Philip Pesic

Week 9

March 19 2023

Week 9 Midterm

Write a Java program that

Declares

a) Four integer datatype variables: int iAnswer = 0, int i1 = 10, int i2 = 20, in t i3 = 30;

b) Four decimal datatype variables: double dAnswer=0, double d1 = 1.1; double d2 = 2.2;

double d3 = 3.3;

Calculate and Explain "carefully", precisely WHY you get each answer. (2 points each)

```
package Midterm;

class Midterm {
   public static void main(String[] args) {

       int iAnswer;
       int i1 = 10;
       int i2 = 20;
       int i3 = 30;

       double dAnswer;
       double d1 = 1.1;
       double d2 = 2.2;
       double d3 = 3.3;

       iAnswer = i2/i1;
       System.out.println("iAnswer = i2/i1: " +iAnswer); //Answer: 2 | 20/10 = 2 |
intergers can store int values
```

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```
        iAnswer = i1/i3;
        System.out.println("iAnswer = i1/i3: " + iAnswer );  //Answer: 0 | 10/30 =
0.33333 | int cannot store floating point values | Truncated/abbrevieted from the
right to 0

        dAnswer = i2/i1;
        System.out.println("dAnswer = i2/i1: " + dAnswer );  //Answer: 2.0 | 20/10 = 2
| 2.0 == 2, but stored as double due to dAnswer datatype

        dAnswer = i1/i2;
        System.out.println("dAnswer = i1/i2: " + dAnswer ); //Answer: 0.0 | 10/20 = 0.5
| dAnswer is double, but compiler cannot compute decimal from int/int | Truncated to
0.0

        dAnswer = d1/d2;
        System.out.println("dAnswer = d1/d2: " + dAnswer ); //Answer: 0.5 | 1.1/2.2 =
0.5 | double can store double values

        // iAnswer = i2/d3;
        // System.out.println("iAnswer = i2/d3: " + dAnswer ); //Cannot compile |
int/double cannot be stored as int value since a floating point value is returned |
Commented out so program can compile

        dAnswer = i1/d3;
        System.out.println("dAnswer = i1/d3: " + dAnswer );  //Answer:
0.0303030303030303 | 10/3.3 = 0.0303030303030303 | int/double can be stored as double,
but double datatype only stores 52 bits/16 digits of floating point numbers

        System.out.println("Philip Pesic 3/19/23");
    }
}
```

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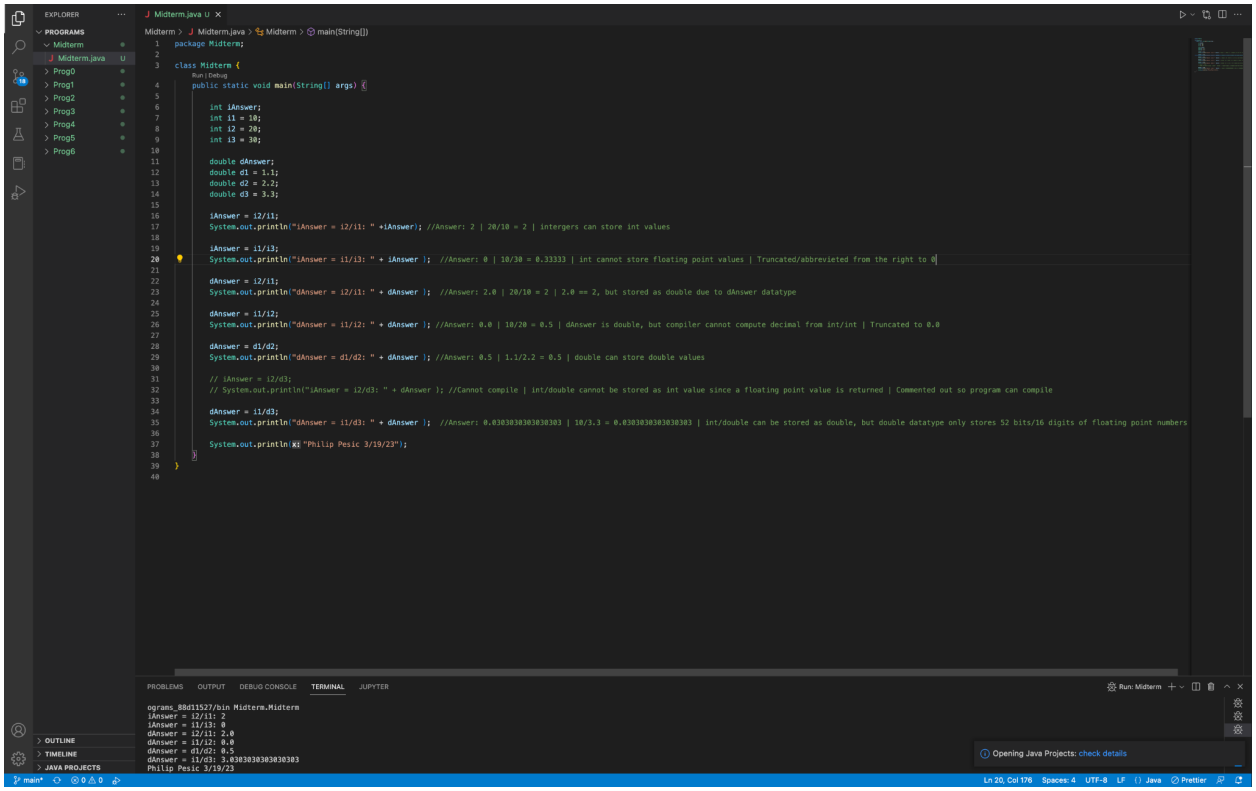

I learned: how ints and doubles handle floating point values