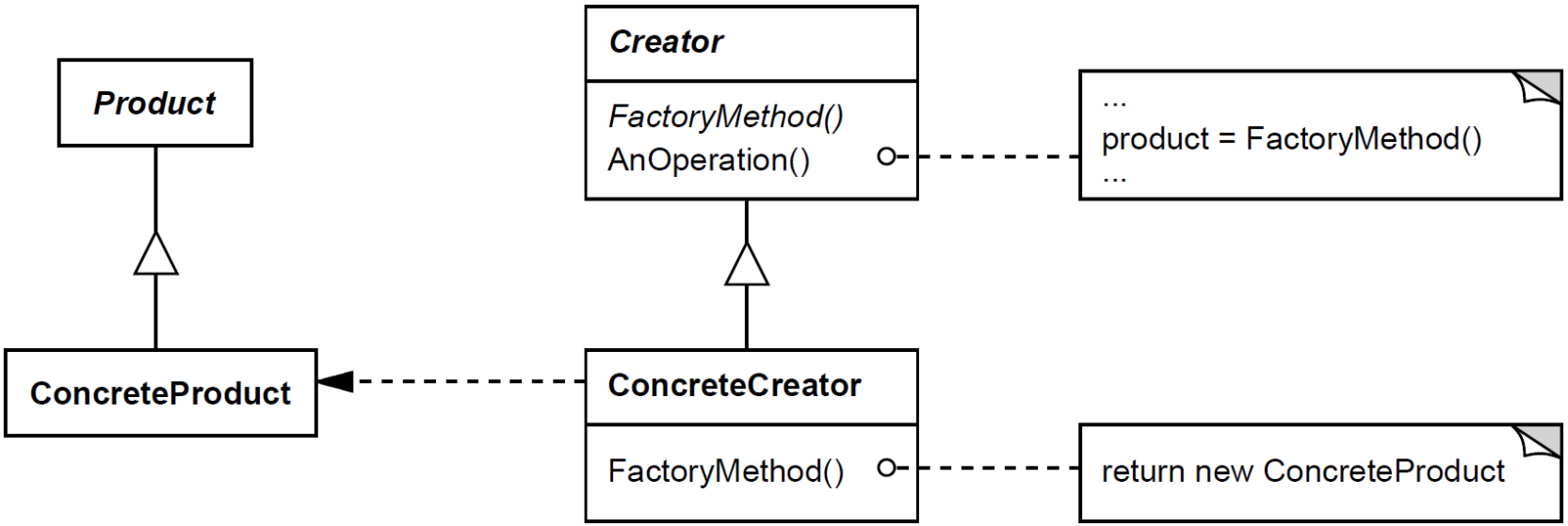
The Factory Method Pattern

Structure & Functionality

Douglas C. Schmidt

Learning Objectives in This Lesson

- Recognize how the *Factory Method* pattern can be applied to extensibly create variabilities in the expression tree processing app.
- Understand the structure & functionality of the *Factory Method* pattern.



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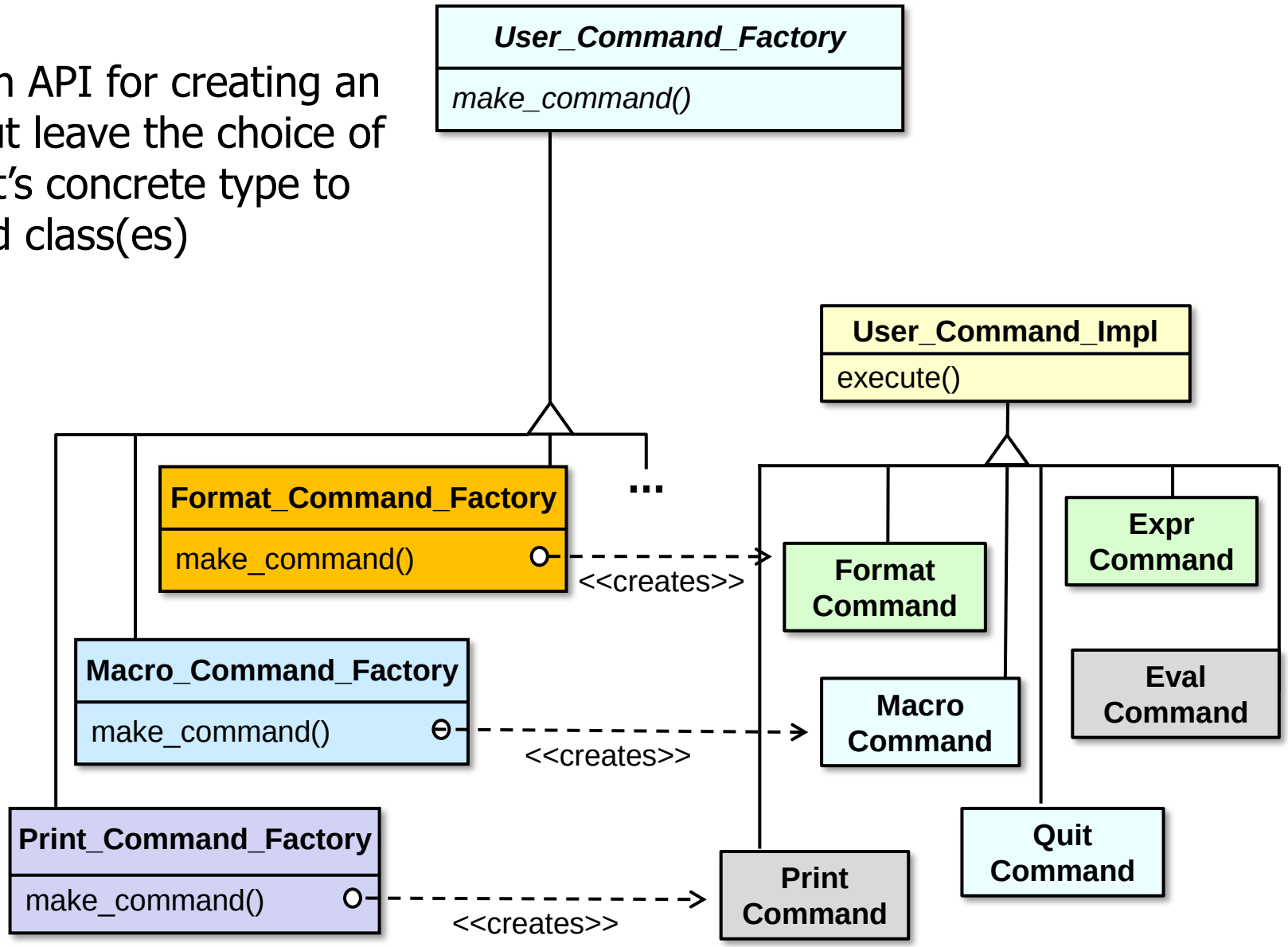
Structure & Functionality of the Factory Method Pattern

