

CMPUT 301 2015 Winter Midterm

TEST VERSION:

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Name: _____

CCID: _____

Student Number: _____

Question	Mark	Out of
Object Oriented Analysis		1
UML		3
Use Cases and Use Case Diagram		2
UML Sequence Diagram		3
UML to Code		2
Software Processes		2
MVC		2
TOTAL		15

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Object Oriented Analysis: Potential Classes and Methods [1 mark]

Read the following paragraph and pull out potential **nouns** that may lead to classes and **verbs** that may lead to relationships and methods according to Object Oriented Analysis.

I want to process images. I have a dataflow graph of image processors. I have a set of virtual machines. I want to efficiently deploy this graph of image processors to my virtual machines to minimize processing time and reduce network bandwidth. Different virtual machines can have different number of image processors allocated to them. I want to define, configure, deploy, and process images through this network.

List the potential Classes [e.g. nouns]:

List the potential Actions/Methods/Relationships [e.g. verbs]:

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UML: **Composition** or **Aggregation**? [3 marks]

Convert this Java code to a **UML class diagram**. . Draw a well-designed UML class diagram to represent this information. Provide the basic abstractions, attributes, methods, relationships, multiplicities, and navigabilities as appropriate. “...” means much code is omitted.

<pre>interface Named { public String getName(); } interface Container extends Named { public Container[] getChildren(); } class City implements Container { protected Person[] people; ... } class Hand implements Container { ... }</pre>	<pre>class SolarSystem implements Container { public Planet[] planets; ... } class Planet implements Container { public City[] cities; ... } class Person implements Container { private Hand[2] hands; ... }</pre>
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Use Cases and Use Case Diagram [2 marks total]

What are **three** primary use cases of the following situation:

Scenario:

Fruit Ranker is the premier fruit ranking website, host of fruit reviews. Fruit rankers carefully shop, and review fruits. These fruit reviews are available to the public so they can find the best places to find good fruit. Different stores will have different fruit of different quality. One can search for reviews by store, or by fruit. The fruit ranker admin can delete malicious fruit reviews and post promoted fruit reviews if a store pays the admin enough for the service.

Use case 1: _____

Use case 2: _____

Use case 3: _____

Now complete this **UML use case diagram**, including boundary, actors, use case bubbles and relationships between actors and use cases.

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Sequence Diagram: [3 marks]

Convert this use case into a **sequence diagram**, remember to include all the actors, the components, the lifelines and use good names for the methods. You can use the back of the page if you need space.

Use Case: CNC Pattern Printing on Objects

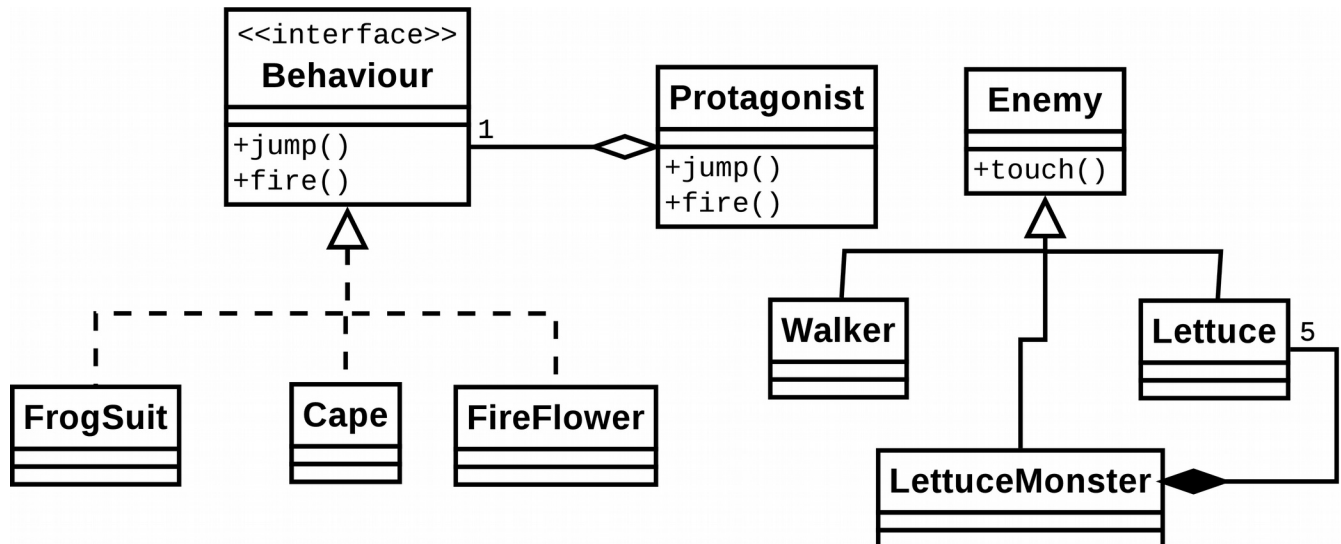
1. Client chooses the pattern on a kiosk
2. Client chooses the method of mapping the pattern to an object, on the kiosk
3. Kiosk prints a work ticket for the client, indicating the price.
4. Client gives the clerk the object to be printed on, and the work ticket.
5. The clerk places the object into the pattern printer and scans the work ticket.
6. The pattern printer prints the pattern onto the surface of the object
7. The clerk receives payment from the client
8. The clerk gives the client the object.

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UML to Code: [2 marks]

Convert this class diagram to skeletal Java Code. Include all attributes and obviously public methods. Includes all generalizations and necessary associations.



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Software Engineering: Software Development Processes [2 marks]
Keep the responses short. A long response that is not on topic is dangerous.

[1 mark] How does the unified process differ from the spiral model?

[1 mark] List 2 specific practices that agile methodologies use to give programmers courage (in the agile sense).

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Model View Controller Pattern [2 marks]

[1 mark] What facts or knowledge does a model know about its listeners?

[1 mark] Provide **1 difference** and **1 similarity** between **Model View Controller (MVC)** and **3-tiered** architecture.