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Drawing of Random Nine-Digit Numbers from a Single Table of Random Three-Digit Numbers

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ABSTRACT: A method of drawing of random nine-digit numbers from a single table of random three-digit numbers has been derived by applying the similar logic that had been applied, in 2016, by *Chakrabarty* in finding out the method of drawing of random six-digit numbers from a single table of random two-digit numbers. This paper describes the derivation of the method with numerical example in order to show the application of the method. The method derived here is the only method of drawing of random nine-digit numbers since no table of random nine-digit numbers is available till now for drawing of random none-digit numbers.

KEYWORDS: Table of random three-digit numbers, drawing of random nine-digit numbers, method of drawing.

I. INTRODUCTION

There had been lot of researches on the construction of tables of random numbers by reputed researchers like *Tippett* (1927), *Mahalanobis* (1934), *Kendall* & *Smith* (1938 , 1939), *Fisher* & *Yates* (1938), *Hald* (1952), *Royo* & *Ferrer* (1954), *RAND Corporation* (1955), *Quenouille* (1959), *Moses* & *Oakford* (1963), *Rao*, *Mitra* & *Matthai* (1966), *Snedecor* and *Cochran* (1967), *Rohlf* & *Sokal* (1969), *Manfred* (1971), *Hill* & *Hill* (1977) and others. Among these tables, the following four tables are treated as suitable in drawing of simple random sample (with or without replacement) from a population (*Cochran*, 1940): The tables of random numbers that had been constructed are of two-digit numbers, three-digit numbers and four-digit numbers only. No table of random *m*-digit numbers is available till now for $m \geq 5$.

The proper randomness of the tables as mentioned above is yet to be tested. In a study made by *Chakrabarty* (2010) on the testing of randomness of the table due to *Fisher* and *Yates* (1938), it has been found that this table, consisting of the 7500 occurrences of the 100 two-digit numbers, is not properly random and deviates significantly from proper randomness. Due to this reason, one table consisting of 6000 random occurrences of the 100 two-digit numbers has been constructed as an alternative/competitor of this table (*Chakrabarty*, 2013*a*). Also, one table containing 5000 random occurrences of the 1000 two-digit numbers has been constructed by *Chakrabarty* (2013*b*) due to the unavailability of such table of two-digit numbers. Two more tables, one containing 20000 occurrences of random two-digit numbers and the other containing 20000 occurrences of random two-digit numbers, have also been constructed by the same author [*Chakrabarty*(2016*a* , 2016*b*)]. Recently, study has been made on testing the proper randomness of the random number tables due to Tippett (*Sarmah* & *Chakrabarty*, 2014), due to Kendall & Smith (*Sarmah* & *Chakrabarty*, 2014*b*), due to *Rand Corporation* (*Sarmah*, *Chakrabarty* & *Barman* (2015*b*). In the studies, each of the tables has been found to be suffered from proper randomness. This leads to think of constructing of table of random four-digit numbers. Moreover, there is or there may be necessity of drawing of random five-digit numbers, random four-digit numbers, random seven-digit numbers etc.. However, due to the increasing difficulties in the construction of tables of these types of random numbers by the method composed by *Chakrabarty* (2013*a*), it had been compelled to think of an alternative approach of drawing of these types of random numbers. *Chakrabarty* has already developed methods of drawing of random four-digit numbers, random five-digit numbers, random six-digit numbers & random seven-digit numbers from a combination of independent tables of random two-digit numbers & random three-digit numbers [*Chakrabarty* (2016*c* , 2016*d* , 2016*e* , 2016*f* , 2016*g* , 2016*h* , 2016*i* , 2017)]. In a study, *Chakrabarty* (2016*f*) derived one method of drawing of random six-digit numbers from a single table of random two-digit numbers. It has been thought that one method drawing of random nine-digit numbers from a single table of random three-digit numbers can be obtained by applying the similar logic that had been applied by *Chakrabarty* in finding out the method of drawing of random six-digit

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numbers from a single table of random two-digit numbers. In this study this thought has been considered and attempt has been made on searching for the said method. This paper describes the derivation of the method with numerical example in order to show the application of the method. A method has been developed for drawing of random nine-digit numbers from a single table of random three-digit numbers as the only method of drawing of random nine-digit numbers from a single table of random three-digit numbers since no table of random nine-digit numbers is available till now for drawing of random none-digit numbers. This paper describes the derivation of the method with numerical example in order to show the application of the method. The method derived here is the only method of drawing of random nine-digit numbers since no table of random nine-digit numbers is available till now for drawing of random none-digit numbers.