Factory Method GoF Class Creational

Intent

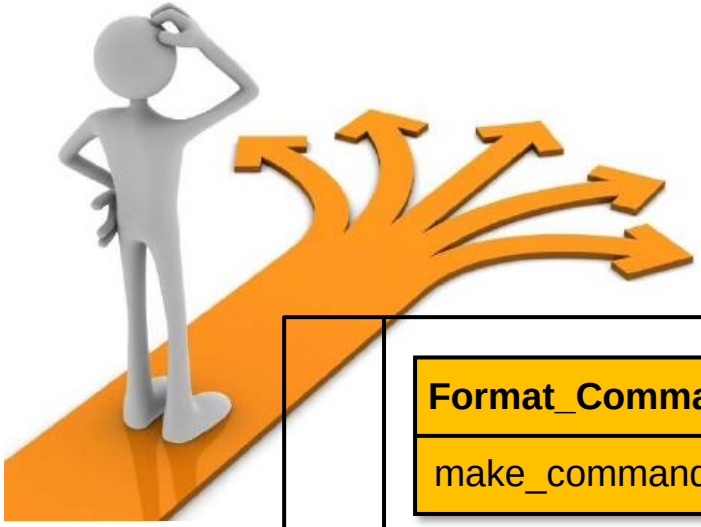
- Provide an API for creating an object, but leave the choice of the object's concrete type to its derived class(es)

