

# Session 10

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# Types of Pointers in C

- 4. Function Pointers

*data type*  
*ptr name*  
*arguments.*

```
int (*ptr)(int, char);
```

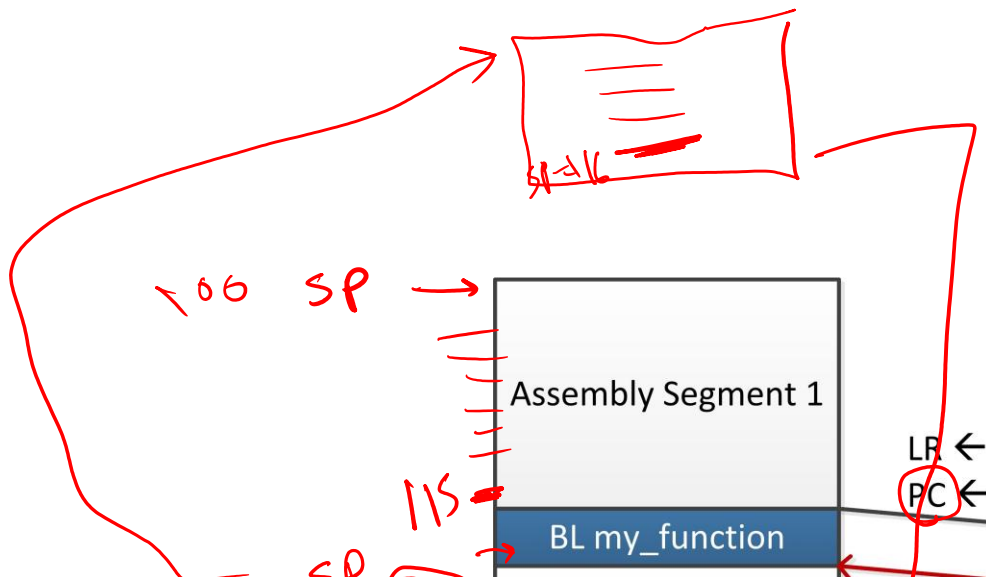
start up code → 100 →

SP = 100

main  
(void)

(callback)(int) →  
30h  
call back = &add ;  
30h

execute (callback, 9) ;  
30h

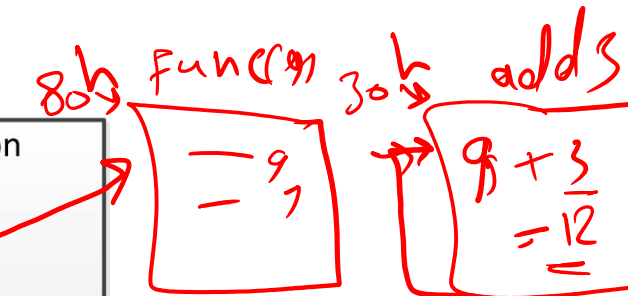
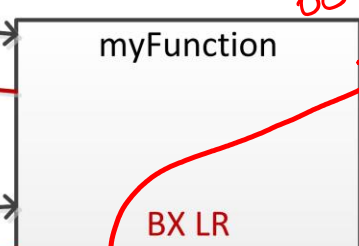


LR ← Address 1<sup>st</sup> instruction in Segment #2  
PC ← Address of myFunction

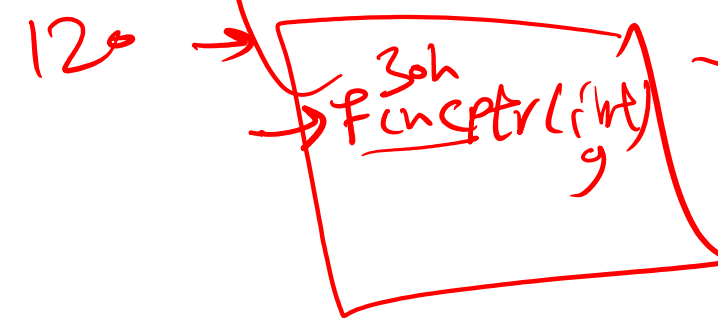
PC ← LR

LR ← Address 1<sup>st</sup> instruction in Segment #3  
PC ← Address of myFunction

PC ← LR



execute (function, 9)  
30h



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# Types of Pointers in C

- 5. Double Pointers

```
datatype ** pointer_name;
```

```
*pointer_name; // get the address stored in the inner level pointer  
**pointer_name; // get the value pointed by inner level pointer
```

# Types of Pointers in C

- 5. Double Pointers

$*ptr$   $ptr = 2022$   
 $**ptr$   $ptr = 10$

How Pointer Works in C++

Int var = 10;

$\bullet$   $\text{int}^* \text{ptr} = \&\text{var};$   
 $\text{*ptr} = 20;$

$\bullet$   $\text{int}^{**} \text{ptr} = \&\text{ptr};$   
 $\text{**ptr} = 30;$

$ptr \neq ptr$   
2022

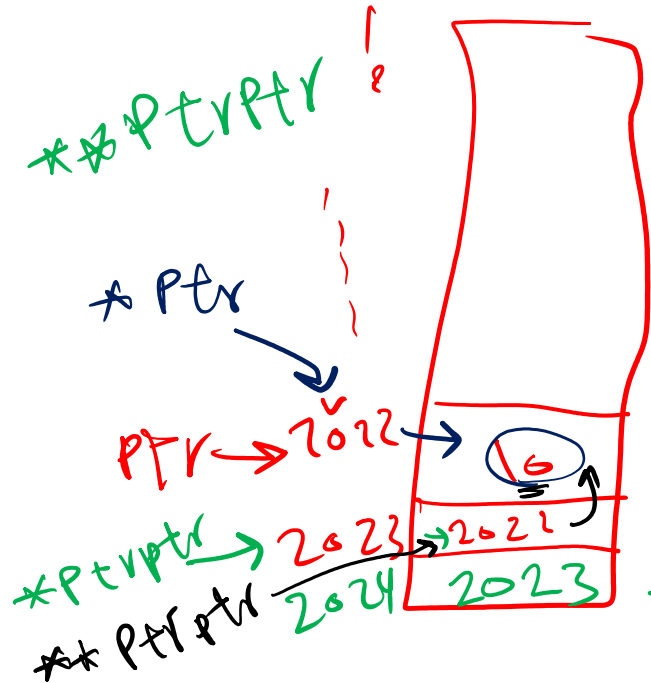
Var

~~10~~

#2022

~~20~~

30



Var

$ptr$

$ptr$

# Types of Pointers in C

- 6. NULL Pointer

```
data_type *pointer_name = NULL;
```

or

```
pointer_name = NULL
```

# Types of Pointers in C

- 7. Void Pointer

```
void * pointer_name;
```

# Types of Pointers in C

- 8. Wild Pointers

```
int *ptr;  
char *str;
```



# Types of Pointers in C

- 9. Constant Pointers

```
data_type * const pointer_name;
```

# Task

# Links