1 Theory

For each of the statements below, please mark whether it is true or false:
(+1 for correct answer, no change for wrong answer)

An object is an instance of a specific class.

- True
- False

A Sequence diagram shows the order in which a system should be built.

- False
- True

A Use Case Diagram gives an overview of all use cases, the actors involved, the subsystems that each use case belong to, and how the use cases are related to each other.

- True
- False

A Class diagram show the methods and attributes that objects of each class contain.

- True
- False

You make one Interaction Diagram for each system event.

- True
- False

An Interaction Diagram describe the interaction between differen classes.

- False
- True

Maximum marks: 6

2 GRASP Patterns

For each of the statements below, please mark whether it is true or false:
(+1 for correct answer, no change for wrong answer)

Information Expert means that the responsibility for working with some specific information should reside with the class that contains the information.

- True
- False

Information Expert means that you should put the information in the class that has the methods to work with it.

- True
- False

Responsibility driven design means that you must always document who is responsible for each design decision so that you can exert responsibility when something goes wrong.

- False
- True

High Cohesion means that each class should have as few and as well defined areas of responsibility as possible.

- False
- True

Low Coupling means that you should strive to have as few and as "loose" associations as possible between classes in a system.

- False
- True

Controllers can call other Controllers.

- True
- False

A Controller can call Information Experts.

- True
- False

Controller requires Polymorphism in order to work.

- True
- False

There can only be one instance of an Information Expert in a system.

- True
- False

According to High Cohesion each class should do as much as possible.

- True
- False

Maximum marks: 10

3 Design Patterns

For each of the statements below, please mark whether it is true or false:
(+1 for correct answer, no change for wrong answer)

An Observable is a class with data that other classes may be interested of.

- True
- False

The Observer Pattern consist of Observers that regularly look for changes in classes of the type Observable.

- False
- True

The object main:GUIController, which is a Controller, is responsible for controlling that the user is using the user interface correctly.

- False
- True

The object main:GUIController, which is a Controller, is responsible for passing on events that the user generates in the user interface to other parts of the application that will do the actual work.

- False
- True

A Strategy Pattern consist of at least three classes with the roles Context, AbstractStategy, and ConcreteStrategy.

- False
- True

The design pattern Factory is a way to structure the system so that all data (Facts) is collected in as few classes as possible.

- True
- False

Singleton means that you are only allowed to call the class once.

- True
- False

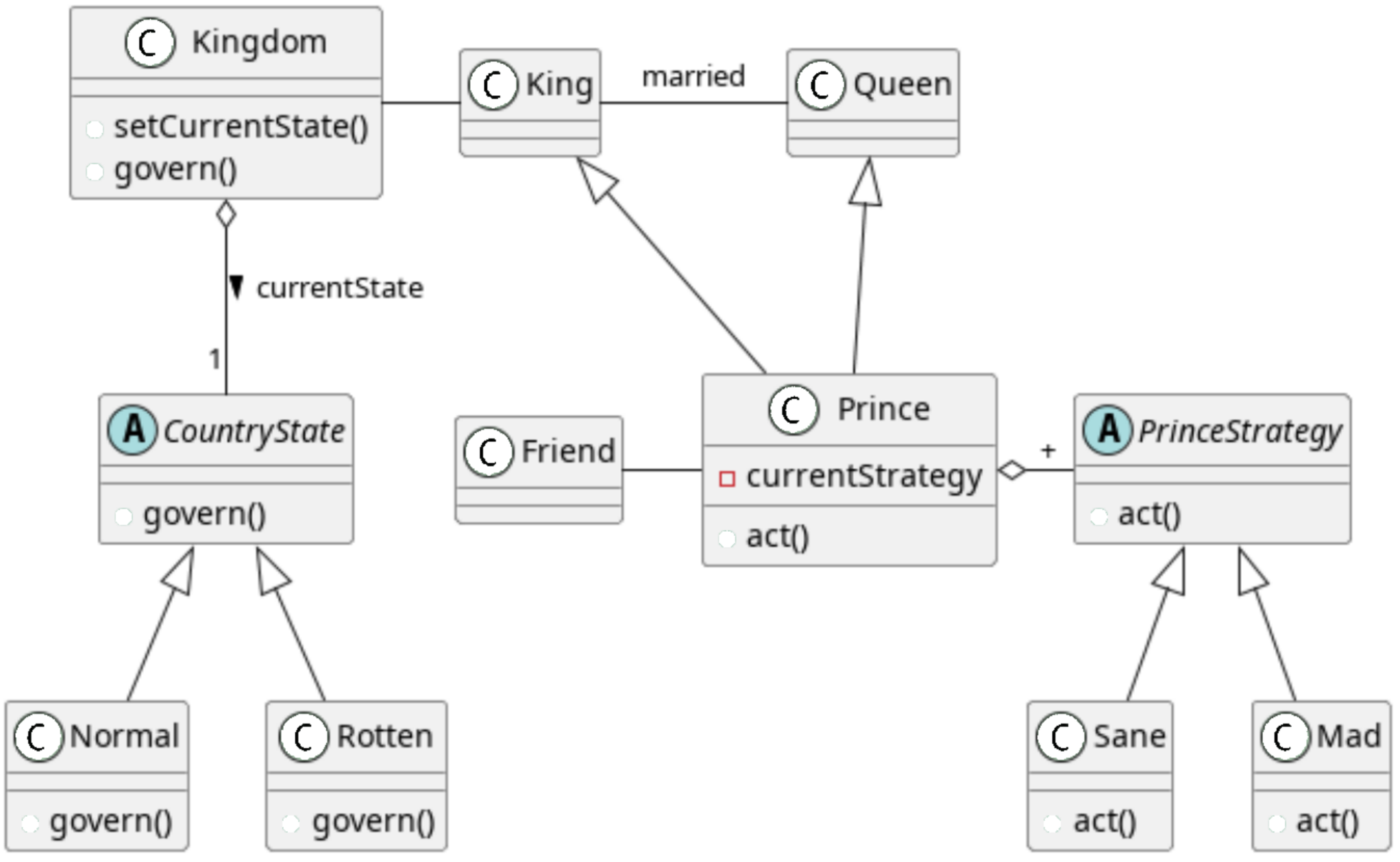
In the State pattern, it is the class with the role «Abstract State» that is responsible for deciding which state to change to next.

