

Assignment - 23sept

1. The Drumbeats of the Festival (Print 1 to n)

Example: Input: 5

Output: 1 2 3 4

```
#include <bits/stdc++.h>
using namespace std;
void sequence(int n){
    if (n==0){
        return;
    }
    sequence(n-1);
    cout << n << " ";
}

int main() {
    int num;
    cout << "Enter a number: ";
    cin >> num;
    sequence(num);
    return 0;
}
```

```
Enter a number: 9
1 2 3 4 5 6 7 8 9
PS D:\OneDrive - galgotiasuniversity.edu
```

2. The Echo in the Cave (Print n to 1)

Example: Input: 5

Output: 5 4 3 2 1

```
#include <bits/stdc++.h>
using namespace std;
void sequencer(int n){
    if (n==0){
        return;
    }
    cout << n << " ";
    sequencer(n-1);
}

int main() {
    int num;
    cout << "Enter a number: ";
    cin >> num;
    sequencer(num);
    return 0;
}
```

Enter a number: 5

5 4 3 2 1

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3. The King's Treasury (Sum of First n Numbers)

Example: Input: 5

Output: 15

Explanation: $1+2+3+4+5 = 15$

```
#include <bits/stdc++.h>
using namespace std;
int sum(int n){
    if (n==0){
        return 0;
    }
    return n + sum(n-1);
}

int main() {
    int num;
    cout << "Enter a number: ";
    cin >> num;
    int result = sum(num);
    cout << "Sum of numbers from 1 to " << num << " is: " << result << endl;
    return 0;
}
```

```
? ) { .\recur }
Enter a number: 5
Sum of numbers from 1 to 5 is: 15
PS D:\OneDrive - galgotiasuniversity.edu.in\Desktop\DSA for life\
niversity.edu.in\Desktop\DSA for life\Class\" ; if ($?) { g++ rec
ur }
Enter a number: 6
Sum of numbers from 1 to 6 is: 21
PS D:\OneDrive - galgotiasuniversity.edu.in\Desktop\DSA for life\
```

4. The Wizard's Mirror (Reverse String)

```
int stringrev(string &s, int a, int b){
    if(a>=b){
        return 1;
    }
    swap(s[a], s[b]);
    return stringrev(s, a+1, b-1);
}

int main(){
    string n="Saad Khan";
    int a=0;
    int b=n.length()-1 ;
    stringrev(n,a,b);
    for(int i=0;i<n.length();i++){
        cout << n[i];
    }
    return 0;
}
```

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5. The Treasure Boxes (Sum of Array)

Example: Input: 5 2 5 3 8 6

Output: 24

```
#include <bits/stdc++.h>
using namespace std;
void Sumarr(int arr[], int n){
    if(n<=0){
        return 0;
    }
    int sum=arr[n-1]+Sumarr(arr,n-1);
    return sum;
}

int main(){
    int n;
    cin>>n;
    int arr[n];
    for(int i=0;i<n;i++){
        cin>>arr[i];
    }
    int sum=Sumarr(arr,n);
    cout << "Sum of array elements: " << sum << endl;
    return 0;
}
```

```
5
1
2
3
4
5
Sum of array elements: 15
PS D:\OneDrive - galgotiasuniversity.edu.in\Desktop\
```

6. The Traveler's Steps (Climbing Stairs)

Example: Input: 3

Output: 3

Explanation: {1+1+1, 1+2, 2+1}

```
#include <bits/stdc++.h>
using namespace std;
int Sumstep(int n){
    if(n==0){
        return 1;
    }if(n<0){
        return 0;
    }
    int sum1=Sumstep(n-2)+Sumstep(n-1);
    return sum1;
}

int main(){
    int n;
    cin >> n;
    int sum=Sumstep(n);
    cout << "total steps: " << sum << endl;
    return 0;
}
```

5

total steps: 8

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7. The Princess's Lock (Factorial)

Example: Input: 4

Output: 24

Explanation: $4! = 4 \times 3 \times 2 \times 1$

```
#include <bits/stdc++.h>
using namespace std;
int fact(int n){
    if(n==1){
        return 1;
    }
    int prod=n*fact(n-1);
    return prod;
}

int main(){
    int n;
    cin >> n;
    int sum=fact(n);
    cout << "total doors to be unlocked: " << sum << endl;
    return 0;
}
```

5

total doors to be unlocked: 120

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8 . The Rabbit's Family (Fibonacci)

Example: Input: 6

Output: 8

Explanation: 1,1,2,3,5,8

#Total doors means = Total Rabbits in this code

```
#include <bits/stdc++.h>
using namespace std;
int fib(int n){
    if(n==1 || n==2){
        return 1;
    }
    int fibu=fib(n-1)+fib(n-2);
    return fibu;
}
int main(){
    int n;
    cin >> n;
    int sum=fib(n);
    cout << "total doors to be unlocked: " << sum << endl;
    return 0;
}
```

```
7
total doors to be unlocked: 13
PS D:\OneDrive - galgotiasuniversity.edu.in\Desktop\galgotiasuniversity.edu.in\Desktop\DSA for life\Class\" ; if ($?) {
ur }
9
total doors to be unlocked: 34
PS D:\OneDrive - galgotiasuniversity.edu.in\Desktop\galgotiasuniversity.edu.in\Desktop\DSA for life\Class\" ; if ($?) {
ur }
```