**1) Generate random samples**

Most of the distributions were discussed in Lab 4 or are similar to ones that are included in that Lab 4. Please online help for details. To generate the dice role, please use a discrete uniform distribution with the following procedure:

Place the following code in the for loop below, you will have to add the following lines before the avg line and after the left parentheses:

x <- trunc(runif(1,0,6)+1)

answer = 0

if (x == 2) answer = 1

**2) Generate sampling distributions**

The key for the Central Limit Theorem is to average random samples from the division to simulate what is happening when many samples are taken from the same distribution.

Even though you will just be running the provided code (with minor modifications), I will outline what is happening below:

1) Generate the appropriate number of SRSs of each of the distributions.

2) Average (by row) the appropriate number of SRSs. For example, let’s assume that we are using 5 SRS of size 6.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E | F |
| 1 | -0.30 | -1.28 | 0.24 | 1.28 | 1.20 | 1.73 |
| 2 | -2.18 | -0.23 | 1.10 | -1.09 | -0.69 | -1.69 |
| 3 | -1.85 | -0.98 | -0.77 | -2.12 | -0.57 | -0.40 |
| 4 | 0.13 | -0.37 | -0.33 | -0.37 | 1.34 | -0.09 |
| 5 | -0.19 | -0.51 | 1.97 | 0.87 | 2.38 | -0.65 |

Each of the SRS are in the columns (letters). Our sample size (what we are averaging) are the rows (numbers) and the result is placed in column G.

3) From column G, generate histogram, QQ plot, mean and standard deviation.

**R code:**

n <- 1000 #the number of repeats (not to be changed)

# average: the number of data sets that you want to average

average <- 1

# This will be displayed in the title

type <- "Normal"

#calculates the average data

avg <- rep(0,n)

for (j in 1:n)

{for (i in 1:average)

{avg[j] <- avg[j] + rnorm(1,0,1)

avg[j]=avg[j]/average}

. . .

You will need to include the rest of the code as appropriate to produce what is required in the assignment.