- False
- True

Maximum marks: 8

4 Class Diagram

Consider the class diagram below:



The class diagram describes relations from a play. For each of the statements below, please mark whether the diagram supports the statement (true) or does not support the statement (false).
(+1 for correct answer, no change for wrong answer)

hamlet:Prince has an association with ofelia:Friend

- True
- False

denmark:Kingdom can either be in the state currentState:Normal or currentState:Rotten

- False
- True

england:Kingdom can have both an association to currentState:Normal and currentState:Rotten at the same time.

- False
- True

hamlet:Prince has an association with denmark:Kingdom

- True
- False

gertrude:Queen can not goven denmark:Kingdom

- True
- False

hamlet:Prince can act both according to Sane::act() and Mad::act() at the same time.

- True
- False

horatio:Friend always know whether hamlet:Prince is acting Sane or Mad.

- True
- False

gertrude:Queen is married to claudius:King

- False
- True

sweden:Kingdom no longer knows exactly which CountryState it has, only that it has a reference to some object of the type CountryState.

- False
- True

It is polonius:CountryState that through the method CountryState::govern() decides whether the country should be ruled as Normal::govern() or Rotten::govern().

- True
- False

hamlet:Prince is a Queen □□

- False
- True

Maximum marks: 11

5 Relations between Classes

Consider the class diagram below:

The class diagram describes how customers may have different service plans (e.g. mobile phone plans). For each of the statements below, please mark whether the diagram supports the statement (true) or does not support the statement (false).
(+1 for correct answer, no change for wrong answer)

anthony:Subscriber is using the same :Tariff all times of the day

- False
- True

prepaid:ServicePlan and mini:ServicePlan uses nightPrice:Tariff

- True
- False

bob:Subscriber and charlie:Subscriber use the same :ServicePlan

- True
- False

david:Subscriber has a workPhone:ServicePlan and a burnerPhone:ServicePlan

- False
- True

x:Tariff and y:Tariff both have the price 2 SEK and is valud between 07:00 and 17:00

- True
- False

doppio:ServicePlan contains both x:Tariff and y:Tariff with the price 2 SEK and valid between 07:00 and 17:00.

- True
- False

flex:ServicePlan has a separate :Tariff for every hour of the day.

- True
- False

whistle:ServicePlan does not have any Tariff.

