POLYTECHNIC SCHOOL OF ENGINEERING, NYU
Brooklyn, NY 11201

CS391
Midterm Exam – 12 March 2015
Prof. Katz

Name: _____

Poly ID:_____

Section 1: Multiple Choice (10 Questions, 2 points per question)
Section 2: Fill in the blanks (5 Questions, 3 points per question)
Section 3: Working with code (5 Questions, 5 points per question)
Section 4: Write Code (2 Questions, 20 points per question)

Anyone found cheating on this exam will immediately fail. Anyone who is found writing after time has been called will also fail. Do not open this test booklet until you are instructed to do so. If you have a question please ask only the proctor of the exam!

Section 1: Multiple Choice (10 Questions, 2 points per question) Circle your choice on this paper

1) What filename should the following class appear in:
   class myClass{...}
   a. myClass.java
   b. MyClass.java
   c. MYCLASS.java
   d. The filename does not matter
2) Class B is a subclass (derived from) class A. How can B's constructor call A's constructor?
   a. A();
   b. A.();
   c. super();
   d. super::();
3) The function name for the overloaded addition operator in Java is:
   a. operator+
   b. OPERATOR+
   c. operatorADDITION
   d. You don't overload operators in Java
4) All classes in Java automatically derive from which class?
   a. Class
   b. Extends
   c. Object
   d. Exception
5) The proper way for one constructor in the Exam class to call a sibling two argument constructor is:
   a. Exam(5,5);
   b. this.Exam(5,5);
   c. this(5,5);
   d. construct(5,5);
6) In windows programming the class which is responsible for painting the minimize, maximize and close buttons at the top right of the window is…
   a. JWindow
   b. JFrame
   c. JBox
   d. JPanel
7) Which layout class provides a North, South, East and West position?
   a. FlowLayout
   b. BorderLayout
   c. SequentialLayout
   d. GridLayout
8) Which of the following is not valid in Java
   a. float f = 100F;
   b. float f = 100.;
   c. double d = 100;
   d. double d = 100e2;
9) What is the output of the following: System.out.println("X= "+5+3);
   a. X = 8
   b. X = 5
   c. X = 53
   d. (does not compile)
10) Which keyword when placed in front of the definition of a class member variable would allow main to access it
   a. final
   b. abstract
   c. static
   d. public

Section 2: Fill in the blanks (5 questions, 3 points per question) Write your answers on this piece of paper.

1) _____ functions cannot access instance variables.

2) If a class wants to "derive" from an interface what keyword is used after the class name?.

3) Unlike C++, Java specifies that a character is _____ **bytes** long.

4) When compiling a Java program what file name will be given to class C which exists as a member class of class B? _____.

5) Java doesn't have destructors, but the _____ function is called when the garbage collector destroys the object.

Section 3: Working with Code (5 questions, 5 points per question) Write your answers on this piece of paper. (Use the back of this sheet if you need more room)

1. Finish the Code:

```
class Question1 _____________________ {
      public void run() { yield();}
}

public class Question1_Main {
      public static void main(String [] args){
            new Question1().start();
      }
}
```

2. Explain what happens and what is printed in the following code:

```
public class Q2 {
      public static void main(String[] args){
            int a = 5;
            int b = 6;
            if (a<b)
                  throw new SomeException();
            System.out.println(a%b);
      }
}
```

_____

3. What's wrong with the following code? (Or how do you correct it?)

```
public class Q3
{
      int x;
      public static void main(String [] args){
            myFunc();
      }
      static void myFunc()
      {
            x=5;
            System.out.println(x);
      }
}
```

_____

4. What is the output of the following:

```
class Q4
{
   public static void main(String [] args){
         String s1 = "Daniel";
         String s2 = "Katz";
         swap(s1,s2);
         System.out.println("S1: "+s1+"\nS2: "+s2);
   }
   public static void swap(String s1, String s2){
         String temp=s1;
         s1=s2;
         s2=temp;
   }
}
```

S1:

S2:

---

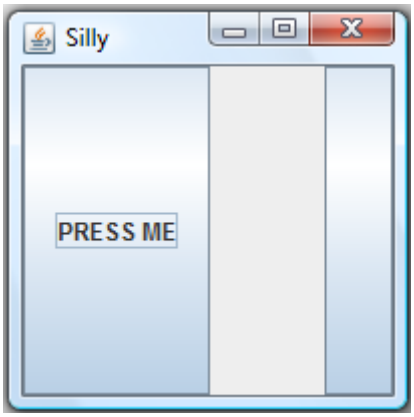
5. What is the output of the following:

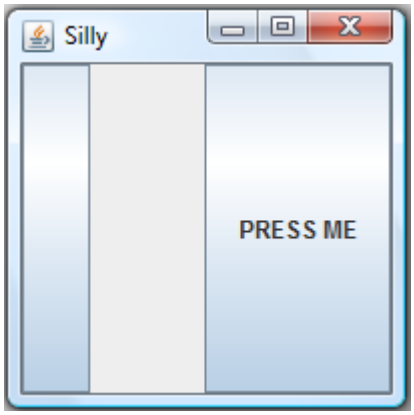
```
   class Q5{
         public static void main(String[] args){
               int x=5;
               int y=10;
               System.out.println("Five plus ten = "+x+y);
         }
   }
```

Five plus ten =

Section 4: Write code. You must answer both questions.

1) Design a very simple program which displays two buttons inside a window. The window should have a size of 200x200 and the program should terminate when the window closes. The first button should be on the left of the second button. The text inside the first button should be “PRESS ME” initially, but when pressed, the label should change to nothing (“”) and the second button’s label should change to “PRESS ME”. Likewise when the second button is pressed, its label should change to nothing (“”) and the first button should say “PRESS ME”.





2) Design a class which will print out a timer on the screen (System.out). The thread should increment the counter (and print the new value) each second. Just start the timer at zero and have it count up. Do not implement main, just this class! Please note, this class may be instantiated many times.