COMP 1409 Introduction to Software Development 1
Quiz #5 – Suggested Solution

1. Clearly explain what the Java keyword "static" means. **(1 point)**

   Static means something belongs to the class, not to the individual objects. There is only one copy in memory and all objects of the class share that copy.

2. Clearly explain what the Java keyword "final" means. **(1 point)**

   Final means something that cannot change, i.e. a constant. When something is declared final in Java it must be initialized in the same statement.

3. What will be on the screen after the code below executes? **(1 point)**

```
static final int MIN_VALUE = 1;
static final int MAX_VALUE = 10;

int myNumber = MIN_VALUE;
myNumber++;
myNumber += MAX_VALUE;

if(myNumber >= MAX_VALUE) {
   System.out.println("high");
}
else {
   System.out.println("low");
}
```

   On the screen: ____high_

4. What will be on the screen after the code below executes? Assume these are regular get and set methods in a class that has a String field for name. **(1 point)**

```
setName("Adam");
setName("Alice");
System.out.println(getName());
```

   On the screen: __Alice_

5. Below is part of a Student class. You complete it. The get methods are written for you. You must write the set methods. Both constructors must call the appropriate set methods to initialize the fields. The set method for grade must validate its parameter to ensure grade is within the range 0..100 inclusive. If the parameter is invalid an error message must be displayed and the grade not changed. Do not use "magic" numbers. You do not need to write comments.
   (8 points)

```
public class Student
{
    public static final double MIN_GRADE = 0.0;
    public static final double MAX_GRADE = 100.0;

    private String name;
    private double grade;

    /** Default constructor */
    public Student(){
       setName("");
       setGrade(0.0);
    }

     public Student(String theName, double theGrade){
        setName(theName);
        setGrade(theGrade);
     }

    public String getName(){
       return name;
    }

    public double getGrade(){
        return grade;
    }

    public void setGrade(double newGrade){
        if(newGrade >= MIN_GRADE && newGrade <= MAX_GRADE) {
            grade = newGrade;
        }
        else {
           System.out.println("invalid grade");
        }
    }

    public void setName(String theName) {
```

```
        name = theName;
    }

}
```