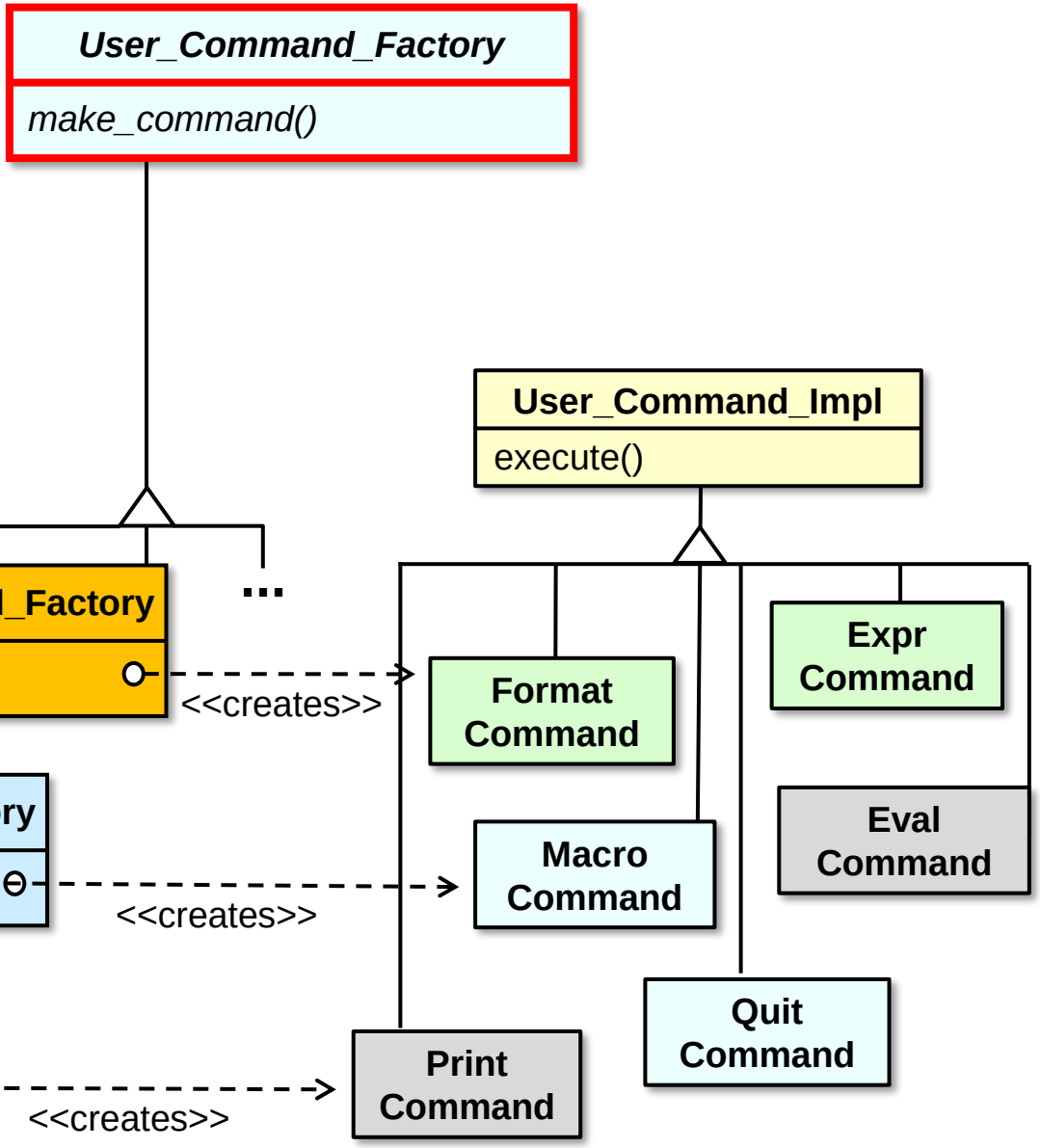


See en.wikipedia.org/wiki/Factory_method_pattern

Applicability

- When a class cannot anticipate the objects it must create.

