Final Part 1 of 6

Started: Aug 19 at 3:26pm

Quiz Instructions

Welcome to the CSC207 Summer 2021 final assessment. This final assessment comes in 6 parts. Each one is a different quiz on Quercus. You have until 14:00 EST on Friday 20 August 2021 to submit your answers to all of them.

SAVE YOUR ANSWERS IN A TEXT FILE ON YOUR COMPUTER before copying them into Quercus and clicking submit.

You can use spell-check, grammar-check, IntelliJ, the internet, and your notes from the course to answer these questions. IF YOU COPY SOMEONE ELSE'S WORDS it is considered to be CHEATING!!!! **Be sure to put everything in your own words.** Give enough detail so that we are convinced that you understand the concepts.

To ask a question during the exam, go to our usual lecture Zoom session (**link (https://utoronto.zoom.us/j/89521849618)**) during the following times:

- 14:00--16:00 ET on Thursday 19 Aug
- 22:00--23:59 ET on Thursday 19 Aug
- 9:00--11:00 ET on Friday 20 Aug
- 13:00--14:00 ET on Friday 20 Aug

The first question in Final Part 1 of 6 contains the statement of academic integrity - please make sure to read it.

Question 1	0 pts

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Statement 1: I understand that submitting and taking credit for someone else's words and/or code is an academic offence and I will not do that during this final assessment.

○ True

○ False

Question 2

1 pts

Consider the following two classes:

`Vehicle.java`

```
public class Vehicle {

    int numWheels = 1;

    public void ride(Vehicle v) {
        System.out.println(v.getNumWheels());
    }

    public int getNumWheels() {
        return numWheels;
    }

    public static void main(String[] args) {
        Vehicle v1 = new Bicycle();
        Bicycle v2 = new Bicycle();
        v1.ride(v2);

    }
}
```

`Bicycle.java`

```
public class Bicycle extends Vehicle {

    int numWheels = 2;

    @Override
```

```
        public int getNumWheels() {
            return numWheels;
        }

        void ride(String s) {
            System.out.println(s);
        }

        public void ride(Vehicle v) {
            System.out.println(this.getNumWheels());
        }
    }
}
```

When we run the `main` method, the output to the screen is:

○ v1

○ 2

○ v2

○ 1

Question 3

2 pts

The following classes are part of a larger program that keeps track of the inventory in a commercial kitchen. Explain why the following code prevents the rest of the program from compiling:

```
public class FoodItem {
    private String name;
    private int quantity;

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public int getQuantity() {
        return quantity;
```

```
        }

    public void addToQuantity(int amount) {
        quantity += amount;
    }
}
```

```
public class Apple extends FoodItem{
    private int numSeeds;

    public Apple(int ns){
        super("Apple", 1);
        numSeeds=ns;
    }

    public int getNumSeeds(){
        return numSeeds;
    }

    public void setNumSeeds(int ns){
        numSeeds=ns;
    }
}
```

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Question 4   **2 pts**

Look up the List interface on the Oracle website here:
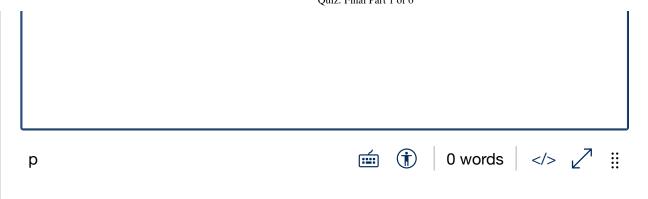**[(https://docs.oracle.com/javase/8/docs/api/java/lang/Class.html)](https://docs.oracle.com/javase/8/docs/api/java/lang/Class.html)**

https://docs.oracle.com/javase/8/docs/api/java/util/List.html
[(https://docs.oracle.com/javase/8/docs/api/java/util/List.html)](https://docs.oracle.com/javase/8/docs/api/java/util/List.html)

Use the information on this website to explain what the following code does. Your answer should contain at least three sentences or more.

```java
import java.util.List;
import java.util.Stack;

public class Main {
    public static void main(String[] args) {
        List<String> ex = new Stack();
        ex.add("Hello");
        System.out.println(((Stack<String>) ex).pop());
    }
}
```

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Question 5

2 pts

Consider a program that allows the user to scan barcodes or manually enter barcodes in order to enter new products into the inventory of a store. This program contains class `Book` that extends `StockItem` and class `Cake` that extends `FoodItem`.