II. DRAWING OF RANDOM THREE-DIGIT NUMBERS

The table of random Three-digit numbers constructed by Chakrabarty (2013*a* , 2016*a*) carries the following features:

Features of the Table of Random Three-Digit Numbers:

(1) In the table, each of the 1000 three-digit numbers occurs n times out of $1000n$ consecutive occurrences ($n = 1 , 2 ,$ …….) if we start counting from the observation at the $(1000k + 1)^{th}$ position ($k = 0 , 1 , 2 ,$ …….).

(2) In the table, the frequency of occurrence of each of the 1000 three-digit numbers out of $100n$ consecutive trials ($n = 1 , 2 ,$ …….) may be one more or less than n if we start counting from any position.

(3) The table can be treated as random as per the logic behind the two definitions of probability namely definition in theoretically ideal situation and definition in practically ideal situation (Chakrabarty, 2011).

(4) The table is random with respect to the occurrences of the numbers row-wise but not column-wise. Thus while drawing random numbers from the table, one requires moving row-wise either to the right or to the left starting from any position in the table. The starting position and the direction of movement are to be selected at random by suitable randomized trials in order to keep their randomness intact.

Method of Drawing of Random Three-Digit Numbers from the Table:

Each of the two tables, constructed here, can be used in drawing of random three-digit numbers

(1) which are distinct

and (2) which are not necessarily distinct.

A. Drawing of Distinct Random Three-Digit Numbers

Suppose that we want to draw n random three-digit numbers from the table such that the drawn numbers are distinct. Since distinct three-digit numbers are to be drawn, one can draw a maximum of 1000 such numbers since the total number of such numbers is 1000.

Feature no (2), mentioned in section III, implies that if n three-digit numbers occurred consecutively from the $(100k + 1)^{th}$ position ($k = 0 , 1 , 2 ,$ …….) in the table are drawn subject to the feature no (4) then the drawn n numbers will be distinct and random.

Also feature no (3), mentioned in section III, implies that if n three-digit numbers occurred consecutively in the table are drawn starting from any position then the drawn n numbers may not be distinct. Some of them may occur twice. Thus in order to draw distinct numbers, it is required to exclude the next occurrence of the same number and to draw the next consecutive number occurred in the table following feature no (4) mentioned in section III.

Thus the drawing of random three-digit numbers consists of the two basic tasks namely

(a) selection of the starting position at random

and (*b*) selection of the direction (right or left) of movement at random.

Accordingly, in order to obtain the n random three-digit numbers one is to proceed with the following steps:

1. Select the position, from where to start, at random. Since the table contains 10000 random occurrences of the 100 two-digit numbers, accordingly there are 10000 positions of the numbers namely

   0000 , 0001 , 0002 , …… , 9999.

   In selecting the starting position, one thus can apply some usual manual randomization technique of drawing one number from among the10000 numbers

   0000 , 0001 , 0002 , …… , 9999

   in the case of the table of random three-digit numbers due to Chakrabarty (2013 *b*)

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and from among the 20000 numbers

00000 , 00001 , 00002 , …… , 19999

in the case of the table of random three-digit numbers due to Chakrabarty (2016 *b*).

One method of drawing of such number is as follows:

Take a set of 10 identical small balls marking them by the 10 digits

0 , 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9

respectively and put them inside a opaque container C_1 .

Similarly, take another set of 4 identical small balls marking them by

L , R , M_1 & M_2

respectively and put them inside adifferent opaque container C_2 .