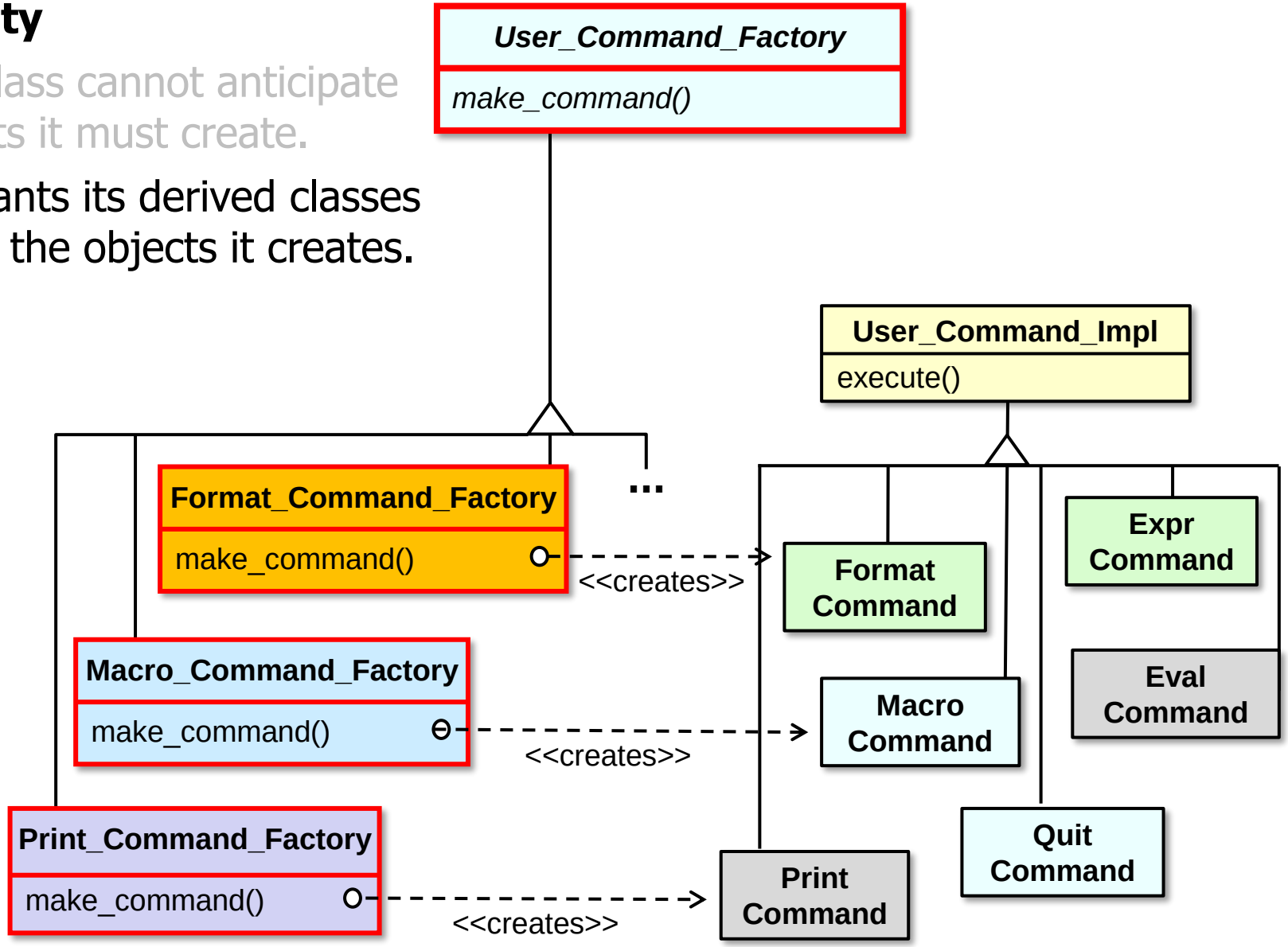




Factory Method GoF Class Creational

Applicability

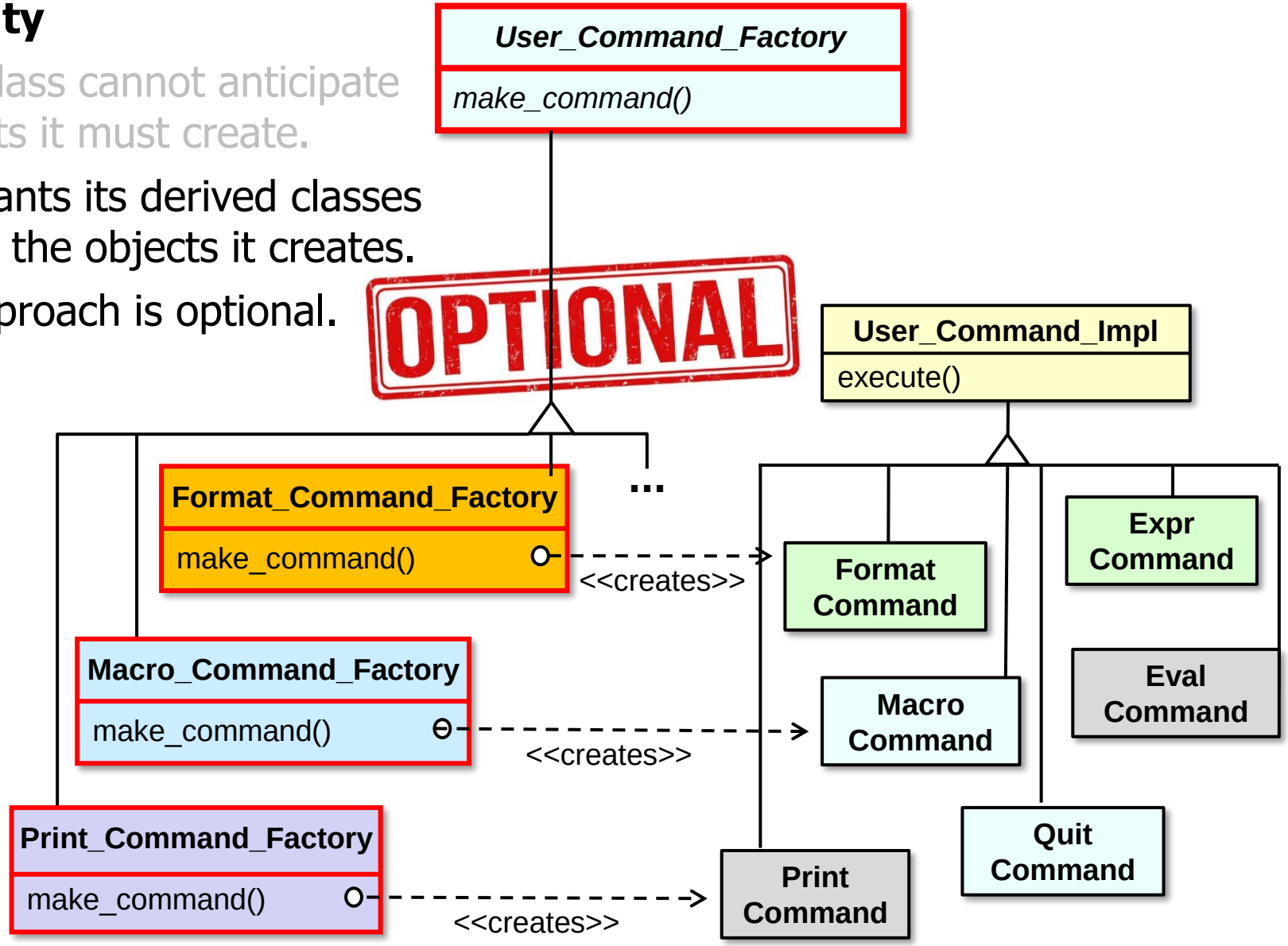
- When a class cannot anticipate the objects it must create.
- A class wants its derived classes to specify the objects it creates.



Factory Method GoF Class Creational

Applicability

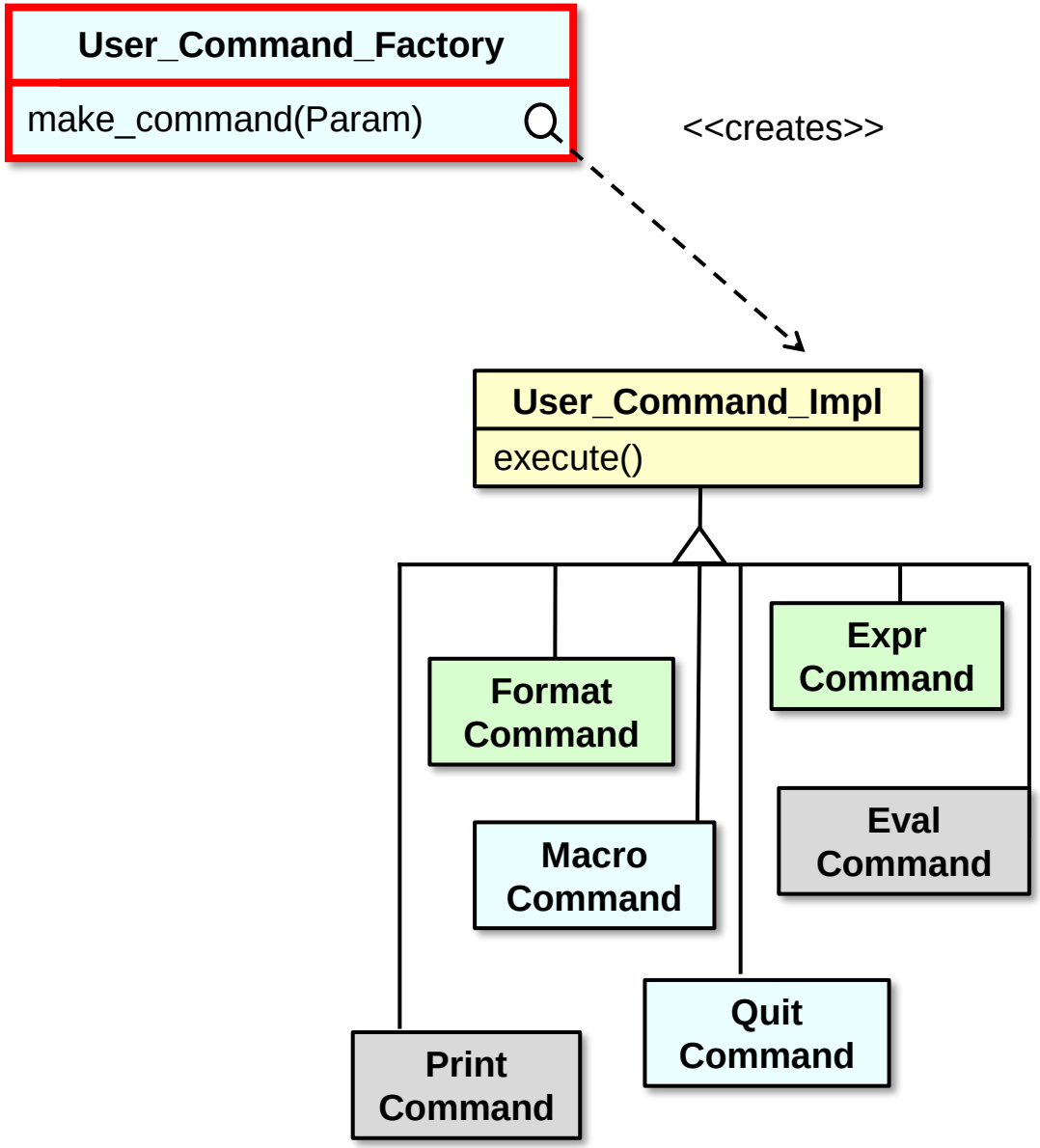
- When a class cannot anticipate the objects it must create.
- A class wants its derived classes to specify the objects it creates.
  - This approach is optional.