`Book` and `Cake` both contain methods `autoReorder` and `checkThreshold`, which allows the system to automatically re-order both items if their quantity goes below a certain threshold value. The threshold value is different for each object.

There are other `StockItem` objects that can be automatically re-ordered, but not all of them. There are other `FoodItem` objects that can be automatically re-ordered, but not all of them.

We want to change the program so that we can loop through all objects that can be automatically re-ordered, using a for-all loop. To accomplish this in a way that is most extensible, we should make it so that:

○ `Book` extends `Cake`.

○ Both `Book` and `Cake` implement an interface that contains the `autoReorder` and `checkThreshold` methods.

○ `Cake` extends `Book`.

○ Both `Book` and `Cake` directly extend the same abstract class.

Question 6

0 pts

Explain your answer to the previous question.

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Question 7   **1 pts**

Consider the following UML diagrams for the `Tree`, `Maple`, and `Forest` classes.

UML for `Tree` and `Maple`:

```
+--------------------------------+
|             Tree               |
+--------------------------------+
| - numRings: int                |
+--------------------------------+
| + Tree(numRings: int)          |
| + grow() : void                |
| + getNumRings(): int           |
+--------------------------------+
```

```
+--------------------------------+
|            Maple               |
+--------------------------------+
| - hasSap: boolean              |
+--------------------------------+
| + Maple(numRings: int)         |
| + grow() : void                |
| + getHasSap(): boolean         |
+--------------------------------+
```

UML for `Forest`:

Forest

- location: String

+ Forest(numTrees: int, location: String)

+ createTrees(numTrees: int): void

+ plant(tree: Maple): void

Which of the following lines of code is the first to prevent the entire `main` method from compiling?

```
public static void main (String[] args) {

 1. Tree t = new Tree(20);
 2. Tree x = new Maple(30);
 3. Maple m = new Maple(40);
 4. int z = m.getNumRings();
 5. x.grow();
 6. m.grow();
 7. Forest forest = new Forest(10, "High Park");
 8. forest.plant(x);
 9. forest.createTrees(3);
10. boolean b = t.getHasSap();

}
```

○ line 5

○ line 6

○ line 9

○ line 8

○ ones of the constructor calls on lines 1, 2, 3, or 7

○ line 10

○ line 4

Question 8

1 pts

Consider the following code:

```
int a = 2;
int b = 2;
Integer w = new Integer(2);
Integer x = new Integer(2);
Integer y = x;
Integer z = new Integer(w);
```

Select all of the true statements:

☐ `a.equals(x)`

returns true because they store the same value.

☐ `a == x`

returns true because Java automatically unboxes the value that is stored in `x`.

☐ `w.equals(x)`

returns true because they store the same value.

☐ `w == z`

returns true because `w` and `z` are aliases for the same object.

☐ `x == y`

return true because `x` and `y` are aliases for the same object.

☐ `a == b`

is true because `a` and `b` are both primitive variables.

Question 9

1 pts

Consider the following code:

```
public class Person {...}
```

```
public class Student extends Person {...}
```

In a Controller class:

```
public Person graduate(Student s) {
  return s;
}
```

The graduate method does which of the following? Select the most accurate answer.

○ The `graduate` method does not change the way the program interacts with `s`.

○ The `graduate` method casts `s` as an instance of `Person`.

○ The `graduate` method creates a new `Person` object and makes `s` point at it.

Quiz saved at 3:27pm   Submit Quiz