Now, draw one ball at random from the container C_1 containing the 10 balls and note down digit appeared on it.

Let the digit drawn be d_1.

Next, draw another ball at random from the container C_1 containing the same 10 balls and note down digit appeared on it.

Let the digit drawn at this stage be d_2.

Then, draw one ball at random from the container C_2 putting 2 balls marked with L & R inside it.

If the drawn ball is R, put the digit d_2 at the right position of $d_1$and if the drawn ball is L, put the digit d_2 at the left position of d_1.

Thus if the ball R appears, the selected two-digit number will be d_1d_2 and if the ball L appears, the selected two-digit number will be d_2d_1.

Let the selected two-digit number be d_2d_1.

Next, draw another ball at random from the container C_1 containing all the 10 balls and note down digit appeared on it.

Let the digit drawn here be d_3.

Then, draw one ball at random from the container C_2 putting 3 balls marked with

L , M_1 & M_2

inside it and put the digit d_3 at the

left position of d_2d_1 if the drawn ball is L ,

middle position of d_2d_1 if the drawn ball is M_1

& right position of d_2d_1 if the drawn ball is .

Thus the selected three-digit number will be $d_3d_2d_1$ or $d_2d_3d_1$ or $d_2d_1d_3$ in accordance with the selected ball is L or M_1 or R .

Let the selected three-digit number be $d_2d_3d_1$.

Finally, draw another ball at random from the container C_1 containing all the 10 balls and note down digit appeared on it. Let the digit drawn here be d_4.

Then, draw one ball at random from the container C_2 putting 4 balls marked with

L , M_1 , M_2 & R

inside it and put the digit d_4 at the

left position of $d_2d_3d_1$ if the drawn ball is L ,

1st middle position (from left) of $d_2d_3d_1$ if the drawn ball is M_1 ,

2nd middle position (from left) of $d_2d_3d_1$ if the drawn ball is M_2

& right position of $d_2d_3d_1$ if the drawn ball is .

Thus the selected four-digit number will be $d_4d_3d_2d_1$ or $d_2d_4d_3d_1$ or $d_2d_1d_4d_3$ or $d_2d_1d_3d_4$ in accordance with the selected ball is L or M_1 or M_2 or R .

The position of the four-digit number selected here will be the required starting position f**or the table of random three-digit numbers due to Chakrabarty (2013 *a*)**

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. Let the i^{th} (i is any of the four numbers $d_4d_3d_2d_1$, $d_2d_4d_3d_1$, $d_2d_1d_4d_3$, $d_2d_1d_3d_4$) position be selected in the earlier step.
In this step, draw the number that occurs at the i^{th} position in the table.

For the table of random three-digit numbers due to Chakrabarty (2013 *b*), one digit from the two digits 0 & 1 is to be selected by conducting a Bernoulli trial and is to be placed at the left position of the selected number as selected above. The number so obtained is the selected number of the starting position.

2. Let the i^{th} position be selected in the earlier step. Draw the number that occurs at the i^{th} position in the table.
3. Chose whether to move towards left or towards right. The choice can be made at random by a binary trial e.g. by tossing of an unbiased coin or by drawing a number from the container C_2 putting two identical balls, marked with L and R respectively, inside it.
4. If it is chosen to move towards right, draw the numbers occurred at the positions
$$i\ ,\ i+1\ ,\ i+2\ ,\ \ldots\ldots\ldots\ldots\ ,\ i+n-1$$
in the table to obtain the *n* random three-digit numbers.
5. If it is chosen to move towards left, draw the numbers occurred at the positions
$$i\ ,\ i-1\ ,\ i-2\ ,\ \ldots\ldots\ldots\ldots\ ,\ i-n+1$$
in the table to obtain the *n* random three-digit numbers.
6. It may occur that some number or numbers among those drawn may be occurred twice. In that situation, retain only one occurrence of them and draw additional numbers appeared at the consecutive positions in the table as per requirement.
If *k* additional numbers are required to draw, then draw the numbers occurred at the positions
$$i+n\ ,\ i+n+1\ ,\ ,\ i+n+2\ ,\ \ldots\ldots\ldots\ ,\ i+n+k-1$$
if it is chosen to move towards right and draw the numbers occurred at the positions
$$i-n\ ,\ i-n-1\ ,\ ,\ i-n-2\ ,\ \ldots\ldots\ldots\ ,\ i-n-k+1$$
if it is chosen to move towards left.