Factory Method GoF Class Creational

Applicability

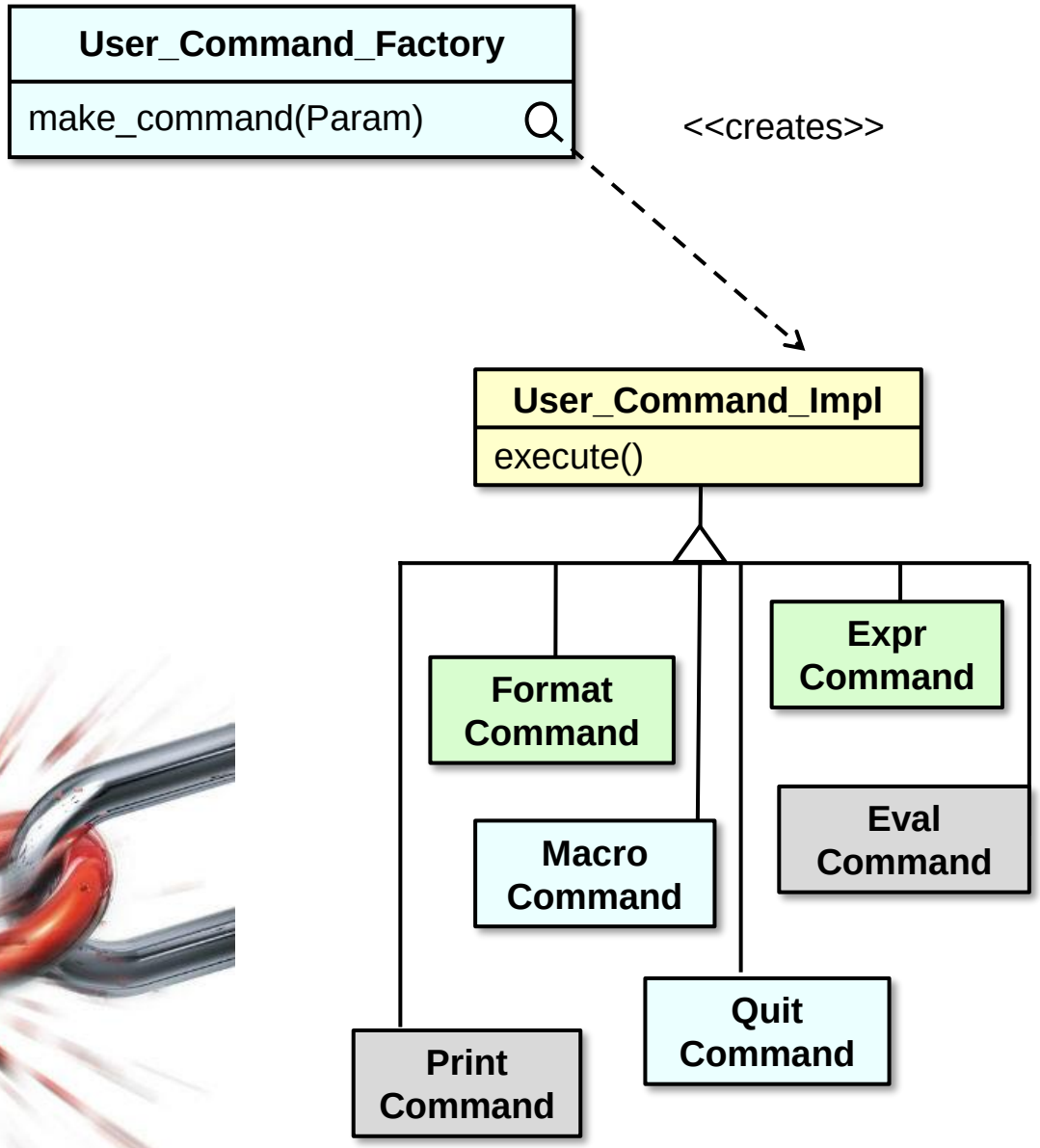
- When a class cannot anticipate the objects it must create.
- A class wants its derived classes to specify the objects it creates.
  - This approach is optional.
  - An alternative is to pass a parameter to the factory method.



