Q1. Explain Pointers in C++ Programming?

Ans: A Pointer is a variable that can hold address of another variable

We can use * to declare the pointer
We can use & to initialize a pointer variable
We can use * (Value at Operator / Dereference operator) to get the value of pointing to the pointers

Syntax:
Data type vb;(Normal variable)
Data type vb1[5];(Array Declaration)
OR
How to Declare a Pointer Variable in C++

Data type *variableName;

OR
Data Type* VariableName;

Example:

```
int a;
int b;

a=10;
b=20;
```

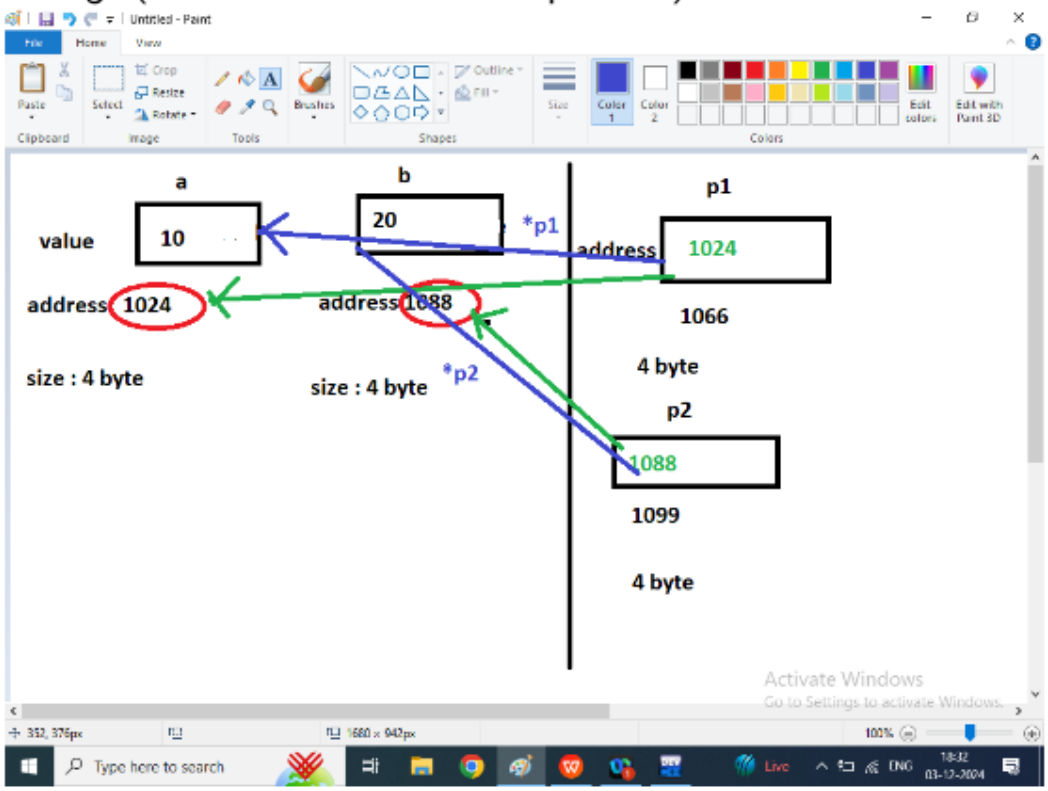
How to initialize a pointer variable in C++: declaration of pointer is not enough it also initialize some address

```
int *p1,*p2;
p1=10;
P2=20;//Incorrect
```

p1=a;
p2=b;

Syntax:
pointerVariableName= &variableName;
p1=&a;
p2=&b;

How to get value of the pointer :
Using *(value at/ dereference operator)



