**Department of Computer Science and Engineering (Data Science)**

**B.Tech. Sem: III Subject: Statistics for Data Science**

**Experiment 3**

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| **Date:** | **Experiment Title: Verify Central Limit Theorem** |
| Aim | To verify Central Limit Theorem using Python |
| Software | Google Colab |
| Implementation | 1. Generate random integer number in a range 0 to 100 using Python.  Code:    2. Generate floating point number in a range 0 to 100 using Python.  Code:    3. Create a list of size 1000 random integer numbers in a range 0 to 100 and store in variable named as population using Python.  Code:    4. Construct a histogram of population created in Question3 using Python.  Code:    5. Find mean and variance of population created in Question3 using Python.  Code:    6. Draw a random sample of size n (user defined) from population created in Question3 using Python.  Code:    7. Create distribution of sample mean of samples drawn from population created in Question3 using Python. Here sample size and number of sample should be user defined.  Code:    8. Construct a histogram of distribution of sample mean created in Question7 using Python.  Code:    9. Create a list of size 1000 floating point numbers in a range 0 to 100 and store in variable named as population using Python.  Code:    10. Construct a histogram of population created in Question9 using Python.  Code:    11. Find mean and variance of population created in Question9 using Python.  Code:    12. Draw a random sample of size n (user defined) from population created in Question9 using Python.  Code:    13. Create distribution of sample mean of samples drawn from population created in Question9 using Python. Here sample size and number of sample should be user defined.  Code:    14. Construct a histogram of distribution of sample mean created in Question13 using Python.  Code:    15. Generate a normal population with user defined mean and standard deviation of size 1000 using Python.  Code:    16. Construct a histogram of population created in Question15 using Python.  Code:    17. Find mean and variance of population created in Question15 using Python.  Code:    18. Draw a random sample of size n (user defined) from population created in Question15 using Python.  Code:    19. Create distribution of sample mean of samples drawn from population created in Question15 using Python. Here sample size and number of sample should be user defined.  Code:    20. Construct a histogram of distribution of sample mean created in Question19 using Python.  Code:      21. Verify Central Limit Theorem for Sampling distribution for Sample mean for randomly generated non-normal population using Python.  Code:  22. Verify Central Limit Theorem for Sampling distribution for Sample mean for randomly generated normal population using Python.  Code:  23. We have population data for individual smoking habits. We know that the true population proportion for smoking is 0.395 or 39.5%. For the given data verify Central Limit Theorem for Sampling distribution for Sample proportions using Python. Take population size equal to 1000.  Code: |
| Conclusion |  |

Signature of Faculty