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)

A Use Case Diagram show how to use a specific class.

- True
- False

It is only when you have a class diagram that you can start thinking about how to test a system.

- True
- False

A Class Diagram describe how classes and objects collaborate.

- True
- False

Design Patterns describe how to structure user interfaces best.

- True
- False

Interaction Diagrams show the method calls that objects make on other objects.

- True
- False

A system is not ready for delivery unless all use cases are fully implemented.

- True
- False

That the class "Apple" inherit from the class "GameElement" means that all the methods and attributes in "GameElement" are also available in "Apple".

- True
- False

"Unit Testing" is a special test framework for the game engine "Unity".

- False
- True

Maximum marks: 8

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)

It is possible to use Polymorphism to accomplish High Cohesion.

- True
- False

A Controller is only ever used when the users need to control a game.

- False
- True

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

- True
- False

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

- True
- False

A Controller can call Information Experts.

- False
- True

The Controller pattern require Polymorphism to function properly.

- False
- True

A class can both be an Information Expert and a Controller.

- True
- False

Maximum marks: 7

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)

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

- False
- True

Strategy pattern makes use of polymorphism.

- True
- False

Abstract Factory is used to create the right types of objects given a certain context, where the rest of the system do not need to know the exact type for each object.

- True
- False

Abstract Factory is really just variant of Strategy.

- False
- True

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

- True
- False

A Strategy pattern consists of at least three classes with the roles Context, AbstractStrategy, and ConcreteStrategy.

- False
- True

Maximum marks: 6

4 Design Patterns II

For each statement, please select the appropriate design pattern from the list.

The price on different types of train tickets is calculated in different ways, e.g. for students and retired people. To implement this you can use the design pattern Select alternative (Factory, Observer, Strategy, State).

When a train is fully booked it shall no longer be possible to buy tickets for it. To notify all ticket vending machines of this as quickly as possible so that they may cancel ongoing transactions,

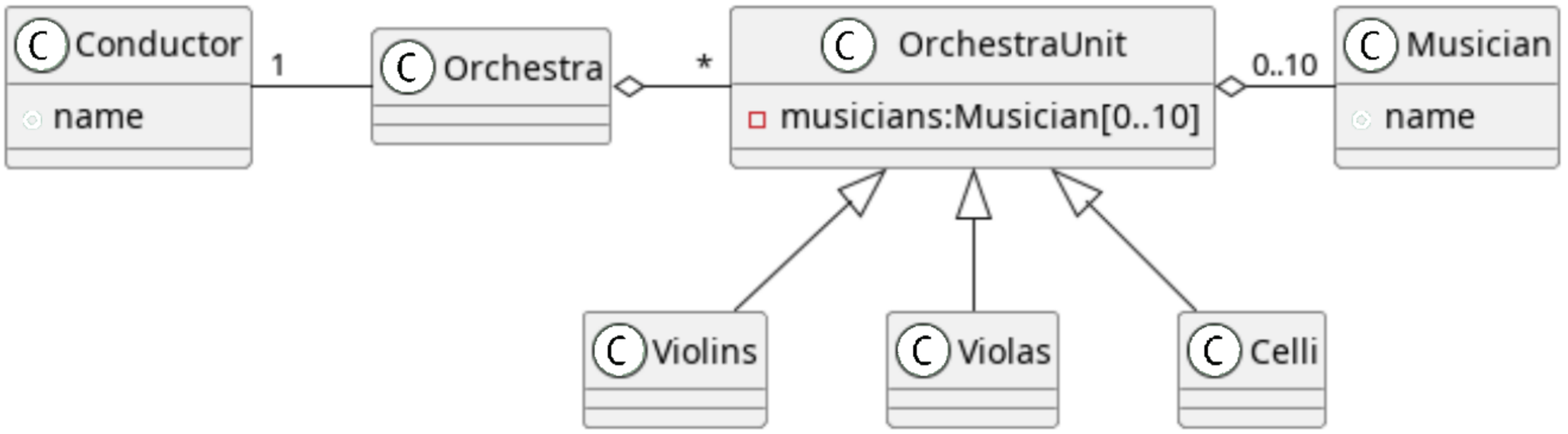
you can use the design pattern Select alternative (State, Observer, Factory, Strategy)

The tickets are printed differently depending on their type. The same information is printed, but in different places and with different text sizes, and with different illustrations on the ticket so that each type is easily recognised. Every piece of information on the ticket is represented as an object, and the system uses the design pattern Select alternative (State, Factory, Observer, Strategy) to once and for all decide how the information on the ticket shall be created.

Maximum marks: 3

5 Class Diagram

The class diagram below describes a string orchestra.



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)

adam:Conductor is not a Musician.

- False
- True

bea:Conductor does not know how many Musicians that play in an Orchestra.

- True
- False

camera:Orchestra does not have a Conductor.

- False
- True

dave:Musician does not play any instrument.

- True
- False

first:Violins consist of three Musicians with the names "Alice", "Bob", and "Cecilia"

- False
- True

c1:Celli consist of musicians[0]:Musician and musicians[1]:Musician.

- False
- True

You must have at least one Musician who plays Viola to be able to create objects of the type Orchestra.

- True
- False

Maximum marks: 7

Grade limits

The grade limits for this exam are:

Grade	Percent	Points
MAX	100%	31
A	90%	28
B	80%	25
C	70%	22
D	65%	20
E	60%	18

Good luck!