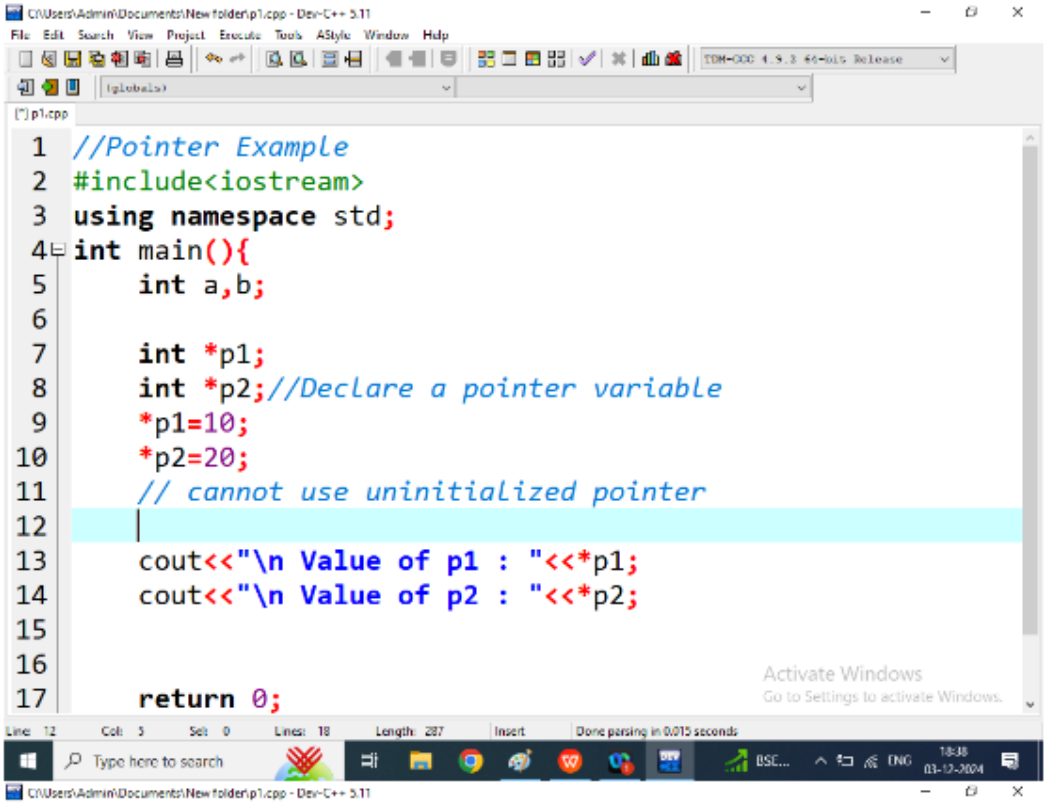
//Pointer Example
#include<iostream>
using namespace std;
int main(){
int a,b;

int *p1;
int *p2;//Declare a pointer variable

```
p1=&a;
p2=&b;
cout<<"\n Address of a : "<<&a;
cout<<"\n Address of b : "<<&b;
cout<<"\n Address of p1 : "<<p1;
cout<<"\n Address of p2 : "<<p2;
cout<<"\n Address of &p1 : "<<&p1;
cout<<"\n Address of &p2 : "<<&p2;

cout<<"\n value of a using pointer  : "<<*p1;
cout<<"\n value of b using pointer  : "<<*p2;
*p1=11;
*p2=22;
cout<<"\n value of a   : "<<a;
cout<<"\n value of b  : "<<b;
cout<<"\n value of a using pointer  : "<<*p1;
cout<<"\n value of b using pointer  : "<<*p2;

return 0;
}
```

