CPSC 1150: Practice Midterm Questions

Problem solving and programming

1. Write a program in Java that accepts a number from the user and prints to the console the sum of all the numbers up to and including that number

2. Write a program in Java that reads a string from the user and counts the number of vowels within the string

3. Write a program in Java that reads a number from the user and returns the reverse of that number. You may **not** use any String or Array methods to complete this exercise.

4. Write a program in Java that checks whether a passed string is palindrome or not. A string is called palindrome if you can read the same word from both sides. For example, “Dad” and “Rotator” are palindrome.

5. Write a program in Java that imitates the behaviour of Math.pow(). Your program should read two numbers, say b and n from the user, and then compute the value of b^n where n is the exponent and b is the base. Your program should then print the result. You may **not** use Math.pow to complete this exercise.

6. Write a program in Java to read several integers from the user until the user enters 0. Your program should then print out the average and closest number to the average.

   For example, if the inputs are 5, 12, -1, 13, 4, 0 the average is 6.6, and 5 is the closest number to the average.

7. Write a program in Java to read two Strings from the user, phrase and letter. Your program should then find the first occurrence of the letter in phrase and print the index at which it occurs. If letter does not occur in phrase, then your program should print -1.
   Ex. if the user `enters phrase=“potato soup”` and `letter=“s”` your program should print `“index: 7”`
   Ex. if the user `enters phrase=“potato soup”` and `letter=“r”` your program should print `“index:-1”`

8. Write body of the Java **method public static int mode(int[ ] arr)**, that takes an array of integers as argument, and returns the first most frequently occurring value of the array.
   For examples, if arr= {27, 15, 15, 11, 27, 11, 15}, then the method should return 15, since 15 occurs most frequently in the array. If arr={1, 8, 8, 3, 3}, then the method should return 8. (first element that occurred most frequently)
   Notes - Do not sort the array.

9. Write a method in Java that given a matrix, it shuffles the elements of the matrix.

10. Write a method in Java that given a matrix and a positive integer, n, it returns true if the sum of numbers in row n is equal to sum of numbers in column n. Otherwise it returns false.

MCQs

1. What is the printout of the call nPrint('E', 4);

```
public class P4 {
   public static void main(String[] args) {
      nPrint('D', 4);
   }
   public static void nPrint(int x, int n) {
      for( ; n > 0; n--, x--)
           System.out.print((char)x);
  }
}
```

A) DDDD
B) DCBA
C) ABCD
D) Too many errors in the code. It will not compile.
F) invalid method call. Run time error.

2. What is the output of the following java code fragment.

```
int [] x1 = {0, 0, 0, 0};
int [] x2 = {1, 2, 3, 4};
for (int i=0; i<x1.length;i++)
     x1[i] = i+1;
if(x1 == x2)
  System.out.println("x1 and x2 have the same content ");
else
  System.out.println("two arrays have different content");
```

A) x1 and x2 have the same content
B) two arrays have different content
C) The output of the program depends on compiler
D) Program has a logical error, although it displays two arrays have different content
E) line x1[i] = i+1 is an error.

3. Consider the following java code. What will be the output of the program.

```
public class P1{
      public static void main(String[] args) {
            String str = "ABCD";
            str.charAt(0)='C';
            str.charAt(1)='B';
            str.charAt(2)='A';
            System.out.println(str);
      }
}
```

A) ABCD
B) CAB
C) CABD
D) ABCD
E) The program will not compile

4. Assume noName( ) takes an array of integers. What is the best name to the following method named noName?

```
public static void noName (int[] arr){
   int y,len;
   len = arr.length;
   for (int i=0; i< len; i++){
     y=arr[i];
     arr[i]=arr[len -1-i];
     arr[len -1-i] = y;
   }
}
```

A) sort
B) reverseSort
C) reverse
D) rightRotate
E) wasteOfTime

5. Analyze the following code:

```
public class Test3 {
   public static void main(String[] args) {
     char[] x = {'a', 'b', 'c', 'd', 'e'};
     char y='A';
     f1(y,x[3]);
     f2(x[3],x[3]);
     System.out.println(y+"  "+x[3]);
   }
   public static void f1(char y, char x) {
       y=(char)(y+1+x-'a');
   }
   public static char f2(char x, char y) {
       return (char)(x +2);
   }
}
```

A) The program displays B f
B) The program displays A d
C) The program displays b F
D) The program displays B c
E) The program will not compile

6. What will the decimal value of x:

```
public class P3 {
   public static void main(String[] args) {
       byte x = (byte)(127 + 5);
       System.out.println("x= "+x);
    }
}
```

A) x = 0
B) x = 132
C) x = -128
D) x = -124
F) This is an error. The code will not compile.