

Practical

Aim 6:- Determine product of 2 large integers using multiplication of their digits. For simplicity, assume both numbers to have same number of digits. This assumption can be relaxed subsequently. Use Divide and Conquer strategy).

Code:-

```
#include<stdio.h>

#include<conio.h>

#include<math.h>

long prod(long,long);

long noOfDigit(long,long);

void main()

{

    long m,n;

    printf("\n Enter no1:- ");

    scanf("%ld",&m);

    printf("\n Enter no2:- ");

    scanf("%ld",&n);

    printf("\n multiplication of %ld and %ld is :- %ld",m,n,prod(m,n));

    getch();

}

long prod(long u,long v)

{

    long x,y,w,z;

    long n,m,p,q,r;

    n=noOfDigit(u,v);

    if(u==0 || v==0)

    {

        return 0;

    }

}
```

```
else if(n<=2)
{
    return (u*v);
}
else
{
    m=floor(n/2);
    w=u/pow(10,m);
    x=u%(int)pow(10,m);
    y=v/pow(10,m);
    z=v%(int)pow(10,m);
    p=prod(w,y);
    q=prod(x,z);
    r=prod(w+x,y+z);

    return p * pow(10,2*m) + (r-p-q) * pow(10,m) + q;
}
}

long noOfDigit(long m,long n)
{
    long max;
    int b=0;
    if(m>=n)
        max=m;
    else
        max=n;
    while(max>0)
    {
        max=max/10;
        b++;
    }
}
```

```
    }  
    return b;  
}
```

Output:-

```
Enter no1:- 25  
Enter no2:- 25  
multiplication of 25 and 25 is :- 625_
```