**DATASTRUCTURE AND ALGORITHMS WITH C++ AND JAVASCRIPT**

**Problem Solving:**

* **First understand the problem**
* **Given Values**
* **Approchs(how to solve problem)**
* **Making program from that approach**

**Program(H-L-L)**

**Solution**

**Problem**

**Machine**

**Understandable**

**format**

**Flow chart:**

**Basically Flow chart is an diagrammatical representation of an approach**

**Components of Flow Chart:**

1. **Terminator : used for starting or ending problem flow**
2. **Input/output**
3. **Process**
4. **Decision Making**
5. **Arrows**
6. **Connector**

**Pseudo-code:**

* **Way of generic representing look of code**
* **Basically pseudo code is like a English Statements which are represents the approach of a problem**

**Questions**

**1.construct a flow chart to calculate sum of 2 numbers**

**Sum=a+b**

**Read a,b**

**Start**

**Print sum**

**End**

**Program code in Javascript**

  <script>

        let a=prompt("Enter value for a?","");

        let b=prompt("Enter value for b?","");

        let sum=a+b;

        document.write(`The sum of ${a} and ${b} is:`+sum);

    </script>

2.Calculate simple intrest?

**Start**

**End**

**Print S.I**

**S.I=P+R+T/100**

**Read P,T & R**

**Program Code in Javascript**

   <script>

        let p=prompt("Enter Value for P ?","");

        let r=prompt("Enter Value for R ?","");

        let t=prompt("Enter Value for t ?","")

        let SI=p+r+t/100;

        document.write(`The S.I is: `+SI);

    </script>

**Program Code in C++**

**#include<iostream>**

**using namespace std;**

**int main(){**

**int p,r,t,SI;**

**cout<<"Enter Values for P,R & T";**

**cin>>p>>r>>t;**

**SI=p+r+t/100;**

**cout<<"The Simple Intrest is:"<<SI;}**

**3.Average of Three Numbers**

**End**

**Print Avg**

**Avg=a=b+c/3**

**Read a,b & c**

**Start**

**Program in Javascript**

    <script>

        let a=prompt("Enter Value for a","");

        let b=prompt("Enter Value for b","");

        let c=prompt("Enter Value for c","");

        let avg=a+b+c/3;

        document.write(`The Average os ${a},${b} &${c} is:`+avg);

    </script>

**Program code in C++**

**#include<iostream>**

**using namespace std;**

**int main(){**

**int a,b,c,avg;**

**cout<<"Enter Values for a,b and c";**

**cin>>a>>b>>c;**

**avg=a+b+c/3;**

**cout<<"The Average is:"<<avg;**

**}**

**4.Find a lesstha b?**

**Start**

**Print “NO”**

**Print “yes”**

**Is**

**a<b**

**Read a,b**

**End**

**Program code in Javascript**

 <script>

     let a=prompt("Enter value for a ?","");

     let b=prompt("Enter value for b ?","");

     if(a<b){

        console.log(`Yes ${a} is lessthan ${b}`);

     }

     else{

        console.log(`NO ${a} is Greater than ${b}`);

     }

    </script>

**Program Code in C++:**

**#include<iostream>**

**using namespace std;**

**int main(){**

**int a,b;**

**cout<<"Enter value for a:";**

**cin>>a;**

**cout<<"Enter Value for b:";**

**cin>>b;**

**if(a<b){**

**cout<<"Yes a is less than b";**

**}**

**else{**

**cout<<"No a is greaterthan b";**

**} }**

**5. Find the given number is even or odd?**

**Print “Even”**

**Is**

**n%2==0**

Read n

**Start**

NO YES

**End**

**Print “Odd”**

**Program code in Javascript**

<script>

        let n=prompt("Enter Value for n ?","");

        if(n%2==0){

            console.log(`The Number is Even value: ${n}`);

        }

        else{

            console.log(`The numver is odd value: ${n}`);

        }

    </script>

**Program code in C++:**

**#include<iostream>**

**using namespace std;**

**int main(){**

**int n;**

**cout<<"Enter Value for n:";**

**cin>>n;**

**if(n%2==0){**

**cout<<"The Number is Even and value :"<<n;**

**}**

**else{**

**cout<<"The number is odd and value:"<<n;**

**}**

**}**

**6.Find the given number is Positive,negative or zero**

**End**

**Print “Zero”**

**Print “Negative”**

**n<0**

**Print “Positive”**

**n>0**

**Read n**

**Start**

**YES**

**NO**

**NO** **YES**

**Program code in Javascript**

 <script>

        let n=prompt("Enter value for n ?","");

        if(n>0){

            console.log(`Positive the value:${n}`);

        }

        else if(n<0){

            console.log(`Negative value:${n}`);

        }

        else{

            console.log(`Zero value: ${n}`);

        }

    </script>

**Program code in C++:**

**#include<iostream>**

**using namespace std;**

**int main(){**

**int n;**

**cout<<"Enter Value for n:";**

**cin>>n;**

**if(n>0){**

**cout<<"Positive value:"<<n;**

**}**

**else if(n<0){**

**cout<<"Negative Value:"<<n;**

**}**

**else{**

**cout<<"Zero value:"<<n;**

**}**

**}**

**Homework: Find the given triangle is valid or not?**

**8.Print 1 to N numbers by using loops**

Number++

Print Number

**End**

Is

Number<n

Number=1

**Read n**

**Start**

**NO**

**YES**

**Program code in Javascript:**

 <script>

        let n;

        n=prompt("Enter Value for n ?","");

        for(let i=1; i<n; i++){

            console.log(i);

        }

    </script>

**Program code in C++:**

**#include<iostream>**

**using namespace std;**

**int main(){**

**int n;**

**cout<<"Enter Value for n:";**

**cin>>n;**

**for(int i=1; i<n; i++){**

**cout<<i<<endl;**

**}**

**}**

**9.Print 1 to N Even numbers**

**Start**

Is

Num<n

**Num=2**

**Read n**

**End**

**NO**

**Num=Num+2**

**Print number**

**Program code in Javascript:**

    <script>

        let n;

        n=prompt("Enter Value for n ?","");

        for(let i=2; i<n; i=i+2){

            console.log(i)

        }

    </script>

**Program code in C++:**

**#include<iostream>**

**using namespace std;**

**int main(){**

**int n;**

**cout<<"Enter Value for n:";**

**cin>>n;**

**for(int i=2; i<n; i=i+2){**

**cout<<i<<endl;**

**}**

**}**

**10.Print 1 to N Odd numbers**

**Start**

Is

Num<n

**Num=1**

**Read n**

**End**

**NO**

**Print number**

**Num=Num+2**

**Program codein Javascript:**

 <script>

        let n;

        n=prompt("Enter Value for n >","");

        for(let i=1; i<n; i=i+2){

            console.log(i);

        }

    </script>

**Program code in C++:**

**#include<iostream>**

**using namespace std;**

**int main(){**

**int n;**

**cout<<"Enter Value for n:";**

**cin>>n;**

**for(int i=1; i<n; i=i+2){**

**cout<<i<<endl;**

**}**

**}**