Factory Method GoF Class Creational

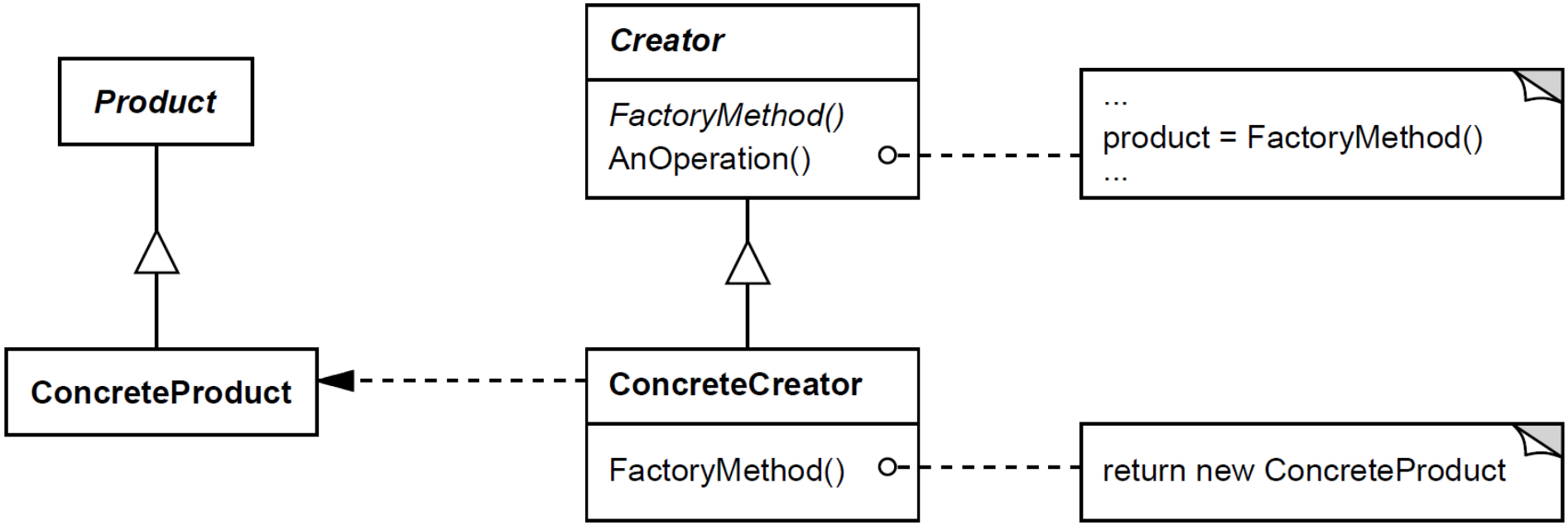
Applicability

- When a class cannot anticipate the objects it must create.
- A class wants its derived classes to specify the objects it creates.
- Or there's a need to decouple the creation of an object from its subsequent use.

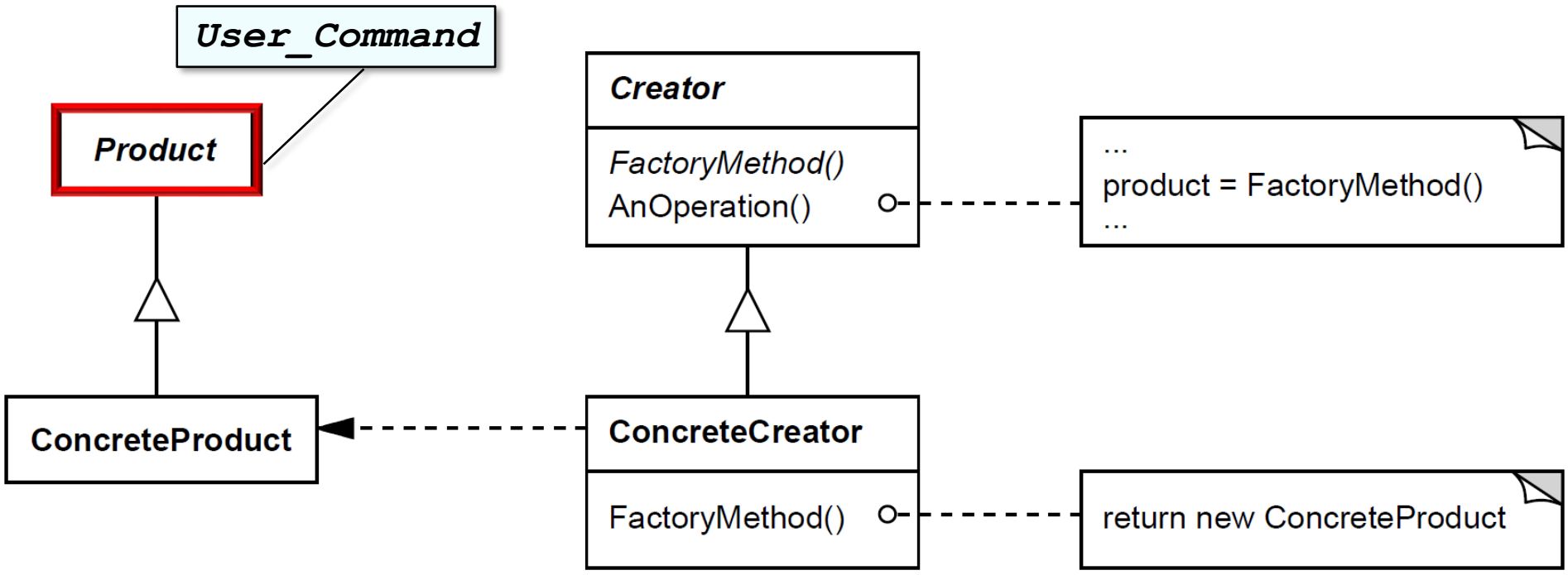


This decoupling is really the essence of the *Factory Method* pattern!

