

CMPUT 301 2016 Fall Midterm

TEST VERSION:

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Name: _____

CCID: _____

Student Number: _____

Question	Mark	Out of
Object Oriented Analysis		2
UML		3
Sequence Diagram		3
UML to Code		2
MVC		3
Version Control		2
TOTAL		15

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Object Oriented Analysis: Potential Classes and Methods [2 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 a ride to Startup Edmonton. I search for Startup Edmonton downtown, I find its location. Then it asks me for where I am and uses the GPS to initialize the location, I correct it slightly. Then it estimates the cost and time of the trip from my location to startup edmonton, my destination. I click agree, and then it finds the closest driver to accept my request to take me there.

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 that processes email threads 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.

```
public interface Person {
}
public interface Email {
    public Person getFrom();
    public Collection<Person> getTo();
    public Collection<Person> getCC();
    public String getBody();
    public Email respondsTo();
}
public interface EmailThread {
    Email getCurrent();
    Collection<EmailThread> getResponses();
}

class EmailThreadFactory {
    Collection<Email> emails;
    Collection<EmailThread> getThreads() { ... };
}
class ConcreteEmail implements Email {
    Person from;
    ArrayList<Person> to;
    ArrayList<Person> cc;
    String body;
    Email respondsTo;
    ...
}
```

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Sequence Diagram: [3 marks]

Convert this scenario or part of it into a single **UML Sequence Diagram** related to 3D/CNC printing/plotting. **Remember to include of all the actors.** You can use the back of the page if you need space.

Scenario: CNC Pattern Printing on Objects

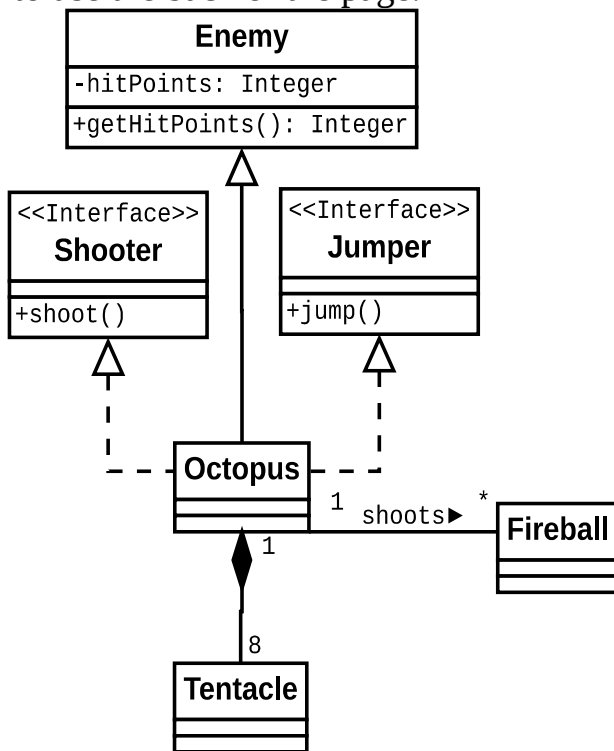
I walk up to the pattern printer kiosk. I select a pattern I want, fluted, just like those Ionic found in Greece with the grooves up and down the column. Then I place my object, a thick dowel 1 meter in length, into the CNC printer. Then I select ESTIMATE and the CNC printer scans my object, then the kiosk tells me it will cost \$20. I select ORDER and the kiosk's CNC printer cuts at my dowel producing a grooved pattern on it. After cutting my dowel, I take it and the kiosk prints an invoice for me. I will give this invoice to a cashier and will pay the cost to the cashier.

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UML to Code: [2 marks]

Convert this class diagram of a VideoGame enemy to skeletal Java Code. Include all attributes and obviously public methods. Make sure all required methods are implemented. Includes all generalizations and necessary associations. If you need space feel free to use the back of the page.



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Model View Controller (MVC) [3 marks]

1. `WorldView` shows an always up to date version of the current world map for our game: `Alberta Driver` which simulates driving 3 hours in the same direction. Fill in the blanks for the provided code.

```
public interface Model {
    public void addView(View view);
}
public interface View {
    public void update();
}
class WorldView implements View {
    World world;
    ...
    // drawWorld redraws the world
    public void drawWorld() { ... }
    // indicates if something changes in the world
    public void update() {
        _____
    }
}
class World implements Model {
    ArrayList<View> observers; // holds observers
    ... // implementation exists here
    public void addView(Observer o) {
        _____
    }
    // Called when the World changes
    public void notifyViews() {
        _____
    }
}
}
```

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Version Control [2] Marks

Your assignment currently works but you need to make a big change to it. This problem will require modifying 25% to 50% of the classes in the project. Furthermore the solution you have might not work. If it doesn't work you don't want to lose marks for handing in a broken assignment. Assume the working assignment is on branch **master**. Also assume we have to hand in the working assignment on branch **master**. Answers **must** use git commandline commands.

1. Describe using git how we can isolate our new experimental changes from our work on **master**.

2. We want to go try these changes out in the lab or at home. How do we share these changes on github?

3. If your changes worked, how do you add your changes to **master**?

4. If your changes did not work, what do we have to do to **master**?