Lab Task-6

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Solve them using dynamic programming

Problem -1

Fibonacci series : 0 1 1 2 3 5 8

input : 5

output: 5

Solution:

```
#include<stdio.h>
int main(){
int n;
scanf("%d",&n);
int result=fibo_dp(n);
printf("%d\n",result);
return 0;
}
int fibo_dp(int n){
int fib[n+1];
fib[0]=0;
fib[1]=1;
for(int i=2;i<=n;i++){
    fib[i]=fib[i-1]+fib[i-2];
```

```
}
return fib[n];
}
```

Problem 2: Factorial of a number

input : 5

output:120

Solution:

```
#include<stdio.h>
int main(){
int n;
scanf("%d",&n);
int result=fac_dp(n);
printf("%d\n",result);
return 0;
}
int fac_dp(int n){
int fac[n+1];
fac[0]=1;
fac[1]=1;
for(int i=2;i<=n;i++){
    fac[i]=fac[i-1]*i;
}
return fac[n];
```

```
}
```

Problem 3: Sum of n Numbers

input : 5

output:15

Solution:

```
#include<stdio.h>
int main(){
int n;
scanf("%d",&n);
int result=sum_dp(n);
printf("%d\n",result);
return 0;
}
int sum_dp(int n){
int sum[n+1];
sum[0]=0;
for(int i=1;i<=n;i++){
    sum[i]=sum[i-1]+i;
}
return sum[n];
}
```