National Technology of Mexico
Technological Institute of Tijuana

ACADEMIC SUBDIRECTION
Systems and Computing Department

SEMESTER
February - June 2021

ACADEMIC CAREER
Information and Communication Technologies Engineer

SUBJECT AND KEY:
Data Mining BDD-1703TI9A

STUDENT'S NAME AND REGISTRATION:
Velázquez Farrera César Alejandro 17212937
Camacho Manabe Juan Daniel 17210534

NAME OF THE JOB:
Practice #1

UNIT TO BE EVALUATED
Unit I

TEACHER'S NAME:

Mc José Christian Romero Hernández

Due date: March 16, 2021

Practice #1

Prove the law of large numbers for N normally distributed random numbers with mean = 0, stdev = 1:

Create an R script that will count how many of these numbers are between -1 and 1 and divide by the total number of N

You know that E (X) = 68.2%

Check mean (Xn) -> E (X) while rerunning your script while increasing N

Pasos

1.- First, the variable that will house the sample size is created, in this case it is 900,000.

```
N <- 900000
```

2.- A counter is initialized to zero, the variable will be called "Counter".

```
Counter <- 0
```

3. A “for” loop is developed to generate the random numbers generated by the “rnorm [N]” function and an “if” conditional that verifies that the values that are between -1 and 1. If the condition becomes true then one unit is added to the counter.

```
for(i in rnorm(N)){
  if(i >=-1 & i<=1){
    Counter <- Counter + 1
  }
}
```

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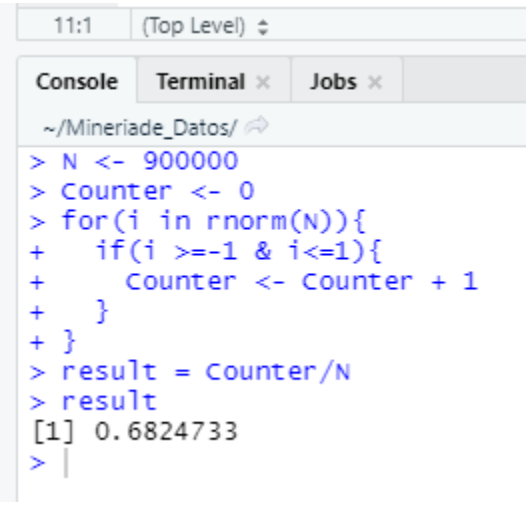
4. Once the "for" loop has finished, then divide the number of iterations that fell between -1 and 1 by the number of samples.

Source code

```
N <- 900000
Counter <- 0

for(i in rnorm(N)){
  if(i >=-1 & i<=1){
    Counter <- Counter + 1
  }
}
result = Counter/N
result
```

Evidence



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