Pattern Exercise

CSCI 4448/5448: Object-Oriented Analysis & Design

Lecture 16a

Acknowledgement & Materials Copyright

- I'd like to start by acknowledging Dr. Ken Anderson
- Ken is a Professor and the Chair of the Department of Computer Science
- Ken taught OOAD on several occasions, and has graciously allowed me to use his copyrighted material for this instance of the class
- Although I will modify the materials to update and personalize this class, the original materials this class is based on are all copyrighted © Kenneth M. Anderson; the materials are used with his consent; and this use in no way challenges his copyright

Menti Attendance

Please enter your CU identikey (mine is brmo3998, for example) on the menti.com screen for participation credit.

A Lecture Break

I feel like we all deserve a lecture break after the Factory/Abstract Factory lectures, so here's a thing…

How well do you know your patterns?

- Prepare yourself…
- Find a partner (or two)
- Clear away all notes and connected machinery
- You need paper and a writing thing

- Please remember – if you’re not here participating in person, or you are, and it doesn’t go well, there will be other avenues for extra credit and participation – please, don’t panic.

Task 1

- Draw the UML Class Diagram for the Strategy Pattern

AND

- Complete this OO Principle
- Favor _____ over _____

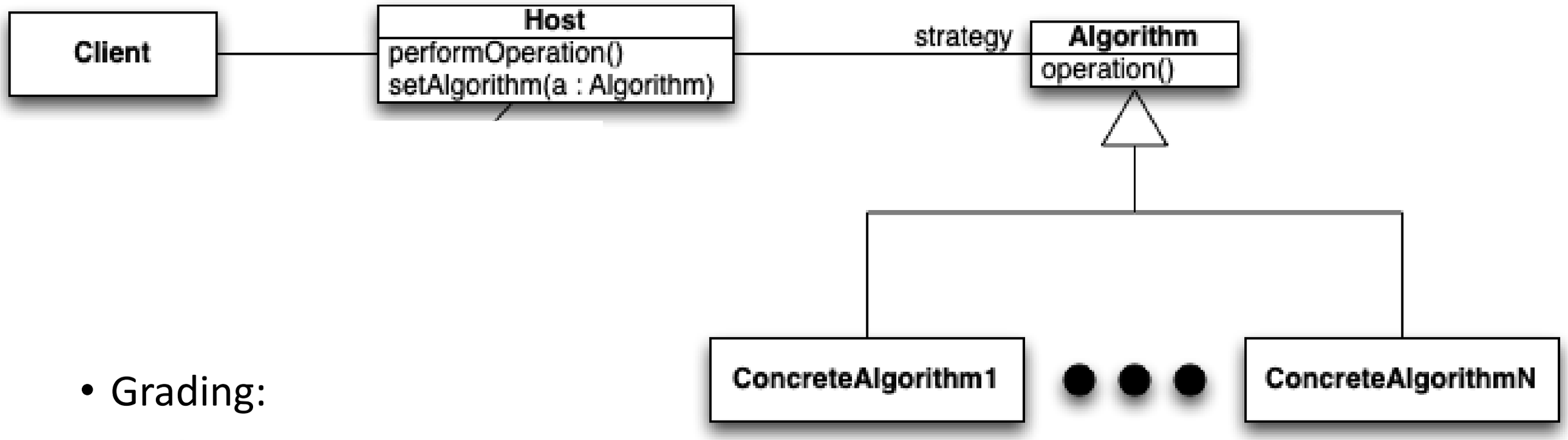
Grading the tasks

- Patterns
  - The drawings can be arranged differently – look for parts and connections
  - Exact match or really, really close = Perfect
  - Not bad, missed a couple of things = Close
  - Otherwise = A Duck

- Phrases/Definitions
  - must be right (spelling doesn’t count) to get the point

- I can intervene in grading if you’re concerned…

Task 1 – Strategy Answers



- Grading:
- Perfect! = 2 points
- Close! = 1 point
- Looks like a drawing of a duck = 0 points

- Favor Delegation (or Composition) over Inheritance.
- 1 Point if right, 0 if wrong or somehow rude