B. Drawing of Random Three-Digit Numbers (Not Necessarily Distinct)

The features (1) and (2), mentioned in section III, imply that if three-digit numbers are picked up at a gap of *g* positions ($1001 \leq g \leq 1999$), the picked up numbers will not necessarily be distinct.
Thus in order to to draw *n* random three-digit numbers which need not necessarily be distinct, one is to proceed with the following steps:
1. Select one position from where to start at random by the similar method as in the case of drawing of distinct random three-digit numbers mentioned above. Let the i^{th} position be selected.
2. Draw the number that occurs at the i^{th} position in the table.
3. Chose the length of jump that is to be 1001 or more and 1999 or less at random. It can be chosen by some usual manual randomization technique of drawing one number from among the numbers
$$1001\ ,\ 1002\ ,\ 1003\ ,\ \ldots\ldots\ldots\ldots\ ,\ 1999.$$
Let the selected length of jump be *l*.
The random selection of the length of the jump can be done by similar method as done in the selection of the starting position.
4. Chose whether to jump towards left or towards right. The choice can be made by the same method as in the earlier case.
5. If it is chosen to jump towards right, draw the numbers occurred at the positions
$$i\ ,\ i+l\ ,\ i+2l\ ,\ \ldots\ldots\ldots\ldots\ ,\ i+(n-1)\,l$$
in the table to obtain the required *n* random thre-digit numbers.
6. If it is chosen to move towards left, draw the numbers occurred at the positions
$$i\ ,\ i-l\ ,\ i-2l\ ,\ \ldots\ldots\ldots\ldots\ ,\ i-(n-1)\,l$$
in the table to obtain the required *n* random three-digit numbers.

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III. DRAWING OF RANDOM NINE-DIGIT NUMBERS

Let $d_1d_2d_3$ be a random three-digit number drawn from a table of random three-digit numbers.
The possible values that $d_1d_2d_3$ assumes are the 1000 three-digit numbers

000 , 001 , 002 , …… , 998 , 999

and the probability that $d_1d_2d_3$ assumes any of them is equal which is 0.001.
Similarly, if $d_4d_5d_6$ *is another three-digit number drawn independently from the same table then* the possible values that $d_4d_5d_6$ assumes are also the 1000 three-digit numbers

000 , 001 , 002 , …… , 908 , 999

and the probability that that $d_4d_5d_6$ assumes any of them is equal which is 0.001.
Similarly, if $d_7d_8d_9$ *is another three-digit number drawn independently from the same table then* the possible values that $d_7d_8d_9$ assumes are also the 1000 three-digit numbers

000 , 001 , 002 , …… , 908 , 999

and the probability that that $d_7d_8d_9$ assumes any of them is equal which is 0.001.
Now if the three three-digit numbers namely

$$d_1d_2d_3 \ , \ d_4d_5d_6 \ \ \& \ \ d_7d_8d_9$$

are combined together to form the nine-digit number

$$d_1d_2d_3d_4d_5d_6d_7d_8d_9$$

then the possible values that it assumes are the 1000000000 nine-digit numbers

000000000 , 000000001 , 000000002 , …… , 999999998 , 999999999

and the probability that

$$d_1d_2d_3d_4d_5d_6d_7d_8d_9$$

assumes any one of them is 0.000000001 and same for all.
(since the three numbers $d_1d_2d_3$, $d_4d_5d_6$ & $d_7d_8d_9$ have been drawn independently).
Thus the nine-digit number

