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EXPERIMENT-1

- **AIM:** To implement the various functions e.g. linear, non-linear, quadratic, exponential etc.

- **PROGRAM:**
  Here,i have considered the following 10 functions:
  1)func1: n^3
  2)func2: nlogn
  3)func3: (logn)^2
  4)func4: 2^logn
  5)func5: n
  6)func6: 2^[(2logn)^0.5]
  7)func7: n ^ (1/logn)
  8)func8: logn
  9)func9: (logn)^2
  10)func10: (logn)^0.5

The input ‘n’ to all the above functions varies from 0 to 100 with increment of 1.

- **CODE:**

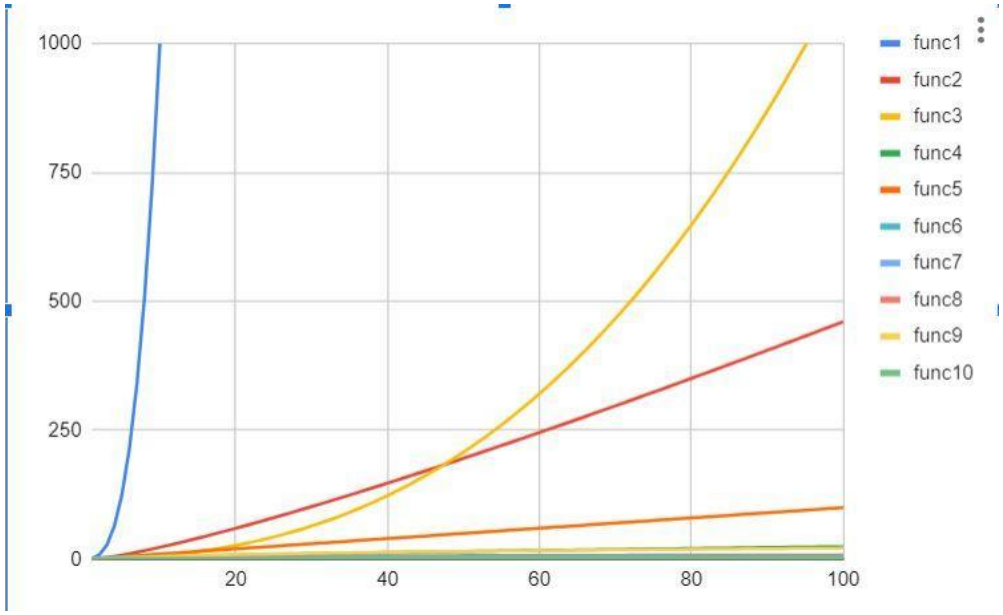
```
#include <stdio.h>
#include<math.h>

void
func1 (int n)//n^3
{
  int ans = n * n * n;
  printf("%d\t",ans);
}
```

```
void
func2 (int n)//n^logn
{
  float value= log(n);
  printf("%0.3f\t",n * value);
}

void func3 (int n)//logn^logn
{
  float value= log(n);
  float ans = pow(value,value);
  printf("%0.3f\t",ans);
}

void
func4 (int n)//2^logn
{
    float value = log(n);
  float ans = pow (2, value);
  printf("%0.3f\t",ans);
}

void
func5 (int n)//n
{
  printf("%d\t",n);
}

void
func6 (int n)//2 ^ (2logn)^0.5
{
  float ans = log(n);
  ans = 2* ans ;
  float value = pow(ans,0.5);
  ans = pow(2,value);
  printf("%.3f\t",ans);
}
```

```
void
func7 (int n)//n ^ (1/logn)
{
  float ans = log(n);
  float value = pow(ans,-1);
  ans = pow(n,value);
  printf("%.3f\t",ans);
}

void
func8 (int n)//logn
{
  float ans = log (n);
  printf("%0.3f\t",ans);
}

void
func9 (int n)//logn^2
{
  float ans = log (n);
  ans = pow (ans, 2);
  printf("%0.3f\t",ans);
}

void
func10 (int n)//(logn)^0.5
{
  float ans = log (n);
  ans = pow (ans, 0.5);
  printf("%0.3f\t",ans);
}

int
main ()
{
  for (int i = 1; i <= 100; i++)
```

```
    {
      func1 (i);
      func2 (i);
      func3 (i);
      func4 (i);
      func5 (i);
      func6 (i);
      func7 (i);
      func8 (i);
      func9 (i);
      func10 (i);
      printf ("\n");
    }
}
```

- **RESULT**:



- **OBSERVATIONS**:

Here, we have plotted 10 graphs for the 10 different functions:

1)Here,the function 'n' is a straight line ane is directly proportional to the input.

2)The function 'n^3' ,the output increase rapidly as compared to the input.

3)The function logn, (logn)^2, (logn)^0.5,do not vary much for a smail range of input from 1 to 100.

4)The function nlogn first becomes negative in the range 0 to 1,after that it reaches the value of 0 and then its value increase.

5)The function 2^logn ,increase vary rapidly for the first 5 input,after that the increase is vary minimal.