

University of Toronto
Department of Computer Science
CSC 148H1S — Winter 2004
Section L0301

Midterm test

No aids allowed.

Time: 50 minutes

name: _____

student number: _____

1	
2	
3	
Total	

1. [10 marks]

Here is a Java program. It compiles and runs without errors.

```
class A {
    public void m() { }
    public A() {
        m();
    }
}

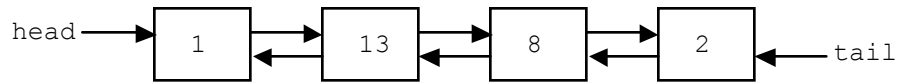
class B extends A {
    private int f = 4;
    public void m() {
        System.out.println(f);
    }
    public B() {
        m();
        f = 3;
        m();
    }
}

public class Init {
    public static void main(String[] args) {
        B b = new B();
    }
}
```

Give the output from this program in the space below. (Hint: it is very short.)

2. [10 marks]

A doubly-linked list is to be used to store integers. Odd numbers are to go at the beginning and even numbers at the end, so the list might look like this:



Apart from the odd-even separation, the order of the items in the list does not matter. The nodes in the list are instances of this class:

```

class Node {
    public int data;
    public Node next, prev;
}
  
```

The list itself is represented as an instance of the class `OddEvenList`. Write the instance variables for this class, and the insert method, in the spaces below. Include comments describing both the variables and the method.

```

class OddEvenList {

    // Put your instance variables here.

    // Put your method comment for insert() here.
    /**
     *

    // Put insert() itself here.
    void insert (int data) {
  
```

3. [10 Marks]

This interface defines the characteristics of a thing that can be flown:

```
public interface Flyable {  
    int getCrewSize();  
    int getNumEngines();  
}
```

Write two *classes*, `JumboJet` and `Kite`, that implement the `Flyable` interface and that obey these rules:

1. The constructor of each class is used to set the characteristics of the object. Besides the standard characteristics of crew size and number of engines, a `JumboJet` has a number of passengers and a `Kite` has a tail length. All `Kites` have 0 engines, but there are no other restrictions on either class.
2. One or more methods are provided to retrieve the characteristics of objects belonging to the class.