$$d_1d_2d_3d_4d_5d_6d_7d_8d_9$$

is a random one.
Similarly, each of the other nine-digit numbers namely

$$d_1d_2d_3d_7d_8d_9d_4d_5d_6 \ , \ d_4d_5d_6d_1d_2d_3d_7d_8d_9 \ , \ d_4d_5d_6d_7d_8d_9d_1d_2d_3 \ \ \& \ \ d_7d_8d_9d_1d_2d_3d_4d_5d_6$$

is also random.
If one of these six nine-digit numbers is selected by performing a random trial, the selected number will be a random nine-digit number.
If the process is repeated once, one more random nine-digit number can be obtained.
By further repetitions, one can obtain more random nine-digit numbers.
Therefore in order to draw *n* random nine-digit numbers from a single table of random three-digit numbers, it is required to draw three independent sets, each of *n* random three-digit numbers, from the table.

It is to be noted that any successive three digits of different nine-digit numbers can be same. Conversely, with the same successive three digits there can be different nine-digit numbers. Therefore, the random three-digit numbers in each of the three independent sets of random three-digit numbers, drawn in order to form random nine-digit numbers, need not be distinct.

It is further to be noted that the random selection of which set's three-digit numbers will be placed at the left position, which set's three-digit number will be placed at the middle position & which set's three-digit number will be placed at the right position while combining them in the formation of random nine-digit number can be made afresh for each random nine-digit number to be drawn or can be made once, before drawing the three-digit numbers for the three sets, to be applied in the construction of all random nine-digit numbers to be selected.

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Thus, in order to draw *n* random nine-digit numbers one can apply the following two methods:

First method of drawing

In order to draw *n* random nine-digit numbers, in this method, one can proceed with the following steps:

(1) Make a choice at random which set's three-digit numbers will be placed at the left position, which set's three-digit number will be placed at the middle position & which set's three-digit number will be placed at the right position while combining them in the formation of random nine-digit numbers. This can be done by a random trial.
(2) Draw the 1st set of *n* random three-digit number from the table by the method discussed in Section II *b*.
(3) Draw the 2nd set of *n* random three-digit number from the table by the same method independently from the 1st set.
(4) Draw the 2nd set of *n* random three-digit number from the table by the same method independently from the 1st set.
(5) Combine the respective three random three-digit numbers of the three sets by the choice of the positions obtained in step (1) to obtain the *n* random nine-digit numbers.

Second method of drawing

In order to draw *n* random nine-digit numbers, in this method, one can proceed with the following steps:

(1) Draw three random three-digit numbers independently from the table of random three-digit numbers by the same method as discussed in Section II *b*.
(2) Make a choice at random which set's three-digit numbers will be placed at the left position, which set's three-digit number will be placed at the middle position & which set's three-digit number will be placed at the right position while combining them in the formation of random nine-digit numbers. This can be done by a random trial.
(3) Combine the three three-digit numbers, obtained in step (1), as per the selected choice of the positions to obtain one random nine-digit number.
(4) Perform the above three steps more $(n-1)$ times to obtain more $(n-1)$ random nine-digit numbers.
(5) The random nine-digit numbers obtained in step (3) & Step (4) are the required *n* random nine-digit numbers.

IV. NUMERICAL EXAMPLE

Example (4.1): Let it be wanted to draw 20 random nine-digit numbers from the table of random three-digit numbers constructed by *Chakrabarty* (2016*a*).

First method of drawing

Let a trial namely the throwing of an unbiased coin be performed to make a choice which set's three-digit number will be placed at the left position and which set's three-digit number will be placed at the right position while combining them in the formation of random nine-digit number.
Suppose, the selected choice is as follows:

Two-digit number belonging to the **1st Set** will be placed at the **Left** position,
Two-digit number belonging to the **2nd Set** will be placed at the **Right** position
& Two-digit number belonging to the **3rd Set** will be placed at the **Middle** position.

Now let us draw the 1st set of 20 random three-digit numbers from the table by the method as described in Section II *b*.
Let the numbers drawn be

647 , 487 , 559 , 083 , 937 , 090 , 590 , 287 , 542 , 360 , 551 , 094 , 970 , 274 , 426 , 137 , 646 , 559 , 278 , 774 .