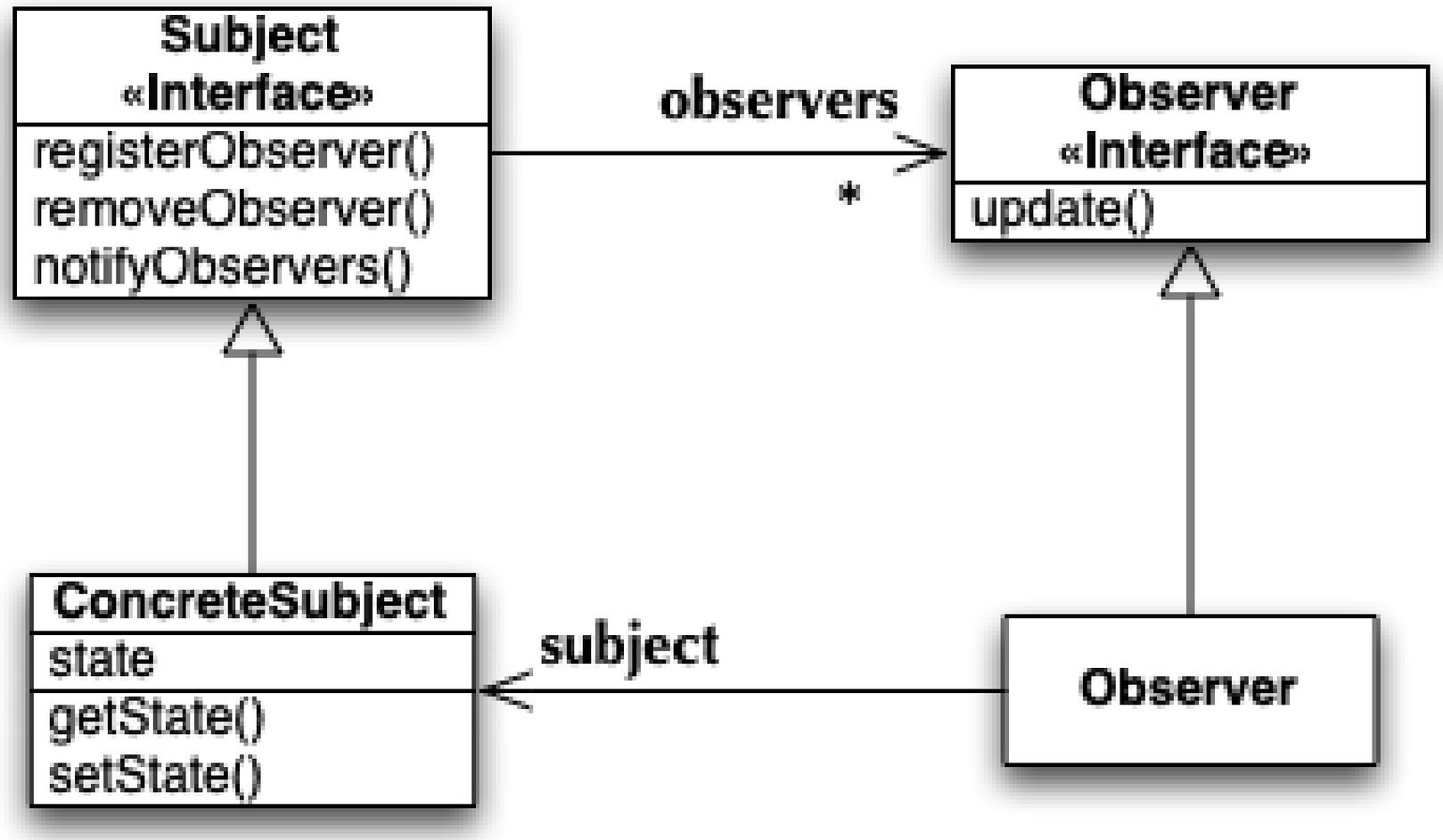
Task 2

- Draw the UML Class Diagram for the Observer Pattern

AND

- In Java, _____ is an interface, but _____ is a class, which can cause problems.

