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| **SUBJECT** | Design and Analysis of Algorithms |
| **EXPERIMENT NO :** | 1A |
| **DATE OF PERFORMANCE** | 1/02/2023 |
| **AIM:** | To implement the various functions e.g., linear, non-linear, quadratic, exponential etc.   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. |
| **THEORY** | 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.   1. n 2. n3 3. log n 4)n.2n   5)log (log n) |

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|  | 1. 2n 2. en   8) 3/2.n  9) (log n)1/2  10) n.(log n) |
| **ALGORITHM** | Function 1:   1. Initialize a variable n. 2. Take the value of n from 0-100 and print all of them.   Function 2:   1. Initialize variables n and result. 2. result = n\*n\*n 3. Apply a for loop for values of n from 0-100 and print all the values for result.   Function 3:   1. Initialize variables n and result. 2. result = log(n) 3. Apply a for loop for values of n from 0-100 and print all the values for result.   Function 4:   1. Initialize variables n and result. 2. result = n\*pow(2,n) 3. Apply a for loop for values of n from 0-100 and print all the values for result.   Function 5:   1. Initialize variables n and result. 2. result = log(log(n)) 3. Apply a for loop for values of n from 0-100 and print all the values for result. |

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|  | Function 6:  Initialize variables n and result.   1. result = pow(2,n) 2. Apply a for loop for values of n from 0-100 and print all the values for result.   Function 7:   1. Initialize variables n and result. 2. result = exp(n) (en) 3. Apply a for loop for values of n from 0-100 and print all the values for result.   Function 8:   1. Initialize variables n and result. 2. result = 3/2\*n 3. Apply a for loop for values of n from 0-100 and print all the values for result.   Function 9:   1. Initialize variables n and result. 2. result = pow(log(n),0.5) 3. Apply a for loop for values of n from 0-100 and print all the values for result.   Function 10:   1. Initialize variables n and result. 2. result = n\*log(n) 3. Apply a for loop for values of n from 0-100 and print all the values for result. |

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| **PROGRAM:** | #include <stdio.h>  #include <stdlib.h>  #include <math.h>  int main()  {  int n,f1,f2,x=0;  long double f5,f3,f11;  double f8,f9,f7,f6,f10,f4;  while(x<=11){  printf("Enter the function no.:\n");  scanf("%d",&x);  if(x==1)  {  printf("n^3\n");  for(int i=0; i<=100; i++)  {  f1=i\*i\*i;  printf("%d\n",f1);  }  }  if(x==2)  {  printf("n\n");  for(int i=0; i<=100; i++)  {  f2=i;  printf("%d\n",f2);  }  }  if(x==3)  {  printf("2^n\n");  for(int i=0; i<=100; i++)  {  f3=(pow(2,i));  printf("%.Lf\n",f3);  }  }  if(x==4)  {  printf("n\*log(n)\n");  for(int i=0; i<=100; i++)  {    f4=i\*log(i);  printf("%.21f\n",f4);  }  }  if(x==5)  {  printf("log(n)\n");  for(int i=0; i<=100; i++)  {  f5=log(i);  printf("%.2lf\n",f5);  }  }  if(x==6)  {  printf("log(log(n))\n");  for(int i=0; i<=100; i++)  {  f6=log(log(i));  printf("%.2lf\n",f6);  }  }  if(x==7)  {  printf("e^n\n");  for(int i=0; i<=100; i++)  {  f7=exp(i);  printf("%.2lf\n",f7);  }  }  if(x==8)  {  printf("log(n)\n");  for(int i=0; i<=100; i++)  {  f8=i\*log(i);  printf("%.2lf\n",f8);  }  }  if(x==9)  {  printf("(3/2)n\n");    for(int i=0; i<=100; i++){  f9=1.5\*i;  printf("%.2lf\n",f9);  }  }  if(x==10)  {  printf("(logn)^1/2\n");  for(int i=0; i<=100; i++){  f10=pow(log(i),0.5);  printf("%.2lf\n",f10);  }  }  else{  exit(0);  }  }  return 0;  } |

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| **CONCLUSION:** | In this experiment we have learn linear or non linear quadratic function and implemented various functions in C program. | |