Next, let us draw the 2nd set of 20 random three-digit numbers from the table by the same method but independently of the 1st set.
Let the numbers drawn, in this case, be

090 , 296 ,139 , 984 , 522 , 072 , 808 , 466 , 422 , 279 , 998 , 402 , 892 , 286 , 500 , 182 , 336 , 811 , 503 , 354 .

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Next, let us draw the 3rd set of 20 random three-digit numbers from the table by the same method but independently of the 1st set & the 2nd set.

709 , 429 , 513 , 089 , 975 , 007 , 080 , 286 , 524 , 360 , 598 , 090 , 908 , 726 , 465 , 171 , 663 , 598 , 853 , 435

Now, let us combine the corresponding numbers drawn from the two tables as per the selected choice of combination. Thus, the selected 20 random nine-digit numbers are

647709090 , 487429296 , 559513139 , 083089984 , 937975522 , 090007072 , 590080808 , 287286466 , 542524422 , 360360279 , 551598998 , 094090402 , 970908892 , 274726286 , 426465500 , 137171182 , 646663336 , 559598811 , 278853503 , 774435354 .

Second method of drawing

First, let us draw two random three-digit numbers independently to include in the two sets namely the 1st Set, & the 2nd Set respectively by the method described in Section II *b*.
Let the two numbers drawn be

647 , 090 .

Next, let a random binomial trial namely namely tossing of an unbiased coin be performed to choice which set's three-digit number will be placed at the left position and which set's three-digit numbers will be placed at the right position while combining them in the formation of random nine-digit numbers.
Suppose, the selected choice is as follows:

Two-digit number belonging to the 1st Set will be placed at the Left position,
& Two-digit number belonging to the 2nd Set will be placed at the Right position.

Thus, the 1st selected six-digit random number is 647090 .

In order to obtain the remaining 19 random nine-digit numbers, the two steps are to be repeated 19 times.
Let the outcomes of all the 20 trials be as follows:

Table-4-1

Serial No of Trial	Three-digit Number obtained in 2nd Set			Outcome of the Random Trial: Position of Three-digit Number belonging to			Selected Random Nine-digit number
	1st Set	2nd Set	3rd Set	1st Set	2nd Set	3rd Set	
1	647	090	709	Middle	Left	Right	090647709
2	487	296	429	Left	Right	Middle	487429296
3	559	139	513	Right	Left	Middle	139513559
4	083	984	089	Middle	Right	Left	089083984
5	937	522	975	Right	Middle	Left	975522937
6	090	072	007	Middle	Left	Right	072090007
7	590	808	080	Right	Left	Middle	808080590
8	287	466	286	Middle	Right	Left	286287466
9	542	422	524	Left	Middle	Right	542422524
10	360	279	360	Left	Middle	Right	360279360
11	551	998	598	Right	Middle	Left	598998551
12	094	402	090	Right	Left	Middle	402090094
13	970	892	908	Middle	Right	Left	908970892
14	274	286	726	Middle	Left	Right	286274726

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15	426	500	465	Left	Middle	Right	426500465
16	137	182	171	Middle	Right	Left	171137182
17	646	336	663	Right	Left	Middle	336663646
18	559	811	598	Right	Left	Middle	811598559
19	278	503	853	Middle	Right	Left	853278503
20	774	354	435	Left	Middle	Right	774354435

Thus, the selected 20 random nine-digit numbers to are

090647709 , 487429296 , 139513559 , 089083984 , 975522937 , 072090007 , 808080590 , 286287466 , 542422524 , 360279360 , 598998551 , 402090094 , 908970892 , 286274726 , 426500465 , 171137182 , 336663646 , 811598559 , 853278503 , 774354435 .

V. CONCLUSION

There is unavailability of table of random nine-digit numbers. Therefore, it has not yet been possible to draw random nine-digit numbers using random numbers table. The method of drawing of random nine-digit numbers, developed here, is the only way of drawing of random nine-digit numbers in the absence of table of random nine-digit numbers.

