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Experiment No.	1

AIM:	Aim – To implement the various functions e.g. linear, non-linear, quadratic, exponential etc.
Program 1	
PROBLEM STATEMENT :	Problem Definition & Assumptions – For this experiment, you have to implement at least 10 functions from the following list.

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

PROGRAM:

```c
#include<stdio.h>
#include<math.h>

  double fac(int n)
  {
  if (n==0)
   return 1;
   return n*fac(n-1);
  }

  float fun1(int a)
  {
    return sqrt(a);
  }
  float fun2(int a)
  {
    return log(a);
  }
  float fun3(int a)
  {
```

```
  return log(log(a));
}
float fun4(int a)
{
  return pow(sqrt(2),log(a));
}
float fun5(int a)
{
  return a;
}
float fun6(int a)
{
  return 2*a+3;;
}
float fun7(int a)
{
  return pow(log(a),2);
}
float fun8(int a)
{
  return log(fac(a));
}
float fun9(int a)
{
  return sqrt(log(a));
}
float fun10(int a)
{
  return pow(2,log(a));
}


int main()
{


  for ( int i=0;i<=100;i=i+10)
   {

    printf(" value of %d in function 1 is %0.2f\n",i, fun1(i)); //
    printf(" value of %d in function 2 is %0.2f\n",i, fun2(i));
    printf(" value of %d in function 3 is %0.3f\n",i, fun3(i));
    printf(" value of %d in function 4 is %0.2f\n",i, fun4(i));
    printf(" value of %d in function 5 is %0.2f\n",i, fun5(i));
```

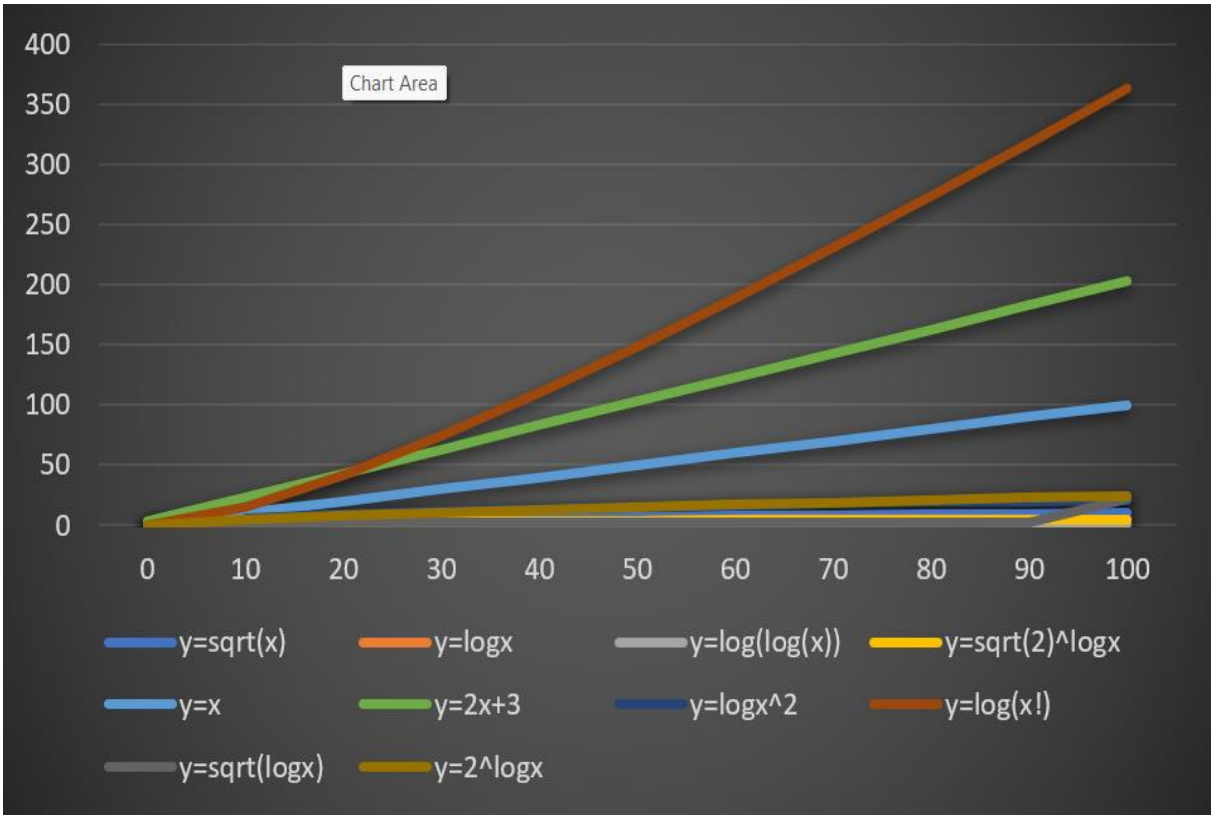
```
    printf(" value of %d in function 6 is %0.2f\n",i, fun6(i));
    printf(" value of %d in function 7 is %0.2f\n",i, fun7(i));
    printf(" value of %d in function 8 is %0.2f\n",i, fun8(i));
    printf(" value of %d in function 9 is %0.2f\n",i, fun9(i));
    printf(" value of %d in function 10 is %0.2f\n",i, fun10(i));
    printf(" value of %d factorial is %0.2f\n",i, fac(i));
    printf("\n");

   }

}
```