Task 2 – Observer Answers



- Grading:
- Perfect! = 2 points
- Close! = 1 point
- Duck issues = 0 points

- In Java, Observer is an interface, but Observable is a class, which can cause problems.
- 1 Point if right, 0 if otherwise

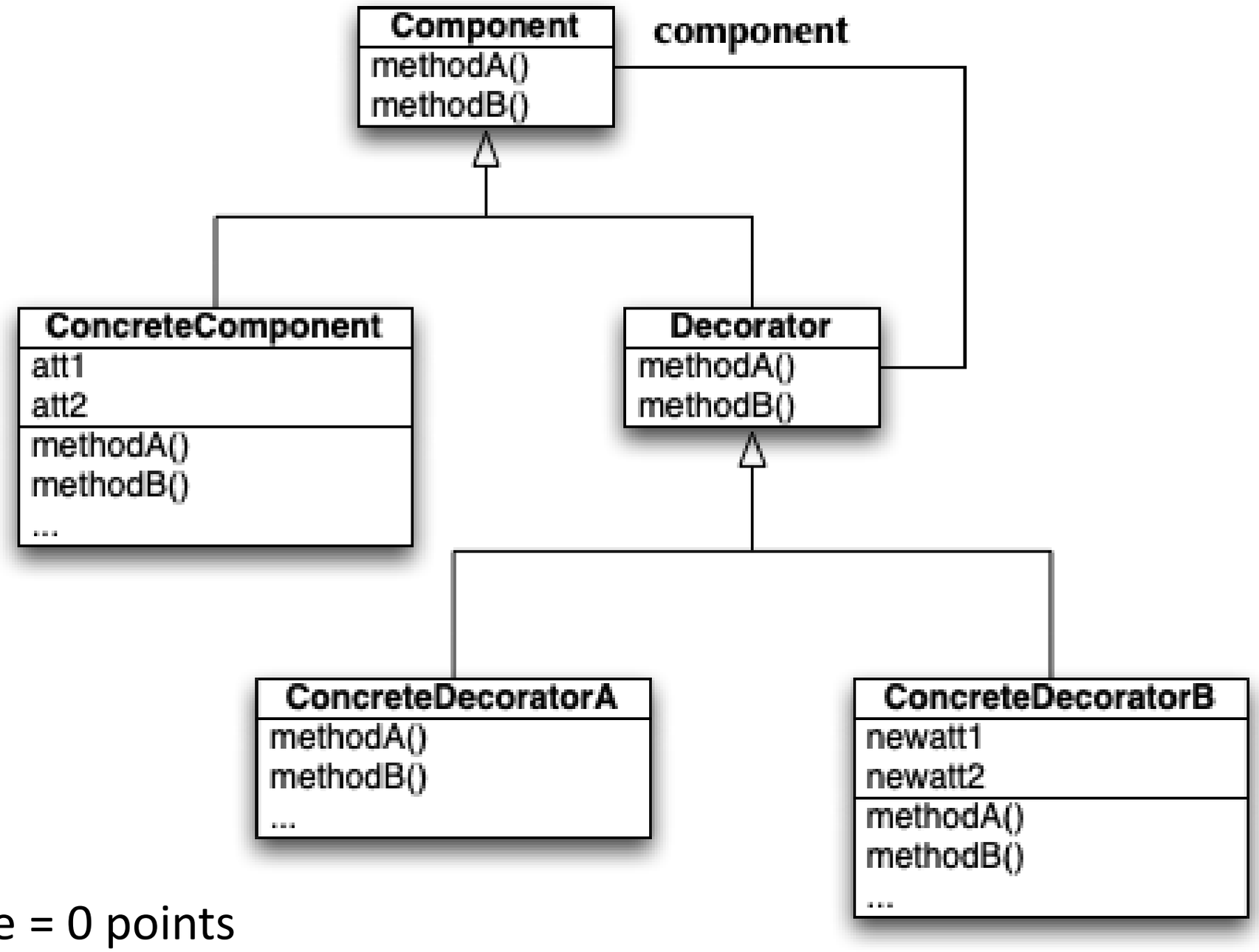
Task 3

- Draw the UML Class Diagram for the Decorator Pattern

AND

- Open Closed Principle: Classes should be open for _____ but closed to _____

Task 3 – Decorator Answers



- Grading:
- Perfect! = 2 points
- Close! = 1 point
- Definitely duck-like = 0 points

- Open Closed Principle: Classes should be open for extension but closed to modification
- 1 Point if right, 0 if not