It can be possible to draw random nine-digit numbers from three independent tables of random three-digit numbers by a method that can be derived by similar way as the derivation of the method derived here. This is one problem for the researchers at this stage.

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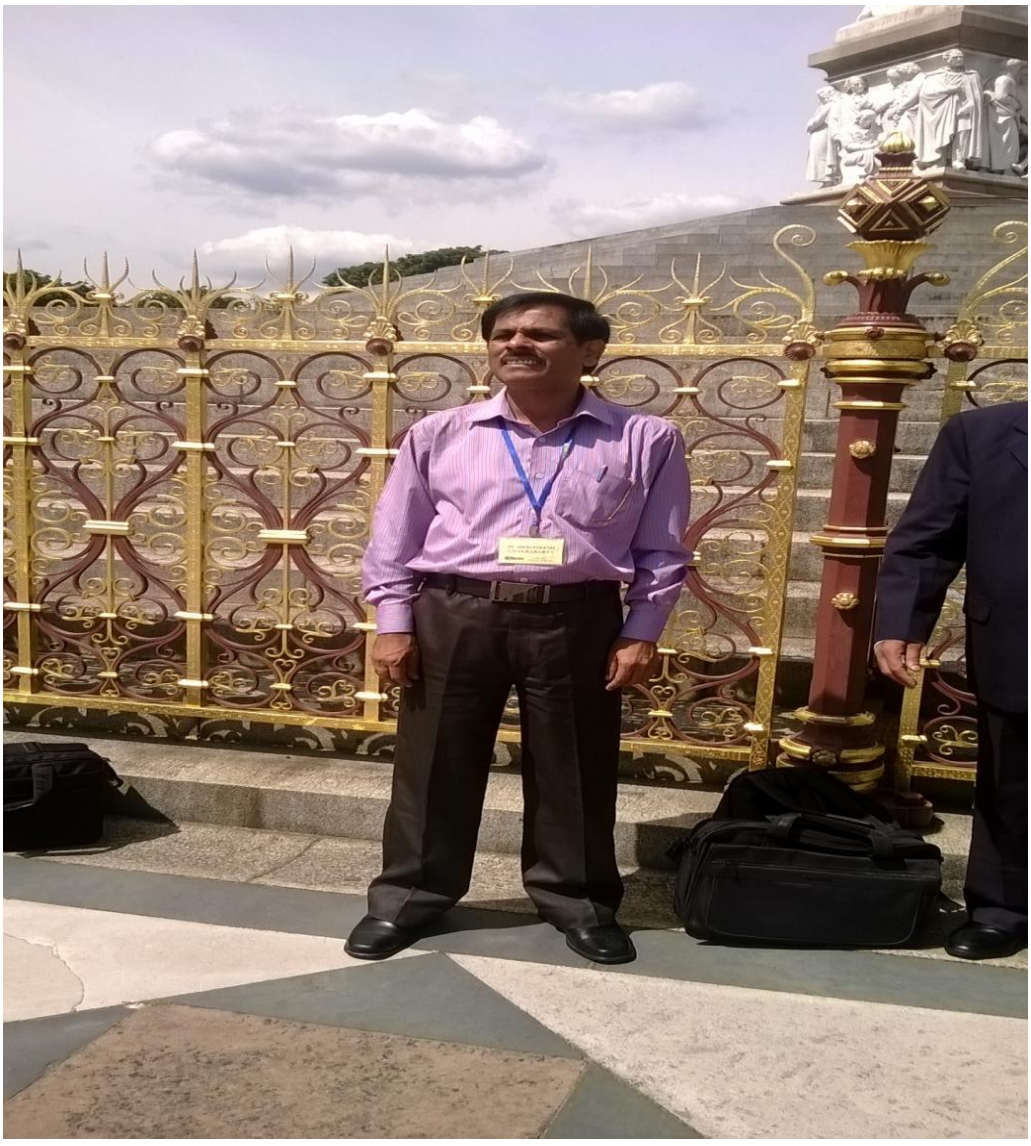

