Choose one of the following two questions to answer. You may program both if you have time; the higher score will be taken as your grade. You must program in Glue and submit using the "sub114" command. Name your program "bq2_#.c" where # is the problem number you have chosen. You have 50 minutes.

1. Given an array alphabet[26] = {'a', 'b', 'c', ..., 'z'} and array word[] = "onomatopoeia", write a program which will randomly replace an individual character in word[] with a random alphabetical character 12 times. Print the modified word[] string after each substitution for a total of 12 output strings.

2. The value of Pi, which equals 3.1415926..., can be simulated as follows: randomly pick N points in the square with vertices (-1,-1), (-1,1), (1,1), and (1,-1); let K be the number of points that are within distance 1 of the origin (0,0); then Pi can be approximated by

$$\pi = 4 \times \frac{K}{N}$$

Write a program that asks user to input N and prints out the value of Pi given by the above formula.

(Hint: rand()/RAND_MAX gives a random real number between 0 and 1.)