Day-15 of 101days Coding challenge.

----------POINTER----------

- * dereferencing , (or used to access the value)
- & referencing , (or using the address of the variable)

⇨ Pointer----

```cpp
#include<iostream>

using namespace std;

int main()
{
    int value = 20;
    int *ptr; // here ptr data type should be as value type (int)
    ptr = &value; // assigning address of value to the ptr
    cout<<ptr<<endl; // it will print the address of the value
    cout<<&ptr<<endl; // it will print the address of the ptr
    cout<<*ptr<<endl;  // it will print the value stored into the ptr

    *ptr = 30;
    cout<<*ptr<<endl; // it will return the updated value 30

    // appling increment and decrement to the pointer
    ptr++; // address will increase as per data type
    ++ptr; // address will increase;

    cout<<ptr<<endl;
    // note we can't increase the value of the pointer as shown below
    // it will generate the random value , because it initlizes once (solution we can traverse the array)
    *ptr++;
    ++*ptr;
    cout<<*ptr<<endl;
}
```

⇨ Output-----

```
0x70fe1c
0x70fe10
20
30
0x70fe24
4199401

--------------------------------
Process exited after 0.08807 seconds with return value 678938
Press any key to continue . . .
```

⇨ Pointer To array

```cpp
#include<iostream>
#include<stdlib.h>
using namespace std;

int main()
{
    int arr[] = {10,20,30,40,50,60,70,80}; // array declaration

    int *ptr = arr;   //it will point the first elements of the array (point to the base address)

    // using for loop to increment the pointer for traversing the elements of the array
    for(int i = 0; i<8; i++)
    {
        cout<<i<<":index value="<<*ptr<<endl;
        ptr++; // incrementing the address of the ptr so that pointer can access the value
    }
    return 0;
}
```

⇨ Output

```
0:index value=10
1:index value=20
2:index value=30
3:index value=40
4:index value=50
5:index value=60
6:index value=70
7:index value=80

--------------------------------
Process exited after 0.1138 seconds with return value 0
Press any key to continue . . .
```

⇨ Pointer To pointer

```cpp
#include<iostream>

using namespace std;

int main()
{
    int v = 40;
    int *ptr;
    ptr = &v;
    int **ptr1 = &ptr; // here pointer to ponter is used to access the single pointer

    cout<<*ptr<<endl; // will give the value of the pointer(40)
    cout<<ptr<<endl; // adress
    cout<<**ptr1<<endl; // value
    return 0;
}
```

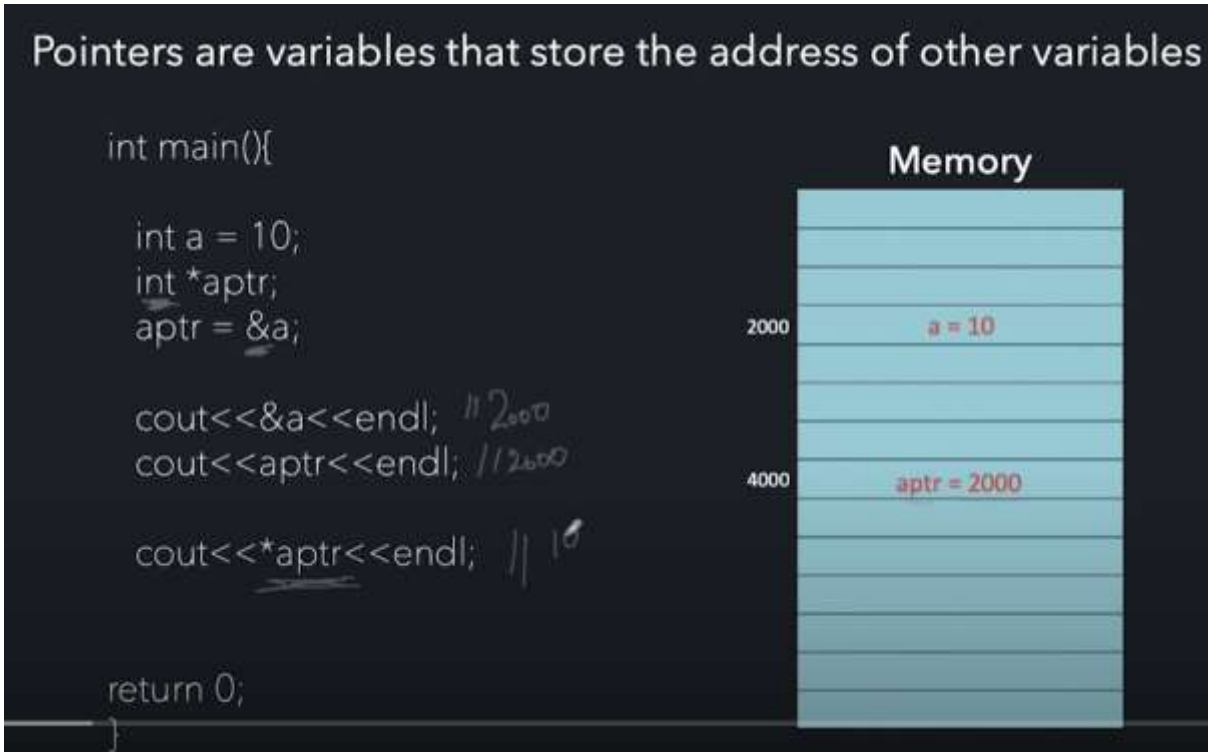
⇨ Output

```
40
0x70fe14
40

--------------------------------
Process exited after 0.09166 seconds with return value 0
Press any key to continue . . .
```

----------Now Some Online Found Resources----------

⇨ Pointer



⇨ Pointer To Pointer

Pointer to Pointer

```
int main(){

  int a = 10;
  int *p;
  p = &a;

  cout<<*p<<endl;

  int **q=&p;

  cout<<*q<<endl;
  cout<<**q<<endl;

return 0;
}
```