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Instructions:

- (a) There are 3 questions on this test . The test is worth 35% of your final mark.
- (b) There is a time limit of 50 minutes.
- (c) Write your answers on this sheet and on the blank sheets provided.
- (d) Make sure you put your name and student # on everything
- (e) Clearly identify which question you are answering.
- (f) Please include comments to explain what you are doing.
- (g) There are 8 versions of this test randomly distributed in the class...Do not attempt to copy from another paper.

1) (12 marks) Given the following valid Java class, answer the questions in the spaces provided.

```
public class Test1
{
    int num;
    static int stuff=10;

    public Test1(int val)
    {
        num = stuff;
        stuff = stuff + val;
    }

    public void reset()
    {
        num = 0;
    }

    public static void main(String[] args)
    {
        Test1 thingy0 = new Test1(10);
        Test1 thingy1 = new Test1(20);

        System.out.println(thingy0.num); //comment 0
        System.out.println(thingy1.num); //comment 1
        thingy0 = thingy1;
        thingy1.reset();
        System.out.println(thingy0.num); //comment 2
        System.out.println(stuff); //comment 3
    }
}
```

Part	Question	Answer Here
a	(2marks) What is output on the line with //comment 0?	10
b	(2 mark) What is output on the line with //comment 1?	20
c	(2 mark) What is output on the line with //comment 2?	0
d	(2 mark) What is output on the line with //comment 3?	40
e	(2 mark) Give the name of all instance variables.	(thingy0.num, thingy1.num) or (num), if other variable names present deduction of one mark.
f	(2 mark) How many class variables are there?	1
g	(2 mark) How many objects are created in the program?	2

Marking Guide

As per question. Two extra marks for this question treated as bonus.

- 2) (11 marks: 1/2 mark per error spotted, 1/2 mark per correct explanation) The following Java class is stored in a file called "Test2.java". Circle the Errors and explain what is wrong in the space provided. Note that a mark will be deducted for each wrong answer. Note that errors could be syntactic or semantic. There are 11 errors and there could be more than one on a line.

<code>public class Test3</code>	<ul style="list-style-type: none"> Class name should be "Test2" Missing "{"
<code>public static int zeroes(int a)</code>	
<code>{return 0;}</code>	
<code>public Test2()</code>	<ul style="list-style-type: none"> Constructor name does not agree with class name.
<code>{System.out.println('Hello, I'm an object');}</code>	<ul style="list-style-type: none"> Should be start " Should be end "
<code>public static void main(String[] args){</code>	
<code>Test2 fred = new Test2();</code>	
<code>int number_of_times</code>	<ul style="list-style-type: none"> Should have ; at end
<code>ConsoleReader console = new ConsoleReader(System.out);</code>	<ul style="list-style-type: none"> Should be "System.in"
<code>System.out.println("Enter an int.");</code>	
<code>number_of_times=console.readDouble();</code>	<ul style="list-style-type: none"> Should be readInt.
<code>boolean done = false;</code>	
<code>while(number_of_times > 0){</code>	
<code>dune = !done;</code>	<ul style="list-style-type: none"> No variable declared "dune"
<code>if(!done)break;</code>	
<code>if(done==true) System.out.println("Hello");</code>	
<code>number_of_times = zeroer(number_of_times,done);</code>	<ul style="list-style-type: none"> No such function "zeroer" Zeroes takes only single argument
<code>}</code>	
<code>}</code>	<ul style="list-style-type: none"> Missing "}"

Marking Guide

As per question with maximum mark of 11 (even if more errors than 11 found).

3) (12 marks) Given the following incomplete Java class, write the java code to prompt the user to input a valid integer. Your program should output a "crooked pyramid" (see example below) observing the following rules. If there is any output at all the first line must be '+'. The fourth line must consist of all '^' and the 7th line must consist of all '\$'. Other than that the output should normally consist of '*'s on a line.

For example, if the user input 8, the output of your program would be

```
+
**
***
^^^^
*****
*****
$$$$$$$
*****
```

```
//Sample solution 1..there are may others.
public class Test3
{
    public static void main(String[] args)
    {
        ConsoleReader console = new ConsoleReader(System.in);
        // Your code goes here
        int input;
        System.out.println("Enter an integer.");
        input = console.readInt();
        for(int i=0;i<input;i++)
        {
            switch(i)
            {
                case 0: System.out.println('+');
                    break;
                case 3: System.out.println("^^^^");
                    break;
                case 6: System.out.println("$$$$$$$");
                    break;
                default:
                    for(int j=0;j<=i;j++)
                        System.out.print("*");
                    System.out.println();
            }
        }
        // Your code stops here
    }
}
```

Marking Guide:

Deductions to be made at a rate of 1/2 mark per error

1. Input with prompt: Maximum deduction 3 marks
2. Basic Syntax: Maximum deduction 3 marks
3. Looping correctly: Maximum deduction 3 marks
4. Selection of when to print different characters: Maximum deduction 3 marks