

ITEC 120: Introduction To Principles Of Computer Science I
Midterm Exam #1 Re-do v1.2
Fall 2008

- Closed book and closed notes and closed exam01-soln set; moreover, no looking at any of those within 30min of starting the exam. No time limit.
- No electronic devices allowed, e.g., calculator, laptop, PDA.
- Give clear, concise answers. Ambiguous answers will be marked wrong.
- Read the problems closely – many (but not all) are different than exam01.
- Due Oct.15 (Wed) in class. You *don't* need to submit the docs for Walrus, String.
- This re-do is worth 1/3 of the points you missed on exam1.

Problem	Area	Points	Score
1	General Knowledge: True/False	10	
2	Short Answer	25	
3	Error detection and correction	15	
4	Designing solutions	35	
6	Interpreting Code	15	
7	Extra Credit	(10)	
Total		100	

I have abided by the Radford University Honor Code when taking this take-home exam:

Name: _____ Email: _____@radford.edu

Signature: _____ Date: 2008.Oct._____

General Knowledge: TRUE / FALSE

10 POINTS

Circle your answer clearly. An ambiguous answer will be counted as a wrong answer.

True / False A constructor has a `void` return-type.

True / False `ints` are objects.

True / False In Java, `n+1` is always bigger than `n`, for any `int n`.

True / False A constructor is a method that is called on an existing object.

True / False When writing a method, you must initialize its parameters.

True / False An object is a blueprint for creating classes.

True / False A class is a blueprint for creating objects.

True / False A method taking three arguments should have three `@return` comments.

True / False The javadoc comment `@param` is immediately followed by a parameter description.

True / False The left-hand-side of an assignment statement **must** be a variable or field.

6. For each of the following expressions, what is the result? (If the expression is an error, explain why in a few words). Consider each option independently of the others.

```
String s = "Oomph";
```

```
s.toUpperCase() _____
```

```
s.substring() _____
```

```
s.substring(1,3) _____
```

```
(s.substring(1,3)).toUpperCase() _____
```

```
(s.replace("o","oo")).toUpperCase() _____
```

```
(s.toUpperCase()).replace("o","oo") _____
```

7. Explain the difference between a local variable and a field. (Two short sentences, max.)

8. Which of these statement(s) declares a variable? Initializes a variable? Calls a constructor?

```
BankAccount b;  
new BankAccount(5000);  
BankAccount b = new BankAccount(5000);
```

Error Detection

20 POINTS

The following code contains errors. Cross out any incorrect words, and add any words as necessary, to make the code correct.

1. For this question, also specify the output (after fixing) of the System.out.println call.

```
int numBananas;  
int numSpoiled;  
double numSellable;  
  
numBananas = 12;  
numSpoiled = 1.5;  
numSellable = numBananas - numspoiled;  
System.out.println( We can sell + numSellable());
```

2.

```
import java.awt.Rectangle;  
//Swapping two rectangles  
public class Swapper  
{  
    private static void main()  
    {  
        Rectangle one = new Rectangle();  
        Rectangle two;  
  
        swapRectangles(one,two);  
    }  
    private swapRectangles(Rectangle a, b)  
    {  
        Rectangle temp;  
        temp = a;  
        a=b;  
        b=temp;  
    }  
}
```

Designing Solutions

35 POINTS

Write the class(es) and test class necessary to solve the following problems.

1. See the attached documentation for a class Walrus. Write a test-class which tests each of its methods. Be sure your program prints the expected height as well as its actual height after each call, as appropriate.

To save yourself writing, please abbreviate “System.out.println” as “S.o.p”, “getWeight” as “gW”, and “expect” as “exp”.

2.

```
public class WalrusTester
{
```

```
}
```

2. After writing your test-class, it is discovered that the code for `class Walrus` (along with the programmer) has been eaten by a rabid polar bear. Your boss asks you to write the class from scratch. (Hint: each part can be answered with only 1-3 lines of code.) You do not need to write any javadoc comments.

- a. What field(s) are needed? Declare them.
- b. Write the constructor for the `Walrus` class.
- c. Write the `getWeight` method for the `Walrus` class.
- d. Write the `eatAPenguin` method.

```
Public class Penguin
{
    // a. Your field(s) here:

    // b. Your constructor here:

    // c. getWeight here:

    // d. eatAPenguin here:

} // end class Walrus.
```

Interpreting Code

15 POINTS

Write out exactly what is printed by the test class below. (You are encouraged to draw pictures in the margins.) Also, fill in the blanks in the test class.

```
public class Zzzzzz {

    int n;
    String s;

    Zzzzzz( int _n, String _s ) {
        n = _n;
        s = _s;
    }

    void lubDub( String s2 ) {
        s = s2 + s;
    }

    int shoopShoop() {
        int nextVal;
        nextVal = 100 * s.length();
        return (n + nextVal);
    }

}

public class ZzzzzzTester {

    public static void main( String[] args ) {
        int k = 4;
        Zzzzzz aa = new Zzzzzz( k, "shy" );
        k = 2;

        // What is the value of aa.n? _____ Of aa.s? _____
        // 'aa.n' means the value of field n, in object aa.

        System.out.println( "Line A: " + aa.shoopShoop() );
        aa.lubDub( "mu" );

        // What is the value of aa.n? _____ Of aa.s? _____
        System.out.println( "Line B: " + aa.shoopShoop() );
    }

}
```