SE1021 HW/Exam 2 Review

You may use a note-sheet for this exam. But all answers should be your own, not from slides or text. Use only your pen/pencil/eraser (for example, no note-sheet). Review all questions before you get started. The exam is printed double-sided. Show all work. You do not need to comment your code.

1. Short answer
   1. Briefly describe two differences between an inner class and a regular (non-inner) class.
   2. Briefly describe two differences between a regular inner class and an anonymous inner class.
   3. Should an anonymous inner classes name be capitalized? Why or why not?

* 1. Is there any difference between an abstract class with only abstract methods and an interface? If not, why does Java have interfaces? If so, what is the difference?
  2. Did you do the optional homework on this exam? (Problems 5 & 6?)

1. More short-answer
   1. Consider this example, which makes use of classes found [here](https://faculty-web.msoe.edu/yoder/se1021/code/hw7) (code/hw7/ on the course webpage)

public class InheritanceExample {

public static void main(String[] args) {

Animal cat = new Cat();

Animal dog = new Dog();

cat.display();

dog.display();

}

}

Why does this code print

This is a cat. Meow!!

This is a dog. Woof!

instead of

This is an animal

This is an animal

After all, the display method of Animal prints "This is an animal", and both cat and dog are Animal references!

1. Even more short-answer
   1. Are try-catch blocks better for catching compile-time errors or run-time errors? Why?

* 1. Does an (ordinary) Exception indicate a compile-time error or a run-time error?

* 1. What happens if a checked exception is thrown but never caught?
  2. What happens if an unchecked exception is thrown but never caught?

1. Consider the following stack trace:

java.lang.ArithmeticException: / by zero

at wk6.Homework.method4(Homework.java:26)

at wk6.Homework.method3(Homework.java:22)

at wk6.Homework.method2(Homework.java:18)

at wk6.Homework.method1(Homework.java:11)

at wk6.Homework.main(Homework.java:6)

What caused the exeception and where (which method) did the exception occur?

1. (12 points) Create a customized class, ExamException, that can be thrown by the following command: (OPTIONAL FOR HOMEWORK)

throw new ExamException ( "Question is too hard" ) ;

1. (20 points) In the space below, draw a sketch of the window created when an instance of MathCalculator is created. (OPTIONAL FOR HOMEWORK)

