Midterm Practice Problems – answers to select problems

Answers appear in boldface.

Part 1. Show your work for partial credit

(a) Consider the following code segment:

```
int p = 30;
int b;

Scanner kbrd = new Scanner (System.in);
System.out.print("Please enter an integer");
b = kbrd.nextInt();


if  (b > p || b <  0 )  {
      p = 2*p;
      b = b/25;
}
else {
      p = 0;
      b = b%2;
}
```

Assume the user entered 55.

What is the value of variable `p` after the execution of this program segment? **60**

What is the value of variable `b` after the execution of this program segment ? **2**

(b) What will be printed by the following code segment:

```
int a = 35;
int b = 100;
boolean flag = false;

if ( !flag  ||  a > b  )
      System.out.println ("One");
else
      System.out.println ("Two");
```

One

(c) Consider the following code segment and show what is printed when it is executed. Show the intermediate values of variables `k` and `s` for partial credit.

```
int k = 1;
int s = 0;

do{
      System.out.print('*');
      if (k % 2 == 1)
            s = s + k;

      k++;

}while ( s < 5 );

System.out.println(k);
```

```
*****6
9
```

```
System.out.println(s);
```

(d) Explain why the following code segment will generate a compiler error (assume it is a part of an otherwise properly composed main method).

```
String  str = "STOP";
int i = 0;

switch (str) {

      case "START":
            i = 1;

      case  "STOP":
            i = 10;
            break;

      default:
            System.out.println ("Error.");

}
```

The switch statement must have a controlling expression of a char or whole number type (int, etc). In this code, the controlling expression (str) has type String.

(e) Consider the following code segment:

```
Scanner kbrd = new Scanner (System.in);
String myStr =  kbrd.nextLine();
int len = myStr.length();
String result;


if  (len <=3  ||  myStr.charAt(0) == 'Z')  {

      result = "RARE";
}
else {

      result = "NOT RARE";
}
```

Show values of variables len and result after the execution of this program segment for the following user inputs:

user enters **Zanzibar**

len_____**8**_____ result____**"RARE"**_____

user enters **Moo**

len_____**3**_____ result__**"RARE"**_____

(f) What will be printed by the following code segment?

```
int a = 20;
int b = 100;
boolean flag = false;

if ( b % a == 0 )
      flag = true;

if ( !flag ) {
            System.out.println ("One");

}
else {
      System.out.println ("Two");
}
```

Two

Show values of following expressions:

b % a _____**0**_____

!flag _____**false**_____

4. Write a complete program that lets a user enter words, computes how many words in the input have the same starting and ending letter.
The program must at first read the number of words in the list (n) followed by exactly n words each appearing on a separate line. Then, the program must compute and print how many words start with the same letter as they end with,

For example, given the following user input:
5
Shine
on
you
crazy
diamond

(where 5 is the number of words that follow) the program must print
Number of words with matching first and last letter is 1

since there is only one word (diamond) with first letter matching the last, and the word "on", for example, is shorter than the previous word "Shine".

Here's another example. For user input
3
one
seven
eighteen

the output should read

Number of words with matching first and last letter is 0

Your program doesn't have to contain comments, but must otherwise use good programming style.

```
public class CalcMatches {
      public static void main(String[] args) {
            System.out.println("Please enter how many words in the
list");
            Scanner kbrd = new Scanner (System.in);
            int n =  kbrd.nextInt();
            String word = "";
            int numMatching = 0; // to store number of words with
                                 // matching first/last chars
            int i = 0;
            while (i< n){
                  System.out.println("Please enter the next word");
                  word =   kbrd.nextLine();

                  // compute the    position of last character in word
                  int lastPos = word.length()-1;

                  // check if first and last chars are same
                  if (word.charAt(0) == word.charAt(lastPos))
                        numMatching++; // increase numMatching by 1
                  i++;
            }
            System.out.println(numMatching);
      }
}
```

1) The individual variables that together make up the array are referred to as:
   (a) indexed variables
   (b) subscripted variables
   (c) elements of the array
   (d) all of the above

(d)

2) What is the correct expression for accessing the 5th element in an array named colors?
   (a) colors[3]
   (b) colors[4]
   (c) colors[5]
   (d) colors[6]

(b)

3) Consider the following array:

myArray[0]	7
myArray[1]	9
myArray[2]	-3
myArray[3]	6
myArray[4]	1
myArray[5]	-1

What is the value of myArray[myArray[1] – myArray[0]]
   (a) 7
   (b) 9
   (c) -3
   (d) 6

(c)

4) Declare and create an integer array that will contain the numbers 1 through 100. Use a for loop to initialize the indexed variables.

```
int[] numbers = new int[100];

for (int at=0; at<100; at++)
    numbers[at] = at + 1;

or alternatively

for (int at=1; at<=100; at++)
    numbers[at-1] = at;
```