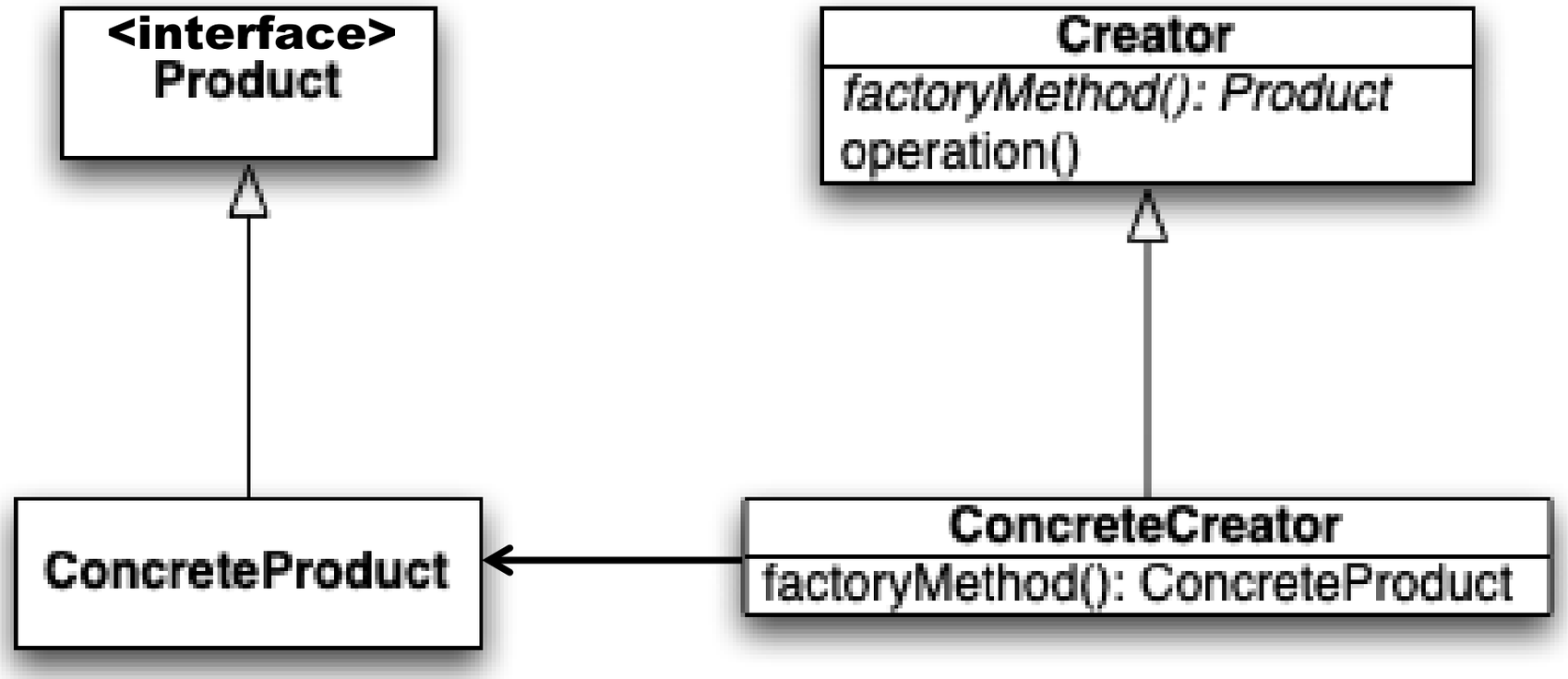
Task 4

- Draw the UML Class Diagram for the Factory Pattern (not simple factory, not abstract factr

AND

- Dependency Inversion Principle: Depend upon _____. Do not depend upon _____.

Task 4 – Factory Answers



- Grading:
- Perfect! = 2 points
- Close! = 1 point
- A bit too ducky = 0 points

- Dependency Inversion Principle: Depend upon abstractions. Do not depend upon concrete classes.
- 1 Point if right, 0 if otherwise

Possible Points

- Strategy 3
- Observer 3
- Decorator 3
- Factory 3
- 12 points? Who's got it?
- Do we have a tie for first?

