConcreteCreator.

When to use Abstract factory method:

- When clients must be decoupled or extremely need for modification and configuration to work with families of the products (like milk: banana flavor, chocolate flavor…). The abstract factory also enforces the constraints which classes must be used with the others.

- A family of products is designed to work only all-together.

Advantages and Disadvantages:

- It isolates the creation of objects from the client that needs them, giving the client only the possibility of accessing them through an interface, which makes the mainipulation easier. The exchanging of product families is easier, as the class of a concrete factory appears in the code ony where it is instantiated. If the products of a family are meant to work together, The Abstract Factory makes it easy to use the objects from only one family at a time.
- Adding new products to the existing factories is difficult, because the Abstract Factory interface uses a fixed set of products that can be created. Adding a new product would mean extending the factory interface, which involves changes in the Abstract Factory class and all its subclasses.