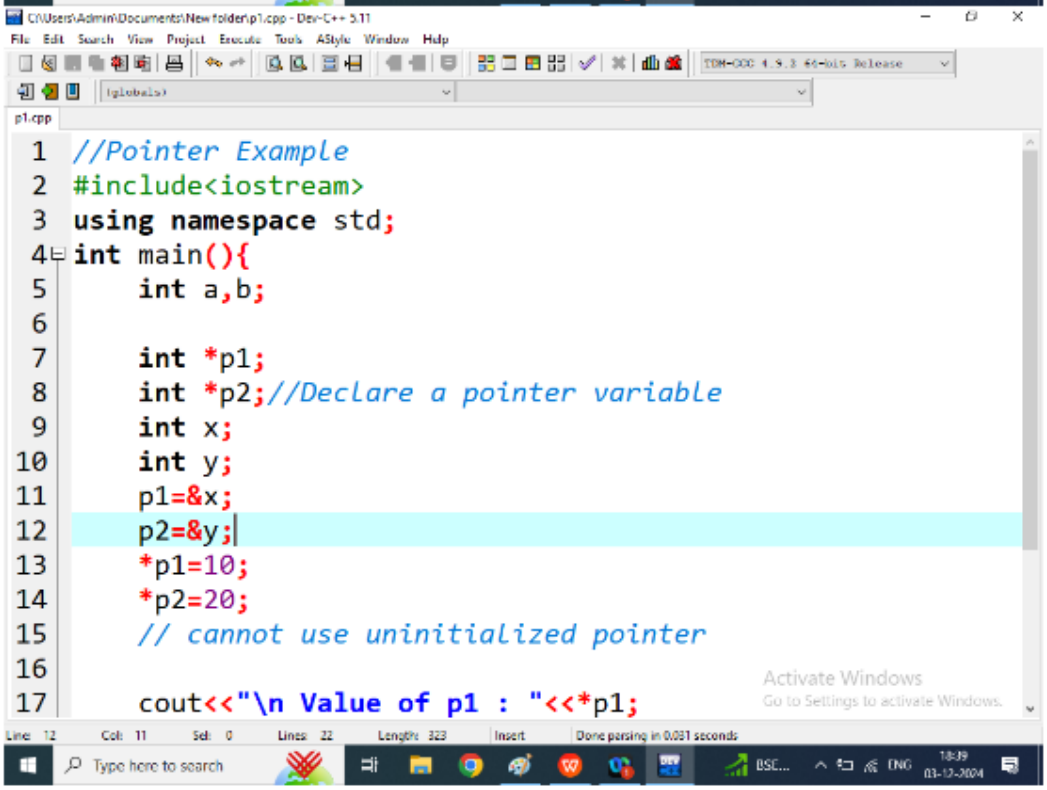


```cpp
//Pointer Example
#include<iostream>
using namespace std;
int main(){
    int a,b;

    int *p1;
    int *p2;//Declare a pointer variable
    *p1=10;
    *p2=20;
    // cannot use uninitialized pointer

    cout<<"\n Value of p1 : "<<*p1;
    cout<<"\n Value of p2 : "<<*p2;


    return 0;
```



```cpp
//Pointer Example
#include<iostream>
using namespace std;
int main(){
    int a,b;

    int *p1;
    int *p2;//Declare a pointer variable
    int x;
    int y;
    p1=&x;
    p2=&y;
    *p1=10;
    *p2=20;
    // cannot use uninitialized pointer

    cout<<"\n Value of p1 : "<<*p1;
```

Q1. Write a c++ Program to print Sum of two numbers using pointer?

int x=1;
int y=2;
1. Pointer Declare
int *p1;
int *p2;

2. Pointer Initilization
p1=&x;
p2=&y;

3. Access value using pointer

int c=*p1+*p2;
cout<<"Additon "<<c;

```
//Pointer Example
#include<iostream>
using namespace std;
int main(){
int a,b;

int *p1;
int *p2;//Declare a pointer variable
int x;
int y;
p1=&x;
p2=&y;
*p1=10;
*p2=20;
```

```
// cannot use uninitialized pointer
int c=*p1+*p2;
cout<<"\n Addition  : "<<c;



return 0;
}
```

Q2. Write a C++ program to calculate area of Rectangle Using Pointer?

```
int l=4;
int b=5;
step1: Declare Pointer Variable
int *x;
int *y;

step2: Initialize a pointer variable
x=&l;
y=&b;

step3: Get Value using Pointer
int ar=*x * *y;
cout<<"Area of Rectangle : "<< ar;
```

```
//Pointer Example
#include<iostream>
using namespace std;
int main(){
int a,b;

int *p1;
```

```
int *p2;//Declare a pointer variable
int x;
int y;
p1=&x;
p2=&y;
*p1=10;
*p2=20;
// cannot use uninitialized pointer
int c=*p1* *p2;
cout<<"\n Area of Rectangle  : "<<c;



return 0;
}
```