

**[May use one side of an 8.5 × 11 inch sheet of paper]** Show all of your work clearly in the space provided or on the additional page at the end of the exam. If the additional page is used, clearly identify to which exam question it is related. Be sure to **read each problem carefully**. Note that the exam is double sided.

**1.** (10 points) Explain the role of the Eclipse IDE.

**2.** (10 points) Explain the difference between a class and an object in Java.

3. (20 points) Explain in as much detail as you can what each of the following lines of code do.

(a)

```
double num1 = 3.14;
```

(b)

```
Double num1 = new Double(3.14);
```

4. (30 points) Assume the following:

```
int i = 4;  
String w = "Yellow";
```

Determine what will be displayed as a result of each of the following expressions:

(a) `System.out.println(2*i);`

(b) `System.out.println(8%i);`

(c) `System.out.println("h" + w.substring(1,5));`

(d) `System.out.println(w.length());`



5. (30 points) Write a GUI (uses JOptionPane for I/O) program that asks the user to a word with an odd number of letters. The program should then display the word, its length, and the middle character. For example, if the user enters: **envenomed**, the program should display:

The word: envenomed has 9 letters.

The middle letter is: n.



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Additional work area for any problem. Clearly identify to which problem the work on this page is related.



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