POINTER (IT IS A HEART OF C LANGUAGE)

Pointer is a derived datatype which is used to store the address of memory location for
Creating the dynamic memory allocation.

What is the meaning of dynamic memory allocation
Dynamic memory allocation means to decide how much memory required at run time is called as dynamic memory allocation.
What is the benefit of dynamic memory allocation.
If suppose we use array then we cannot give the more element than array size.
And if we give the less element decided by array size then remaining memory elements will be lost this is the drawback of array or compile time memory allocation or static memory allocation so we need to use the pointer.

What is the identification of pointer.
*----- is the identification of pointer (value at address operator or indirection operator)
If we give the * with any type variable we can say this is the variable of pointer type.
e.g. int a;//this statement says is a variable of type in but if we place the *before the variable a.
e.g. int *a;//this statement says a is a pointer variable of type integer means a can store the integer memory block in it or integer type memory address in it.

How to store address of any another variable in pointer variable.

If we want to store the any another variable or memory address in pointer variable for
That use the &operator .& is the address of memoryaddress.this operator is used to access the address memory location or variable.

Hoe to store the address of any another variable in pointer variable.

Syntax:- pointervariable=&normal variable;
e.g. a=&b;
as per the reference of the example a is a pointer variable and be the normal or general
variable means b address pointer variable a.

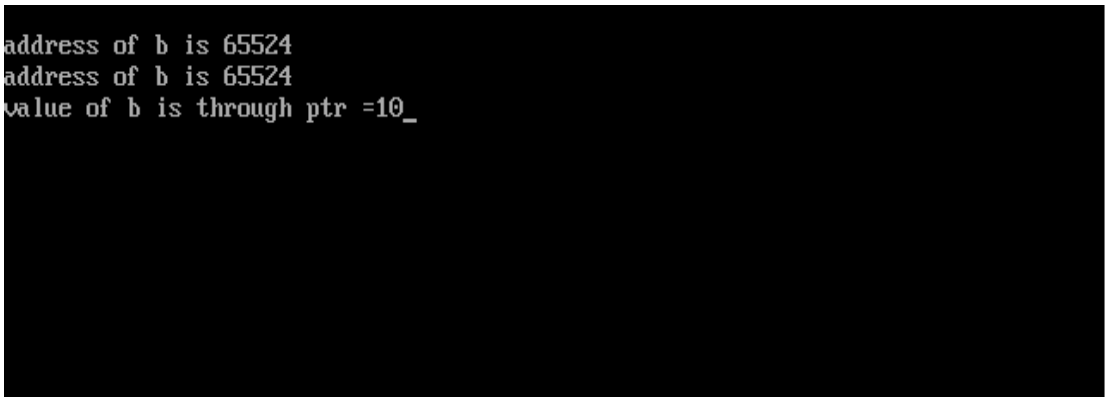
what happen if b address stored in a.

if we apply the change on variable a indirectly effect on b (note:this will discuss in function call by value call by reference);

//following example shows how to store the address of normal variable in pointer variable and access its value.

```
#include<stdio.h>
#include<conio.h>
void main(){
int *ptr,b=10;// ptr is a pointer and b is a normal variable.
ptr=&b;//store the address of b in pointer variable a
printf("address of b is %u\n",ptr); //ptr displays the address of b because mention in above .
printf("address of b is %u\n",&b);//print b with address operator so print the address of b
printf("value of b is through ptr =%d",*ptr);//if we give the start with any pointer variable then .
//if will give the value of variable whose address store in it so *is a value at address operator .
getch();
}
```

Output:-



Note:- address value change on every pc because address allocation decide the use of ram on that pc.

POINTER OF POINTER.

What is the pointer of pointer .

If we want to store the address of one pointer variable in to the another pointer variable for

That we need to use the pointer of pointer in c.

How to declare the pointer of pointer.

Syntax:- datatype **variablename;

e.g. int **a;// this statement say can store the two address field in it means a can point to two memory location at a time.

How to store the address in pointer of pointer variable.

Int **ptr.*a,b;

B=10;//b contain the value 10.

A=&b;//a contain the address of b

Ptr=&a;//ptr contain the address pointer variable a as well as variable b.because ptr has ability

To store the two address field because ptr having two star(indirection pointer).