- False
- True

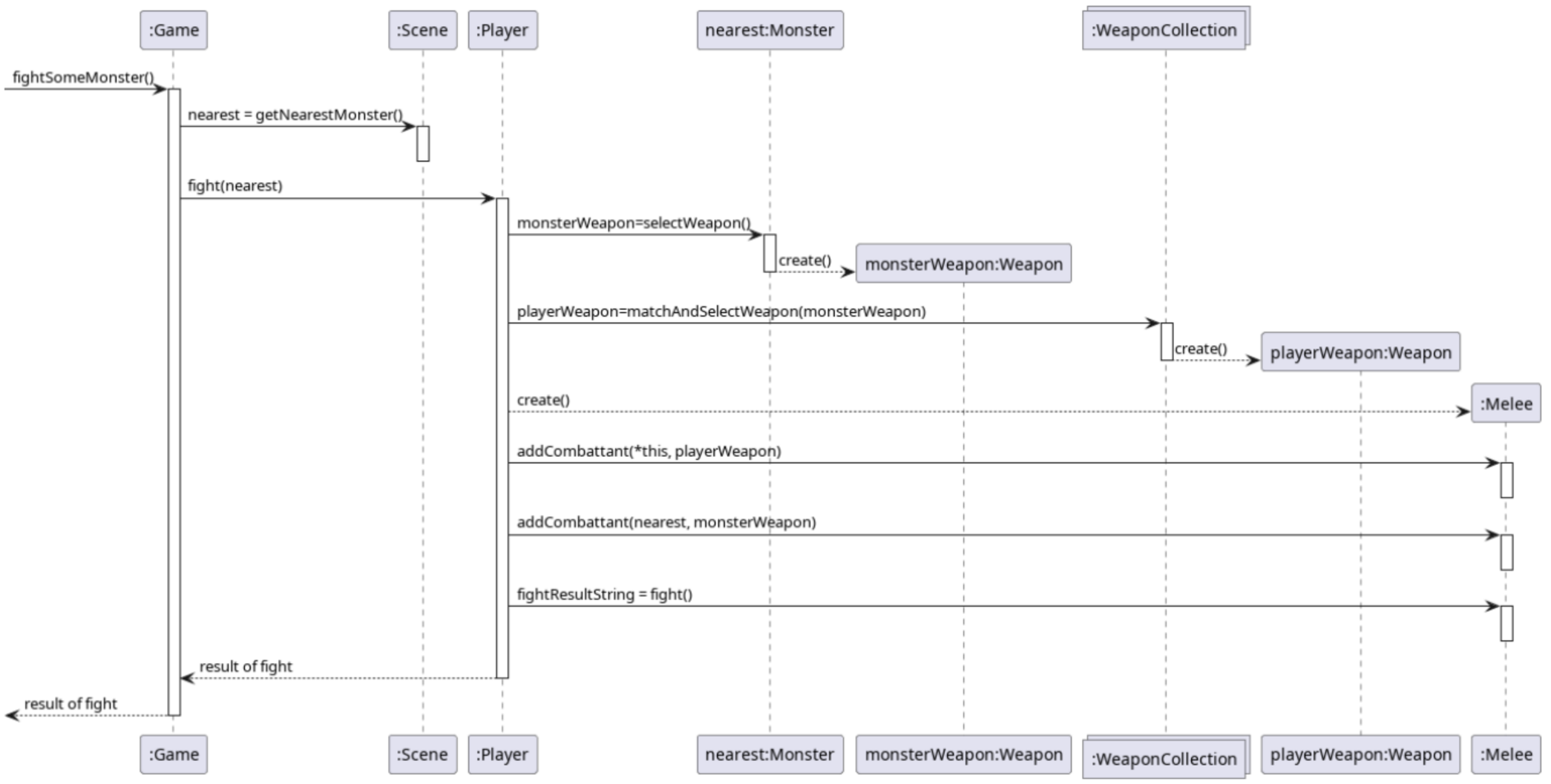
When eric:Subscriber wants to trade up to maxi:ServicePlan, they must first cancel his mini:ServicePlan

- True
- False

Maximum marks: 9

6 Interaction Diagram

Consider the sequence diagram below:



The interaction diagram show the system event fightSomeMonster() in a text based adventure game. For each of the statements below, please mark whether the diagram supports the statement (true) or does not support the statement (false).
(+1 for correct answer, no change for wrong answer)

Monsters do not have any Weapons ready and have to create them when needed.

- False
- True

:Scene is information expert on which Monsters that are in the vincinity.

- True
- False

:Player is information expert on which weapons they have

- True
- False

Since you must take the surroundings into consideration when fighting, it is :Scene who is information expert on how to conduct a fight()

- True
- False

The classes Game, Player, and Melee each have a method named fight()

- False
- True

The object :Scene receives the result from Melee::fight() and reformats it so that it can be displayed in the user interface.

- True
- False

:Player is a controller.

- True
- False

The class Melee must have two methods that are both named addCombattant()

- False
- True

Maximum marks: 8

Grade limits

The grade limits for this exam are:

Betyg	Procent	Poäng
MAX	100%	52
A	90%	47
B	80%	42
C	70%	36
D	65%	34
E	60%	31

Good luck!