Structure & participants



Structure & participants



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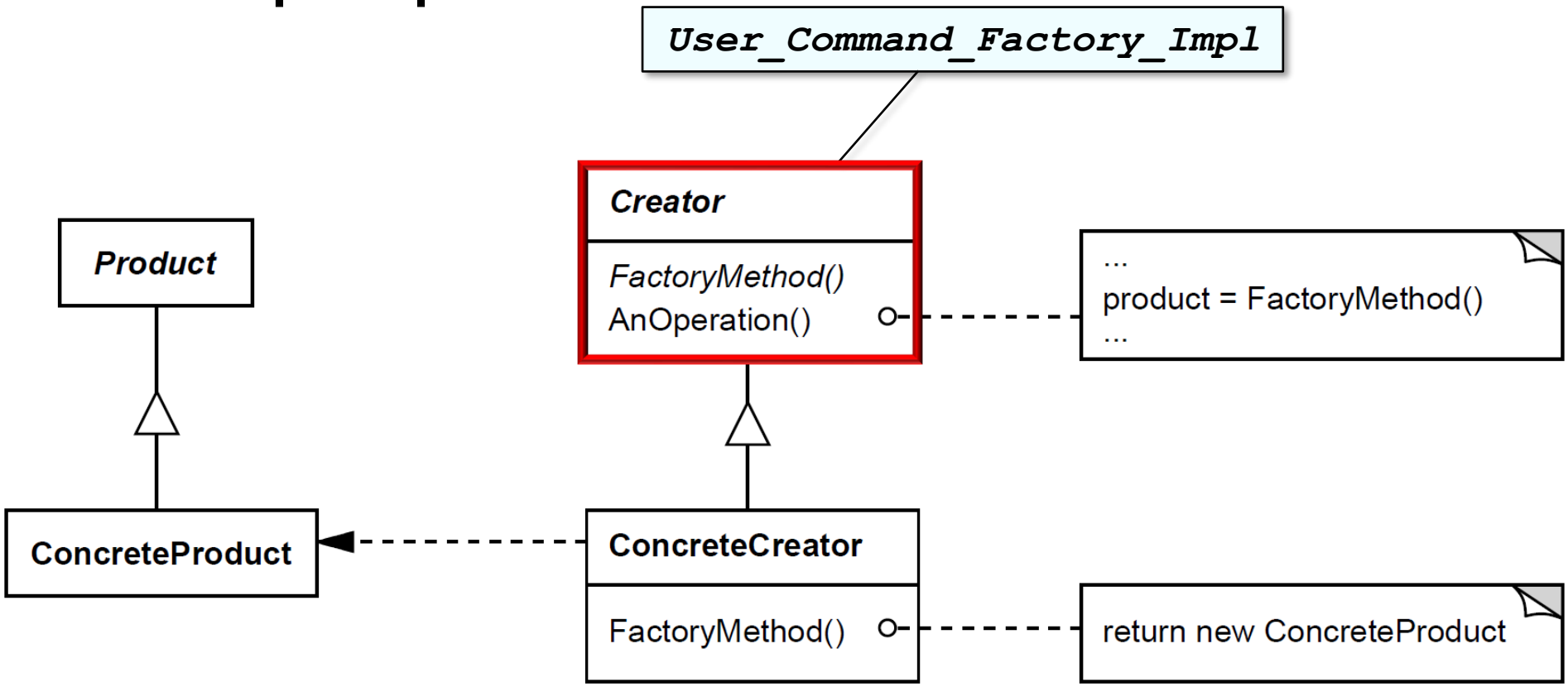

