

CS305j Spring 2010

Midterm 1 Key, Suggested Solutions, and Grading Criteria

Abbreviations:

NAP - no answer provided

ECF - error carried forward

OBOE - off by one error

BOD - benefit of the doubt

GCE - misunderstood question. Answer is way off base.

NN - Not Necessary. The code was not required. Usually no points off for this.

Question 1:

A. 10 B. 10 C. 2 D. 0 E. 13 F. "UTCS21" G. "3UT21"

H. 0 I. 2.7 J2.5

2 points per answer.

missing quotes was -1 for first instance

Question 2:

A: 6

6

3

1

12

8

12

A: 8

D: 20

2 points each

The question was altered so that method alpha returned an int after its println statement.

Question 3:

part 1: no output

part 2:

+11

++22

part 3:

+11111

++22222

+++33333

++++44444

part 4:

+
++
+++

Question 4:

The runtime error in the first part is caused by a divide by 0.

The second part had several logic errors, but the one that causes the line of 1's in an infinite loops is that the inner for loop increments i instead of j.

The five syntax errors are:

1. string not capitialized
2. variables cannot start with digits. (But they can contain digits after starting correctly.)
3. the int quarter can not be assigned a double
4. The statement `int y = x * 3;` will not compile because x has not be initialized.
It is not illegal to have the statement `int x;` and initialize x later.
5. four should be for.

Question 5:

Suggested solution:

```
public static double gForce(double m1, double m2, double r)
{
    double g = 6.67E-11;
    return g * m1 * m2 / (r * r);
}
```

method header with return type of double, 1 point
3 parameters with correct data type, 2 points
G value correctly used, 1 point
calculation attempt, 2 points
calculation correct, 2 points
return correct, 2 points

It was okay to declare G as a class constant.
It was okay to use Math.pow.

Some of the common problems were:

- no name fore method
- wrong value assigned to G

- using System.out.println. This was not specified.
- not squaring the distance or not squaring it correctly.

Question 6:

Suggested solution:

```
public static String getLastHalfRev(String org)
{
    String result = "";
    for(int index = org.length() / 2; index < org.length(); index++)
    {
        result = org.charAt(index) + result;
    }
    return result;
}
```

alternate solution using countdown loop

```
public static String getLastHalfRev(String org)
{
    String result = "";
    for(int index = org.length() - 1; index > org.length() / 2; index--)
    {
        result += org.charAt(index);
    }
    return result;
}
```

method header with correct return type, 2 points

parameter of type String, 2 points

local variable that stores result initialized to "". 3 points

loop attempt, 3 points

loop correct bounds, 3 points

method call to length() and charAt() correct, 3 points

String concatenation correct, 3 points

return statement, 1 point

Question 7:

Part 1, B and C are not true

Part 2, A, C, and D are true