Bharatiya Vidya Bhavan's

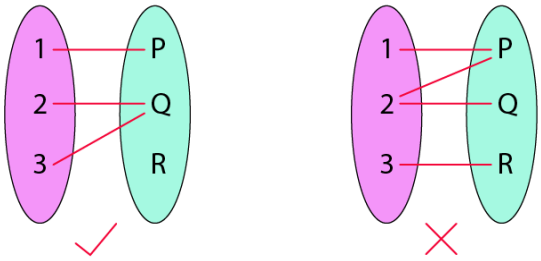
SARDAR PATEL INSTITUTE OF TECHNOLOGY

(Autonomous Institute Affiliated to University of Mumbai)
Munshi Nagar, Andheri (W), Mumbai – 400 058.

Experiment No. 0

Aim – To implement the various functions e.g. linear, non-linear, quadratic, exponential etc.

Details – A function is a relation between a set of inputs and a set of permissible outputs with the property that each input is related to exactly one output. Let A & B be any two non-empty sets; mapping from A to B will be a function only when every element in set A has one end, only one image in set B.



Problem Definition & Assumptions – For this experiment, you have to implement at least 10 functions from the following list.

$(\frac{3}{2})^n$	n^3	$\lg^2 n$	$\lg(n!)$	2^{2^n}	$n^{1/\lg n}$
$\ln \ln n$	$\lg\ n$	$n \cdot 2^n$	$n^{\lg \lg n}$	$\ln n$	$2^{\lg\ n}$
$2^{\lg n}$	$(\lg n)^{\lg n}$	e^n	$(\lg n)!$	$(\sqrt{2})^{\lg n}$	$\sqrt{\lg n}$
$\lg\ (\lg n)$	$2^{\sqrt{2 \lg n}}$	n	2^n	$n \lg n$	2^{2^n+1}

Note – *lg* denotes for log_2 and *le* denotes log_e

The input (i.e. *n*) to all the above functions varies from 0 to 100 with increment of 1. Then add the function n! in the list and execute the same for n from 0 to 20.

Important Links:

1. C/C++ Function Online library
   https://cplusplus.com/reference/cstdlib/rand/
2. Formal definition of Function
   https://www.whitman.edu/mathematics/higher_math_online/section04.01.html
3. Draw 2-D plot using OpenLibre/MS Excel
   https://support.microsoft.com/en-us/topic/present-your-data-in-a-scatter-chart-or-a-line-chart-4570a80f-599a-4d6b-a155-104a9018b86e

---

Input –

1) Each student randomly chose any ten functions from the aforementioned list.

Output –

1) Print the values of each function value for all *n* starting 0 to 100 in tabular format for both aforementioned cases

2) Draw two 2D plot of all functions such that x-axis represents the values of *n* and y-axis represent the function value for different n values using LibreOffice Calc/MS Excel.