

CS 313e

Exam 1

Name: _____

SSN: _____

Answer all questions clearly and completely. 100 points are possible.

1.

a) (10 pts) Define type promotion.

b) (10 pts) Define polymorphism.

c) (10 pts) Explain how type promotion and polymorphism work together to promote reuse and maintainability in a software system.

2. (5 pts) What is coupling?

3. Fill in the blank.

a) (5 pts) A subclass may call any non-private superclass method by prepending _____ to the method call.

b) (5 pts) A subclass typically contains less functionality than its superclass (true/false). _____

4. Given the following classes and object

```
public class Order
{
    private int orderNum;
    public void setOrderNum(int theOrderNum) {...} // assign an
order number
    public void placeOrder(){...}
}
public class ServiceOrder extends Order
{
    private int typeOfService;
}
Order oneOrder = new Order();
oneOrder.setOrderNum(1015);
```

a) (10 pts) Represent the class Order in UML. Make the UML representation as detailed as possible.

b) (5 pts) Represent the object oneOrder in UML. Make the UML representation as detailed as possible.

c) (10 pts) Represent the relationship between the 2 classes in UML.

5. (15 pts) Write a program that reads exam grades from a file called “grades.txt” and prints the exam average to the screen. The exam grades are integers, and each grade appears on a separate line in “grades.txt”. You should not make any assumptions about the number of grades in the file.

6. (15 pts) Write a file copy program that copies each line in text file “inputFile.txt” to the file “outputFile.txt”. You can assume that “outputFile.txt” does not already exist.