//Programme demonstrate the use of pointer of pointer.

```
#include<stdio.h>

#include<conio.h>

void main(){

int **ptr,*a,b=10;

a=&b;

ptr=&a;

printf("address of a is %u\n",ptr);//print the address of a

printf("address of b is through ptr =%u",*ptr);//print the value of a means address of b

printf("value of b is through ptr=%d",**ptr);//access the value at address stored in a

getch();

}
```

Output:

How to create the dynamic memory allocation using the pointer.

If we want to create the dynamic allocation using pointer in c for that c provide the one file

To us called as alloc.h file.in this file contain the some functions those are responsible

For creating the dynamic memory allocation.

Some of the function given below.

1]Malloc:- malloc is a dynamic memory allocation function .malloc allocate block of size byte from memory heap it allow a programmer to allocate memory explicitly as it is needed and in the exact amount of needed.

The heap is used for dynamic allocation of variable size block of memory .many data structure,such as trees and lists,naturally employ heap memory allocation.

How to use the malloc function in programme.

Syntax :-pointervariable=(datatype*)malloc(sizeof(size));

e.g. ptr=(int *)malloc(sizeof(10);

2]calloc

3]realloc

4]free

(here we discuss only malloc function are discussed and pointer are very detailed discuss

In campus oriented c part of giri sir notes.in campus oriented c sir discuss howto study

The c for any company campus or mca cet).

//Example on dynamic memory allocation using the pointer.

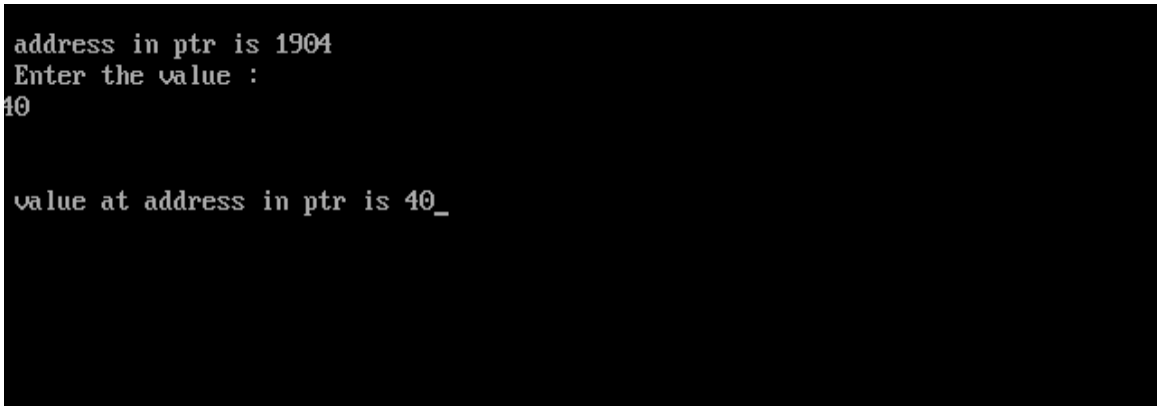
Demo of malloc function.

```
#include<stdio.h>
#include<conio.h>
void main(){
int *ptr,i;
clrscr();
ptr=(int *)malloc(sizeof(int));
printf("\n address in ptr is %u",ptr);
printf("\n Enter the value :");
scanf("%d",&ptr);
printf("\n\n value at address in ptr is %d",*ptr);
getch();
}
```

```
getch();

}
```

Output:



//Programme demonstrate the dynamic array.

```
#include<stdio.h>

#include<conio.h>

void main(){

int *ptr,i,size;

clrscr();

printf("\n enter the size");

scanf("%d",&size);

ptr=(int *)malloc (size*sizeof(int));

printf("\n address in ptr is %u",ptr);

for(i=0;i<size;i++)
```

```
{
scanf("%d",ptr);
ptr++;
}
printf("\n address in ptr is %u",ptr);
ptr=ptr-size;
getch();
Printf("\n address in ptr is %u",ptr);
Printf("\n\n");
For(i=0;i<size;i++)
{
Printf("\n %d",*ptr);
Ptr++;
}
getch();
Return 0;
}
```

Output:


enter the size
5
address in ptr is 1924