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Dr. Dhritikesh Chakrabarty passed B.Sc. (with Honours in Statistics) Examination from Darrang College, Gauhati University, in 1981 securing 1st class &1st position. He passed M.Sc. Examination (in Statistics) from the same university in the year 1983 securing 1st class & 1st position and successively passed M.Sc. Examination (in Mathematics) from the same university in 1987 securing 1st class (5th position). He obtained the degree of Ph.D. (in Statistics) in the year 1993 from Gauhati University. Later on, he obtained the degree of Sangeet Visharad (inVocal Music) in the year 2000 from Bhatkhande Sangeet vidyapith securing 1st class, the degree of Sangeet Visharad (in Tabla) from Pracheen Kala Kendra in 2010 securing 2nd class, the degree of Sangeet Pravakar (in Tabla) from Prayag Sangeet Samiti in 2012 securing 1st class and the degree of Sangeet Bhaskar (in Tabla) from Pracheen Kala Kendra in 2014 securing 1st class. He obtained Jawaharlal Nehru Award for securing 1st position in Degree Examination in the year 1981. He also obtained Academic Gold Medal of Gauhati University and Prof. V. D. Thawani Academic Award for securing 1st position in Post Graduate Examination in the year 1983.

Dr. Dhritikesh Chakrabarty is also an awardee of the Post Doctoral Research Award by the University Grants Commission for the period 2002─05.

He attended five of orientation/refresher course held in Gauhati University, Indian Statistical Institute, University of Calicut and Cochin University of Science & Technology sponsored/organized by University Grants Commission/Indian Academy of Science. He also attended/participated eleven workshops/training programmes of different fields at various institutes.

Dr. Dhritikesh Chakrabarty joined the Department of Statistics of Handique Girls' College, Gauhati University, as a Lecturer on December 09, 1987 and has been serving the institution continuously since then. Currently he is in the position of Associate Professor (& Ex Head) of the same Department of the same College. He has also been serving the National Institute of Pharmaceutical Education & Research (NIPER), Guwahati, as a Guest Faculty continuously from May 02, 2010. Moreover, he is a Research Guide (Ph.D. Guide) in the Department of Statistics of Gauhati University and also a Research Guide (Ph.D. Guide) in the Department of Statistics of Assam Down Town University. He has been guiding a number of Ph.D. students in the two universities. He acted as Guest Faculty in the Department of Statistics and also in the Department of Physics of Gauhati University. He also acted as Guest Faculty cum Resource Person in the Ph.D. Course work Programme in the Department of Computer Science and also in the Department of Biotechnology of the same University for the last six years. Dr. Chakrabarty has been working as an independent researcher for the last more than twenty five years. He has already published ninety four research papers in various research journals mostly of international level and eight research papers in conference proceedings. Sixty research papers based on his research works have already been presented in research conferences/seminars of national and international levels both within and outside India. He has written two books titled (i) Statistics for Beginners and (ii) Selection of Random Samples: Drawing of Random Numbers. He is also one author of the Assamese Science Dictionary titled "Vigyan Jeuti" and also of the research book **"**BIODIVERSITY- Threats and Conservation. He delivered invited talks/lectures in several seminars He acted as chair person in some seminars. He visited U.S.A. in 2007, Canada in 2011 and U.K. in 2014. He has already completed one post doctoral research project (2002─05) and one minor research project (2010─11). He is an active life member of the academic cum research organizations namely (1) Assam Science Society (ASS), (2) Assam Statistical Review (ASR), (3) Indian Statistical Association (ISA), (4) Indian Society for Probability & Statistics (ISPS), (5) Forum for Interdisciplinary Mathematics (FIM), (6) Electronics Scientists & Engineers Society (ESES) and (7) International Association of Engineers (IAENG). Moreover, he is a Referee of the Journal of Assam Science Society (JASS) and a Member of the Editorial Boards of the two Journals namely (1) Journal of Environmental Science, Computer Science and Engineering & Technology (JECET) and (2) Journal of Mathematics and System Science. Dr. Chakrabarty acted as members (at various capacities) of the organizing committees of a number of conferences/seminars already held.