**1. Write a program that asks the user to enter a list of integers. Do the following:**

(a) Print the total number of items in the list.

(b) Print the last item in the list.

(c) Print the list in reverse order.

(d) Print Yes if the list contains a 5 and No otherwise.

(e) Print the number of fives in the list.

(f) Remove the first and last items from the list, sort the remaining items, and print the

result

(g) Print how many integers in the list are less than 5.

**2.Write a program that generates a list of 20 random numbers between 1 and 100.**

(a) Print the list.

(b) Print the average of the elements in the list.

(c) Print the largest and smallest values in the list.

(d) Print the second largest and second smallest entries in the list

(e) Print how many even numbers are in the list.

**3. Start with the list [8,9,10]. Do the following:**

(a) Set the second entry (index 1) to 17

(b) Add 4, 5, and 6 to the end of the list

(c) Remove the first entry from the list

(d) Sort the list

(e) Double the list

(f) Insert 25 at index 3

The final list should equal [4,5,6,25,10,17,4,5,6,10,17]

**4. Ask the user to enter a list containing numbers between 1 and 12. Then replace all of the**

**entries in the list that are greater than 10 with 10.**

**5. (pen)Ask the user to enter a list of strings. Create a new list that consists of those strings with their**

**first characters removed.**

**6.(pen) Create the following lists using a for loop.**

(a) A list consisting of the integers 0 through 49

(b) A list containing the squares of the integers 1 through 50.

(c) The list ['a','bb','ccc','dddd', . . . ] that ends with 26 copies of the letter z.

**7. Write a program that takes any two lists L and M of the same size and adds their elements**

**together to form a new list N whose elements are sums of the corresponding elements in L**

**and M. For instance, if L=[3,1,4] and M=[1,5,9], then N should equal [4,6,13].**

**8. Write a program that asks the user for an integer and creates a list that consists of the factors**

**of that integer.**

**9. (pen)When playing games where you have to roll two dice, it is nice to know the odds of each**

**roll. For instance, the odds of rolling a 12 are about 3%, and the odds of rolling a 7 are about**

**17%. You can compute these mathematically, but if you don’t know the math, you can write**

**a program to do it. To do this, your program should simulate rolling two dice about 10,000**

**times and compute and print out the percentage of rolls that come out to be 2, 3, 4, . . . , 12.**

**10. Write a program that rotates the elements of a list so that the element at the first index moves**

**to the second index, the element in the second index moves to the third index, etc., and the**

**element in the last index moves to the first index.**

**11.(pen) Using a for loop, create the list below, which consists of ones separated by increasingly many**

**zeroes. The last two ones in the list should be separated by ten zeroes.**

**[1,1,0,1,0,0,1,0,0,0,1,0,0,0,0,1,....]**

**12. (pen)Write a program that generates 100 random integers that are either 0 or 1. Then find the**

**longest run of zeros, the largest number of zeros in a row. For instance, the longest run of**

**zeros in [1,0,1,1,0,0,0,0,1,0,0] is 4.**

**13. (pen)Write a program that removes any repeated items from a list so that each item appears at most**

**once. For instance, the list [1,1,2,3,4,3,0,0] would become [1,2,3,4,0].**