RESULT:

```
PS C:\Users\iamri\Desktop> cd "c:\Users\iamri\Desktop\" ; if ($?) { gcc exp.c -o exp } ; if ($?) { .\exp }
 value of 0 in function 1 is 0.00
 value of 0 in function 2 is -1.#J
 value of 0 in function 3 is -1.#IO
 value of 0 in function 4 is 0.00
 value of 0 in function 5 is 0.00
 value of 0 in function 6 is 3.00
 value of 0 in function 7 is 1.#J
 value of 0 in function 8 is 0.00
 value of 0 in function 9 is -1.#J
 value of 0 in function 10 is 0.00

 value of 10 in function 1 is 3.16
 value of 10 in function 2 is 2.30
 value of 10 in function 3 is 0.834
 value of 10 in function 4 is 2.22
 value of 10 in function 5 is 10.00
 value of 10 in function 6 is 23.00
 value of 10 in function 7 is 5.30
 value of 10 in function 8 is 15.10
 value of 10 in function 9 is 1.52
 value of 10 in function 10 is 4.93

 value of 20 in function 1 is 4.47
 value of 20 in function 2 is 3.00
 value of 20 in function 3 is 1.097
 value of 20 in function 4 is 2.82
 value of 20 in function 5 is 20.00
 value of 20 in function 6 is 43.00
 value of 20 in function 7 is 8.97
 value of 20 in function 8 is 42.34
 value of 20 in function 9 is 1.73
 value of 20 in function 10 is 7.98

 value of 30 in function 1 is 5.48
 value of 30 in function 2 is 3.40
 value of 30 in function 3 is 1.224
 value of 30 in function 4 is 3.25
 value of 30 in function 5 is 30.00
 value of 30 in function 6 is 63.00
 value of 30 in function 7 is 11.57
 value of 30 in function 8 is 74.66
 value of 30 in function 9 is 1.84
 value of 30 in function 10 is 10.56
```

```
value of 40 in function 2 is 3.69
value of 40 in function 3 is 1.305
value of 40 in function 4 is 3.59
value of 40 in function 5 is 40.00
value of 40 in function 6 is 83.00
value of 40 in function 7 is 13.61
value of 40 in function 8 is 110.32
value of 40 in function 9 is 1.92
value of 40 in function 10 is 12.90

value of 50 in function 1 is 7.07
value of 50 in function 2 is 3.91
value of 50 in function 3 is 1.364
value of 50 in function 4 is 3.88
value of 50 in function 5 is 50.00
value of 50 in function 6 is 103.00
value of 50 in function 7 is 15.30
value of 50 in function 8 is 148.48
value of 50 in function 9 is 1.98
value of 50 in function 10 is 15.05

value of 60 in function 1 is 7.75
value of 60 in function 2 is 4.09
value of 60 in function 3 is 1.410
value of 60 in function 4 is 4.13
value of 60 in function 5 is 60.00
value of 60 in function 6 is 123.00
value of 60 in function 7 is 16.76
value of 60 in function 8 is 188.63
value of 60 in function 9 is 2.02
value of 60 in function 10 is 17.08

value of 70 in function 1 is 8.37
value of 70 in function 2 is 4.25
value of 90 in function 8 is 318.15
value of 90 in function 9 is 2.12
value of 90 in function 10 is 22.62

value of 100 in function 1 is 10.00
value of 100 in function 2 is 4.61
value of 100 in function 3 is 1.527
value of 100 in function 4 is 4.93
value of 100 in function 5 is 100.00
value of 100 in function 6 is 203.00
value of 100 in function 7 is 21.21
value of 100 in function 8 is 363.74
value of 100 in function 9 is 2.15
value of 100 in function 10 is 24.34
```

GRAPH :



values	y=sqrt(x)	y=logx	y=log(log(	y=sqrt(2)^	y=x	y=2x+3	y=logx^2	y=log(x!)	y=sqrt(log	y=2^logx
0	0		0	0	0	3		0	0	0
10	3.16	2.3	0.834	2.22	10	23	5.3	15.1	1.52	4.93
20	4.47	3	1.097	2.82	20	43	8.97	42.34	1.73	7.98
30	5.48	3.4	1.224	3.25	30	63	11.57	74.66	1.84	10.56
40	6.32	3.69	1.305	3.59	40	83	13.61	110.32	1.92	12.9
50	7.07	3.91	1.364	3.88	50	103	15.3	148.48	1.98	15.05
60	7.75	4.09	1.41	4.13	60	123	16.76	188.63	2.02	17.08
70	8.37	4.25	1.447	4.36	70	143	18.05	230.44	2.06	19.01
80	8.94	4.38	1.478	4.57	80	163	19.2	273.667	2.09	20.85
90	9.49	4.5	1.504	4.76	90	183	20.25	318.15	2.12	22.62
100	10	4.61	1.527	4.93	100	203	21.21	363.74	21.5	24.34

CONCLUSION: I have created ten functions and try the functions for different value and also draw the graph to understand the behaviour of functions
