DATA STRUCTURE AND ALGORITHM

**Write a code in the following pattern:-**

**1 2 3**

**4 5 6**

**7 8 9**

=>

#include<iostream>

using namespace std;

int main(){

int n;

cout<<"Enter the value of n"<<endl;

cin>>n;

int i=1;

int count=1;

while(i<=n){

int j=1; *// FOR THE ROW (IT BASICALY DETERMINE THE ROW)*

while(j<=n){ *//FOR THE COLUMN (IT BASICALY DETERMINE THE COLUMN)*

cout<<count<<" ";

count=count+1; *// AS WE CAN SEE THAT WE HAVE TO CONTINUE THE COUNTING SO WE HAVE DECLARED A COUNT NUMBER BEFORE AND WE JUST KEPT IT INCREASING*

j=j+1;

}

cout<<endl;

i=i+1;

}

}

**Write a code in the following pattern:-**

**\***

**\* \***

**\* \* \***

**\* \* \* \***

**=>**

#include<iostream>

using namespace std;

int main(){

int n;

cout<<"Enter the number of n"<<endl;

cin>>n;

int i=0;

while(i<=n){ // THIS DETERMINE THE ROW

int j=1;

while(j<=i){ // THIS WILL DETERMIN THE COLUMN

cout<<" \* "; // WE WILL PRINT THE \* AS MUCH TIMES AS THE ROW

j=j+1;

}

cout<<endl;

i=i+1;

}

}

**Write a code in the following pattern:-**

**1**

**2 3**

**4 5 6**

**7 8 9 10**

**11 12 13 14 15**

**=>**

#include<iostream>

using namespace std;

int main(){

int n;

cout<<"Enter the number of n"<<endl;

cin>>n;

int i=1;

int dd=1;

while(i<=n){

int j=1;

while(j<=i){

cout<<dd<<" ";

j=j+1;

dd=dd+1;

}

cout<<endl;

i=i+1;

}

}

**Write a code in the following pattern:-**

**1**

**2 1**

**3 2 1**

**4 3 2 1**

=>

#include <iostream>

using namespace std;

int main(){

int n;

cout<<"Enter the data for n"<<endl;

cin>>n;

int i=1;

while(i<=n){

int j=1;

while(j<=i){

cout<<(i-j+1)<<" ";

j=j+1;

}

cout<<endl;

i=i+1;

}

}

**To convert the decimal number in to binary :-**

#include <iostream>

#include <math.h>

using namespace std;

int main(){

int n;

cout<<"Enter the number n "<<endl;

cin>>n;

int i=0;

int ans=0;

while(n!=0){ //

int bit =n&1; //BIT WILL ONLY BE IN THE FORM OF 0 AND 1

ans=(bit \*pow(10,i))+ans;

n=n>>1;

i++;

}

cout<<"The answer in bits is "<<ans<<endl;

}

**TOTAL NOTE COUNTER (SWITCH CASE)**

#include <iostream>

using namespace std;

int main(){

int n;

cout<<"Enter the amount "<<endl;

cin>>n;

switch(1){

case 1:cout<<"The total number of 100 notes are :- "<<(n/100)<<endl;

case 2:cout<<"The total number of 50 notes are :- "<<((n%100)/50)<<endl;

case 3:cout<<"The total number of 20 notes are :- "<<(((n%100)%50)/20)<<endl;

case 4:cout<<"The total number of 10 notes are :- "<<((((n%100)%50)%20)/10)<<endl;

break;

}

}

**CHARACTER STRING ARRAYS:-**

In data structures, a **string** is a sequence of characters used to represent text. **Strings** are commonly used for storing and manipulating textual data in computer programs. They can be manipulated using various operations like **concatenation, substring extraction, and comparison**.