Note: Prob # 1-4 are written exercises.
      Prob # 5-6 are programming exercises.

1. (10 Points) Evaluate the value for each of the following expressions. Assume in each case that
m = 20 and n = 3. Explain how you evaluate the result.

   (a) $n + m \% n$
   (b) $m \% (-n)$
   (c) $m++ - n--$
   (d) $(m >= 10 \&\& n < 5)$
   (e) $(m < 30 | | n >= 1 )$

2. (4 Points) Trace the loop instructions in part (a) and part (b) and give the resulting value of n.
   Initially assume n = 0 in both cases. Write the value of n after each iteration also.

   (a) i = 13;
       while ( i > 8)
       {
           n += i;
           i -= 2;
       }

   (b) year = 1980;
       while (year <= 1999)
       {
           if (year % 5 == 0)
               n += 1;
           year +=2;
       }

3. (2 Points) What will be the value of sum after completing the loop. Write the value after each
   iteration also.

        sum = 0;
        for ( i = 0; i < 10; i++)
            { if( i == 5) continue;
              sum = sum + i;
            }

4. (4 Points) What will be the value of sum and sum1 after completing the loop. Write the values
   after each iteration also.

        sum = 0;
        sum1 =0;
        i = 1;
        while ( i < 10)
            { sum1 = sum1 + 2* i;
if( i == 3) break;
    sum = sum - i;
    i++;
}

NEXT TWO PROBLEMS ARE PROGRAMMING EXERCISES

5. (20 Points) A palindrome is a sequence of characters that reads the same both forward and backward. Some examples are: “0tt0” “121” “i may yam I”
Write a method that takes an array of char and returns the Boolean value true if the string is a palindrome. (Help: Read example on page 161 of the text : using a line buffer).

6. (20 Points) Write a method to merge elements of two sorted arrays such that the final array is also in sorted fashion. You declare three arrays and assume that elements of two arrays are available in sorted order. For testing you can assume first array having even numbers and second array having odd numbers.