CS 1050, Mr. Kramer Sample Exam #2 Total: 130 pts

In questions 1-6, use the code to fill in the values. Use a ? if the value is not determined by the code. If a character is stored use ' 's about the character value. 4 pts each, total: 6 x 4 = 24 pts.

1.
```
public static final int c = 2;
int a = 5; double s = 4.0;
s = a/c; a -= c;
```
a 3 s 2.0 c 2

2.
```
int a = 1, b = 0, c = 3;
if ((c == 4) && (c == (2 + a++)))
  b = 5; else b = 8;
```
a 1 b 8 c 3

3.
```
int a = 1, b = 0, c = 3;
if ((c != 0) || (c == (2 + a++)))
  b = 5; else b = 8;
```
a 1 b 5 c 3

4.
```
int h = 0, n = 0, s = 0, y = 0; char ch;
switch (ch)  {  case 'k' : ++h; break;
                case 'p' : ++n;
                case 's' : ++s;
                default  : ++y;          }
```
/* In each part below, start with the initial values */

a. if value of ch is 'k' h 1 n 0 s 0 y 0

b. if value of ch is 'p' h 0 n 1 s 1 y 1

c. if value of ch is 's' h 0 n 0 s 1 y 1

d. if value of ch is 'h' h 0 n 0 s 0 y 1

5.
```
int [] d = {6, 8, 4};          // Use ? for undefined values
```
d[0] 6 d[1] 8 d[2] 4 d[3] ? d[4] ?

6.
```
char [] t = {'H', 'e', 'n'};   // Use ? for undefined values
```
t[0] 'H' t[1] 'e' t[2] 'n' t[3] ? t[4] ?

7. 8 pts. Write Java code for a method in the class Nums below which will return the real average of the instance variables.
```
public class Nums
{private int num1, num2;
 ... }
```

In the six problems #8-13, include work which shows a trace table (memory map). 7 points each, total 7 x 6 = 42 points.

8.
```
int a = 4, d = 3;
do { a *= 2; d--;}
   while (d > 3);
```
a 8 d 2

9.
```
int a = 10, b = 1;
for (; b < 10; )
{ b += 4; a -= 2; }
```
a 4 b 13

10.
```
int a = 3, b = 0, c = 1;
for (c = 4; c < 10; c += 2,
     b += a);
```
a 3 b 9 c 10

11.
```
int c = 8, d = 7;
while (d > 3)
{ --d; c += 2;}
```
c 16 d 3

12.
```
int a = 0, b = 8, s = 1;
for (b = 0, a = 5; a > 1; --a)
  { if (a == 3) break;
    s = a; b++; }
```
a 3 b 2 s 4

13.
```
int a = 0, b = 8, s = 1;
for (b = 0, a = 5; a > 1; --a)
{ if (a == 3) continue;
     s = a; b++; }
```
a 1 b 3 s 2

SEE JAVA PROGRAM OF ANSWERS TO EXAMS 2 FOR #14-17

14. 8 pts. Write a Java method with a one-character parameter that returns the parameter shifted one letter to the right ('A' becomes 'B', 'B' becomes 'C', etc.) if it is a capital letter; otherwise it returns the original parameter value.

15. 8 pts. Write a Java method that has a single parameter for an array of doubles and returns another array of doubles with the same length and has each element divided by 2.0.

16. 12 pts. Write a Java method that will search the array d for the value in the variable t. Use d and t as parameters. If the value of t is not found, the method returns -1. If the value of t is found, the method returns the first value of the subscript, sub, such that d[sub] has the same value as t. Data types:
char [] d; int sub; char t;

17. 36 pts. Write a complete, compilable Java program (with import statements) to do the following: input from the keyboard the integer number of values to process, n. Use a for loop to input from the console n mileage values (real numbers) traveled for which reimbursement will be calculated. To determine the reimbursement amount corresponding to the number of miles, use an if/else if statement and the following criteria:

Up to 500 miles	15 cents per mile
500 to 1000 miles	$75.00 plus 12 cents for each mile over 500
1000 to 2000 miles	$135.00 plus 10 cents for each mile over 1000
over 2000 miles	$235.00 plus 8 cents for each mile over 2000.

All output is to the screen. Do not print a heading. If the number of miles is <= 0, print the number of miles and "****" in place of the amount this way:

Mileage: mileage amount Reimbursement: ****

If the mileage > 0, print the numbers this way:

Mileage: mileage amount Reimbursement: reimbursement amt

Use a tab, "\t", to separate the two fields. At the end of the table, print with appropriate messages, a blank line followed by the number of mileage values processed that are >= 0 and their total mileage amounts and reimbursements. Formatting the output and commenting is not necessary. Declare your storage. Do not use arrays. Because input is from the keyboard, include code to create a console of type Scanner and use nextInt()&/or nextDouble().