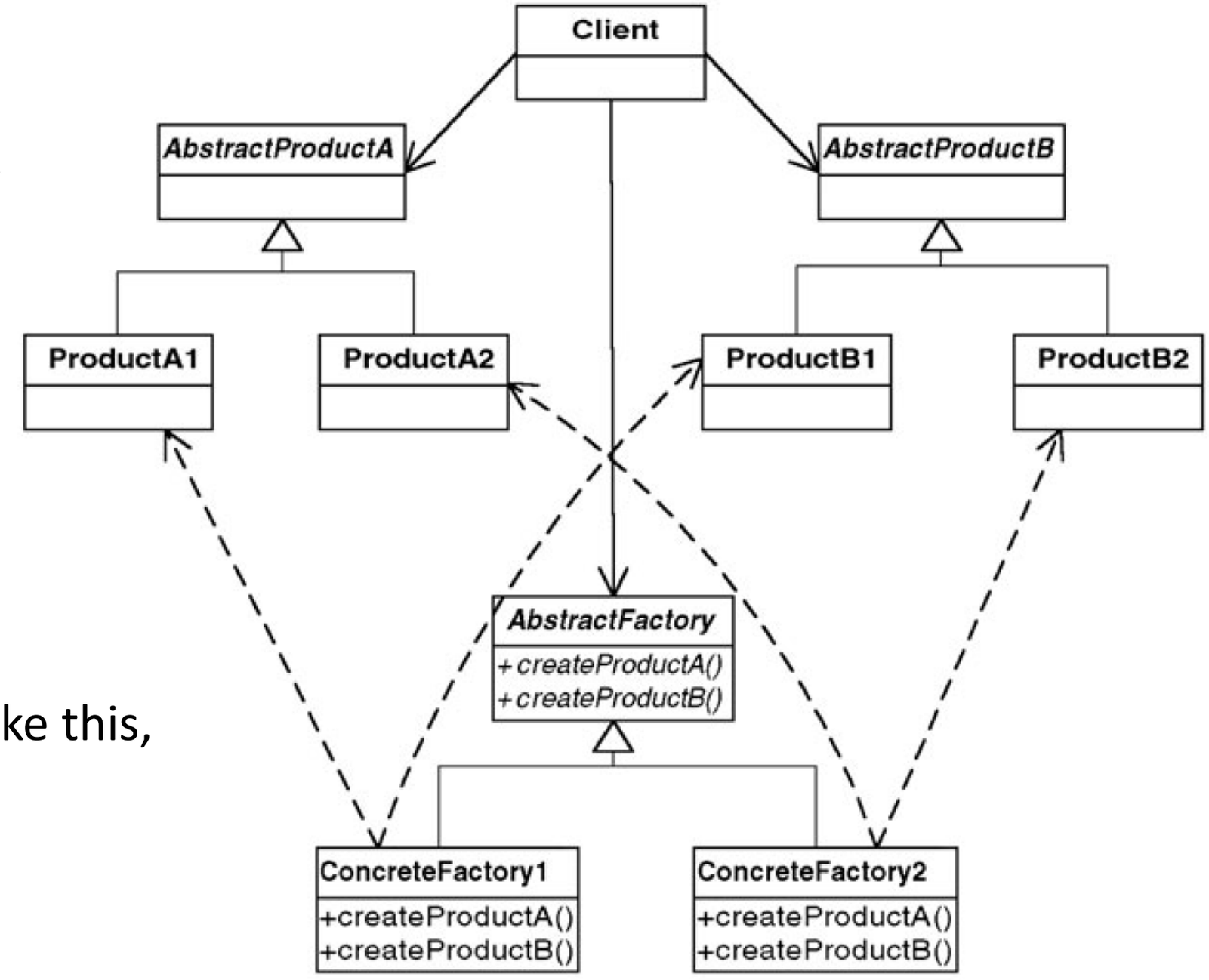
Tiebreaker Task… Abstract Factory

- Draw the UML Class Diagram for the Abstract Factory Pattern

AND

- Factories build objects with _____, abstract factories build families of objects with _____.

Tiebreaker – Abstract Factory Answers



- Grading:
- May not look exactly like this, look for the parts!
- Perfect! = 2 points
- Close! = 1 point
- All I see is duck = 0 points

- Factories build objects with inheritance; abstract factories build families of objects with (object) composition.
- 1 Point if right, 0 if otherwise

Close It Up; Bring It In

- Top Scoring Team(s) – 3 Quiz Points
- Next Level Score(s) – 2 Quiz Points
- Next Level Score(s) – 1 Quiz Point
- All receive participation

- Turn in ONE page to me that has your team Names (clearly) and your score for the whole exercise (clearly)

- Thanks for playing!

- You may need to be able to reproduce diagrams or principles on an exam – but you'll have a sheet of note paper to help…

Questions?

- Material?
- Projects?
- Etc.?