Pointer

Basic Concept:

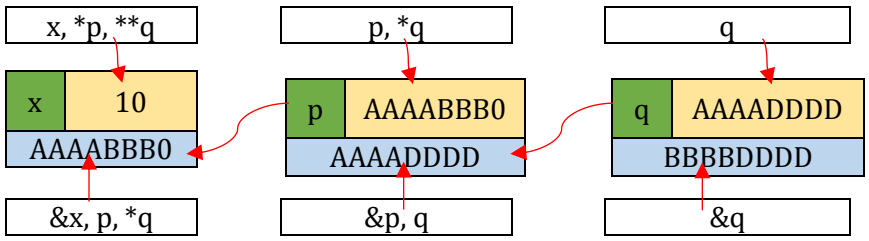
int x = 10;	x Value: 10 x Memory Address: AAAABBB0
cout<<x;	Output: 10
cout<<&x;	Output: AAAABBB0

int *p;	//pointer holds memory address of a variable.
	//int pointer holds memory address of an integer variable.
	
	p Value:
	p Memory Address: AAAADDDD

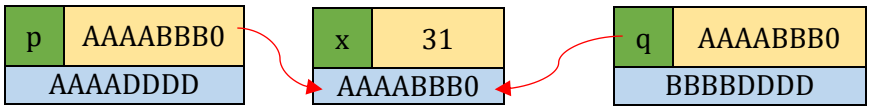
p = &x;	p Value: AAAABBB0 p Memory Address: AAAADDDD
cout<<p;	Output: AAAABBB0
cout<<&p;	Output: AAAADDDD
cout<<*p;	Output: 10

int **q;	//Pointer of a pointer.
	//q will hold the memory location of another pointer.
	
	q Value:
	q Memory Address: BBBBDDDD

q = &p;	q Value: AAAADDDD q Memory Address: BBBBDDDD
cout<<q;	Output: AAAADDDD
cout<<&q;	Output: BBBBDDDD
cout<<*q;	Output: AAAABBB0
cout<<**q;	Output: 10



Multiple Pointer to Same variable:




```
int x = 10;
int *p = &x;
int *q = &x;
```

x = 20;	
cout<<x<<endl;	20
cout<<*p	20
cout<<*q	20
*p = 30	
cout<<*p	30
cout<<*q	30
(*q)++	
cout<<*p	31

Array using Pointer

```
int arr[10];
cout<<*arr<<endl;

int *a;
a = &arr[0];
cout<<*a<<endl;
```

12	25	9	2	22	23	140	180	30	194
0	1	2	3	4	5	6	7	8	9
01-04	05-08	09-0C	0D-10	11-14	15-18	19-1C	1D-20	21-24	25-28

cout<<arr[0]<<endl;	12
cout<<*arr<<endl;	12
cout<<*(arr+1)<<endl;	25
cout<<*(arr+5)<<endl;	23
cout<<*a<<endl;	12
cout<<*(a+1)<<endl;	25
cout<<*(a+5)<<endl;	23

Passing Pointer inside function

```
swap (int *p, int *q)
{

}

int main( )
{
        int x = 10;
        int y = 20;

        //swap(x,y);     //pass by value
        swap(&x, &y);  //pass by reference
}
```

Returning Pointer from function

```
int *add(int x, int y)
{
        int r = x+y;
        return &r;
}

int main( )
{
        int x = 10;
        int y = 20;
        int *z = add(x,y);
}
```