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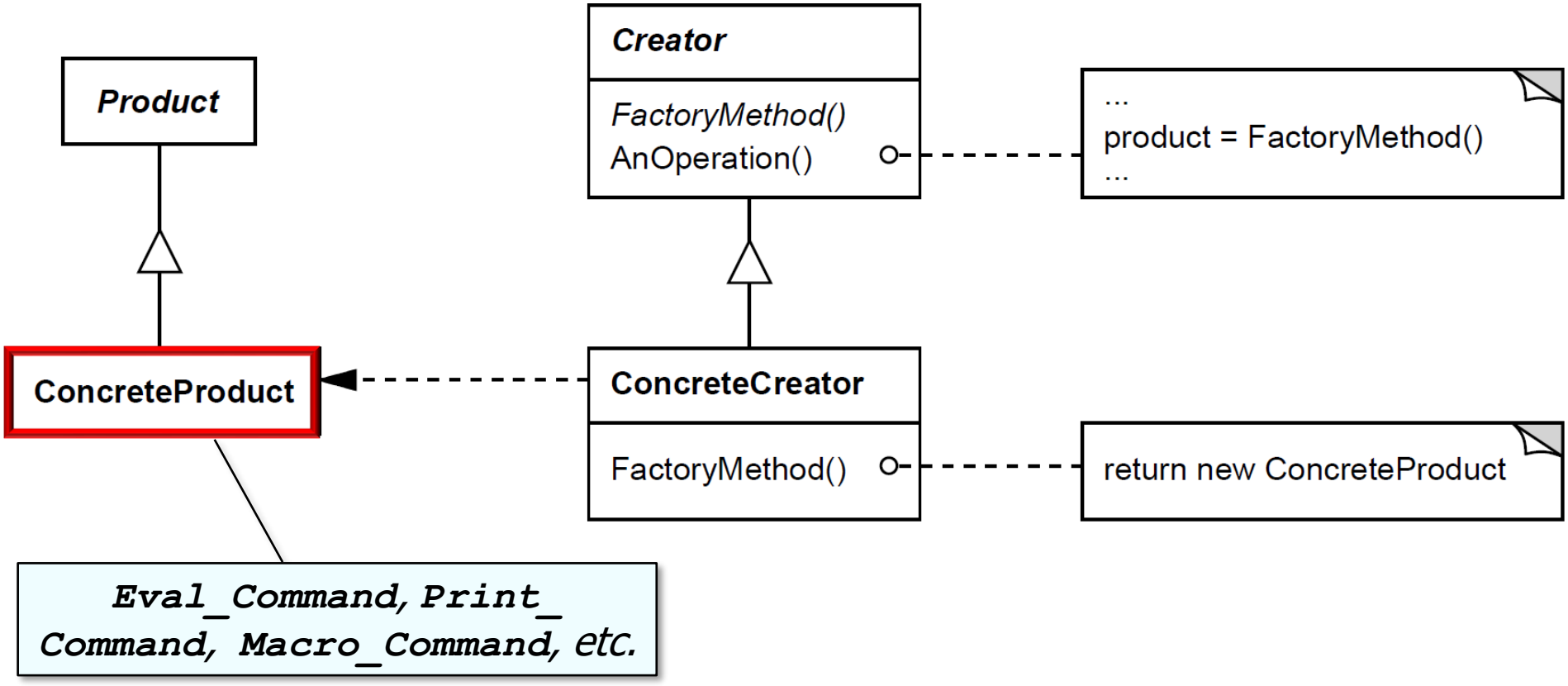
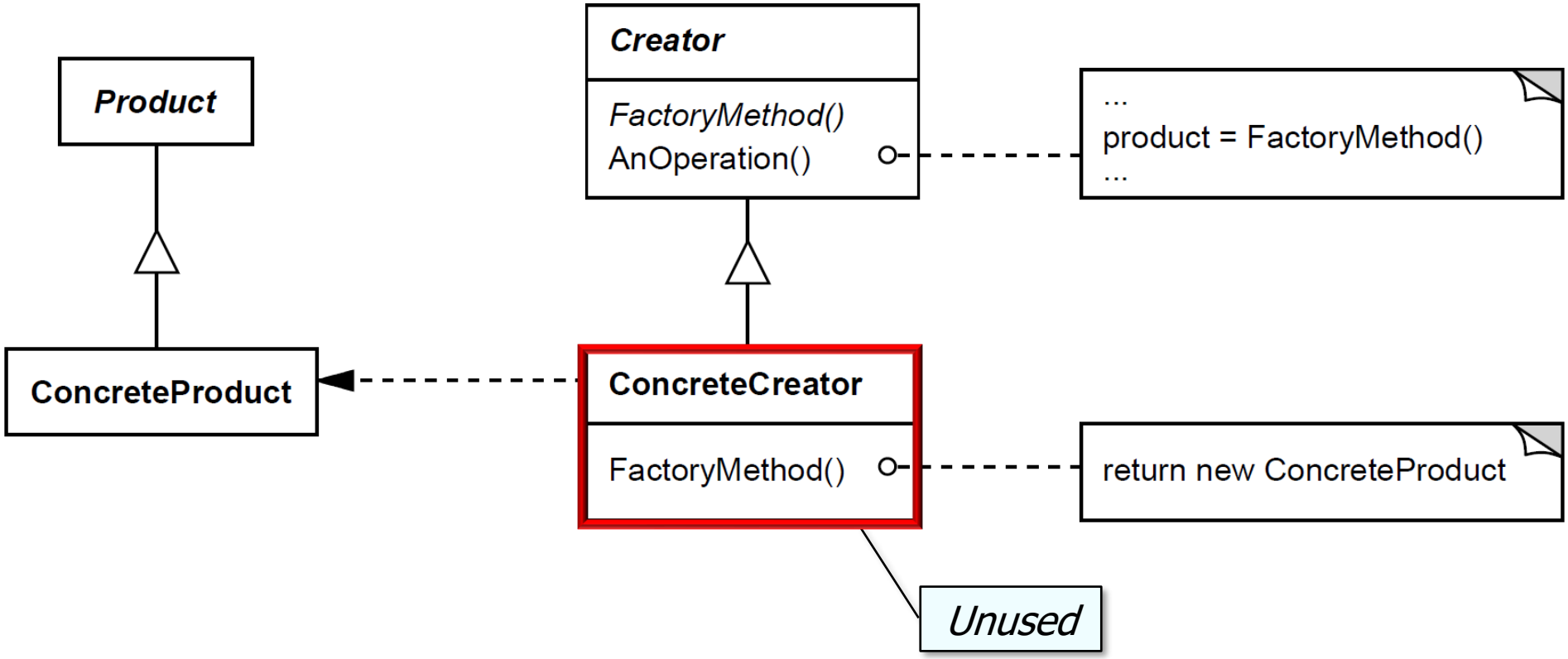


Factory Method GoF Class Creational

Structure & participants



Our app passes a string to the factory method rather than using a derived class