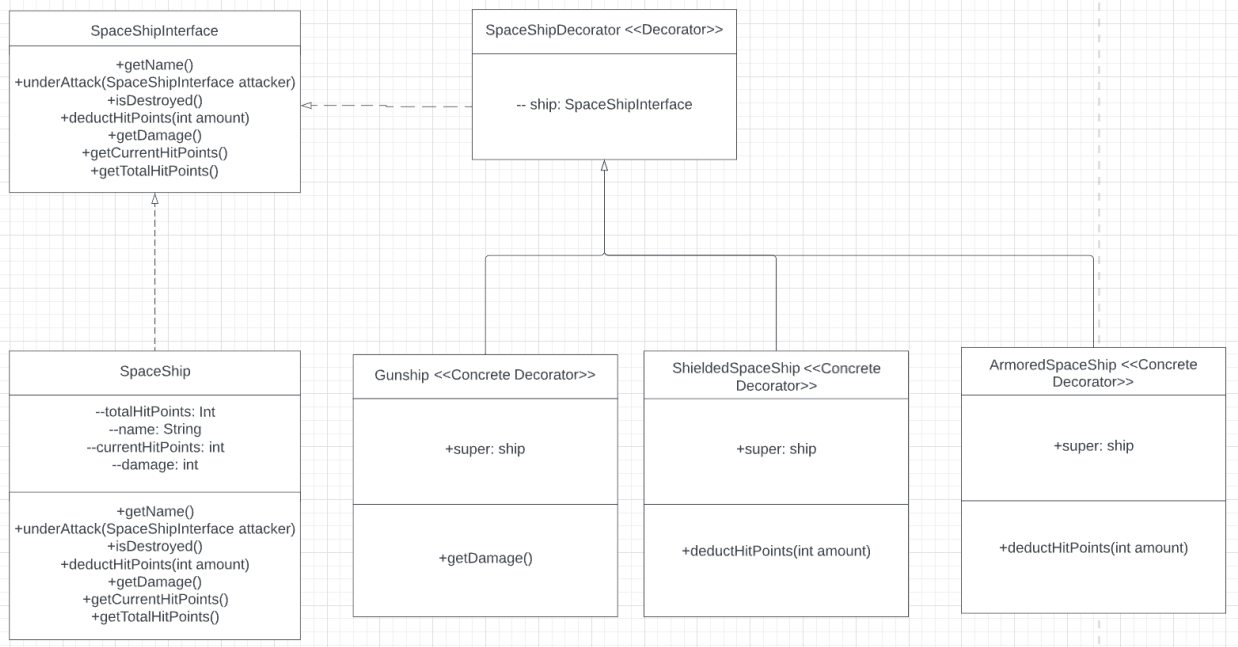# SWEN 262 Refactoring Exercise

INSTRUCTIONS: Analyze the Java code provided to you and read the instructions below. Submit a ZIP archive containing a PDF version of this document that includes the required artifacts in the space after each question and your refactored source code.

1. Fill out the **GoF Pattern Card** below to describe the classes that you would use to refactor the Java class into the required design pattern. You should write *at least 2-3 sentences per class* to describe its role in the pattern in the context of the application.

Gof Pattern Name: Decorator		
Class	**GoF Participant Name**	**Participant's activity within the pattern in the context of the application.**
SpaceShipInterface	Decorator Interface	An interface for all space ships to use
SpaceShipDecorator	Decorator	An abstract class that will implement SpaceShipInterface, and provide the concrete decorators to extend.
Gunship	Concrete Decorator	Will extend decorator, and override getDamage() method to increase the damage by 0.5.
ShieldedSpaceShip	Concrete Decorator	Will extend decorator, and override deductHitPoints() method to let the shields get hit first and then the go to the general ship hit points
ShieldedSpaceShip	Concrete Decorator	Will extend decorator, and override deductHitPoints() method to divide the damage by 2 then apply that amount to ship's hit points
Deviations from the standard pattern:		

2. Provide a UML diagram of the classes and interfaces described in your GoF pattern card. While you may submit a photo or scan of a hand drawn diagram, it must be LEGIBLE.

SpaceShipInterface
+getName() +underAttack(SpaceShipInterface attacker) +isDestroyed() +deductHitPoints(int amount) +getDamage() +getCurrentHitPoints() +getTotalHitPoints()

SpaceShipDecorator <<Decorator>>
-- ship: SpaceShipInterface

SpaceShip
--totalHitPoints: Int --name: String --currentHitPoints: int --damage: int
+getName() +underAttack(SpaceShipInterface attacker) +isDestroyed() +deductHitPoints(int amount) +getDamage() +getCurrentHitPoints() +getTotalHitPoints()

Gunship <<Concrete Decorator>>
+super: ship
+getDamage()

ShieldedSpaceShip <<Concrete Decorator>>
+super: ship
+deductHitPoints(int amount)

ArmoredSpaceShip <<Concrete Decorator>>
+super: ship
+deductHitPoints(int amount)

3. Refactor the source code according to your design above. The code must pass any tests that have been provided. Include your refactored code as part of your submission.