CSC 150H1 F October Midterm 2004
L0101
Duration — 45 minutes

Student Number: _____

Family Name: _____ **Given Name:** _____

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*Do **not** turn this page until you have received the signal to start.*
(Please fill out the identification section above,
and read the instructions below.) *Good Luck!*

This midterm consists of 4 questions on 6 pages (including this one). *When you receive the signal to start, please make sure that your copy is complete.*

For 1 bonus mark write your student number at the bottom of pages 2-6.

If you do any rough work, indicate clearly what you want marked.

# 1:	_____/ 7
# 2:	_____/ 8
# 3:	_____/15
# 4:	_____/ 5
TOTAL:	_____/35

Question 1. [7 MARKS]

Part (a) [3 MARKS]

Given

```
double d = 19/4;
```

What are the values of the following expressions:

```
d
```

```
19/4
```

```
(double)(19/4)
```

Part (b) [1 MARK]

Consider:

```
class Nullable {
  public boolean isNull() {
    return this == null;
  }
}
```

What does the following code produce:

```
Nullable n = null;
System.out.println(n.isNull());
```

Part (c) [2 MARKS]

Give a simple expression that is true exactly when the following is false:

```
1.0 / y < 0.5 && y > 0
```

Part (d) [1 MARK]

Give an example of a method from the Java API or from the assignments that has both a side-effect and a return value.

Question 2. [8 MARKS]

Part (a) [5 MARKS]

Consider the two classes:

```
class Homonid {
  private double heightMetres = 1.8;
  public getHeight() {
    return heightMetres;
  }
  public getType() {
    return "Unknown";
  }
}
class Floresiensis extends Homonid {
  private double heightMetres = 1;
  public getType() {
    return "Floresiensis";
  }
}
```

What is the output of the following sequence of statements:

```
Floresiensis f = new Floresiensis();
System.out.println(f.getHeight());
System.out.println(f.getType());
System.out.println(((Homonid)f).getHeight());
System.out.println(((Homonid)f).getType());
Homonid h = (Homonid)f;
System.out.println(f == h);
```

Part (b) [3 MARKS]

What is the output of the following program:

```
import javax.swing.JFrame;
class A {
  public static void main(String[] args) {
    Object[] a = new Object[1];
    Object[] b = new Object[2];
    a[0] = "Tiger";
    b[0] = new JFrame();
    b[1] = "Burning";
    m(a, b);
    System.out.println(a[0]);
    System.out.println(((JFrame)b[0]).getWidth());
    System.out.println(b[1]);
  }
  private static void m(Object[] a, Object[] b) {
    a = new Object[3];
    ((JFrame)b[0]).setSize(150, 150);
    b[1] = "Bright";
  }
}
```

Question 3. [15 MARKS]

Write a class BetterBufferedReader that lets us execute the following (and other similar interactions) in the Interactions Pane. Comments are not required. Small hint: java.io.InputStreamReader.

```
> import java.io.*;
> BufferedReader b = new BetterBufferedReader();
> b.readLine()
 [Hello]
"Hello"
> b.readLine()
 [Bye]
"Bye"
> b
"Hello
Bye"
```

Question 4. [5 MARKS]

Fill in the body of testToUpperCase with exactly five carefully chosen test cases testing the toUpperCase method of String. Comment your tests.

```
class StringTest extends junit.framework.TestCase {

  public void testToUpperCase() {




  }
```

Total Marks = 35