

# ارسال پارامترها

مدرس: سید کمال الدین غیاثی شیرازی

تهیه شده توسط رضا غلامعلی تبار و سید احمد رضا پیشنهادی

# انواع ارسال پارامترها:

- Call By value
- Call By Reference

## Example 1: (call by value)



```
int i;  
i = 10;  
f(i);  
cout<< i;
```

```
void f (int j)  
{  
    j = 7;  
}
```

i

?

## Example 1:

(call by value)



```
int i;  
i = 10;  
f(i);  
cout<< i;
```

```
void f (int j)  
{  
    j = 7;  
}
```

i	10
---	----

## Example 1: (call by value)



```
int i;  
i = 10;  
f(i);  
cout<< i;
```

i	10
---	----



```
void f (int j)  
{  
    j = 7;  
}
```

j	10
---	----

## Example 1: (call by value)



```
int i;  
i = 10;  
f(i);  
cout<< i;
```

i	10
---	----



```
void f (int j)  
{  
    j = 7;  
}
```

j	7
---	---

## Example 1:

(call by value)



```
int i;  
i = 10;  
f(i);  
cout<< i;
```

```
void f (int j)  
{  
    j = 7;  
}
```

i	10
---	----

## Example 2: (call by value)



```
int i;  
i = 10;  
int* q;  
q = &i;  
f(q);  
cout<< i <<q;
```

```
void f(int *p)  
{  
    *p = 7;  
    p = NULL;  
}
```





## Example 2: (call by value)



```
int i;  
i = 10;  
int* q;  
q = &i;  
f(q);  
cout<< i << q;
```

i	10
---	----

```
void f(int *p)  
{  
    *p = 7;  
    p = NULL;  
}
```

## Example 2: (call by value)



```
int i;  
i = 10;  
int* q;  
q = &i;  
f(q);  
cout<< i << q;
```

```
void f(int *p)  
{  
    *p = 7;  
    p = NULL;  
}
```

i	10
---	----

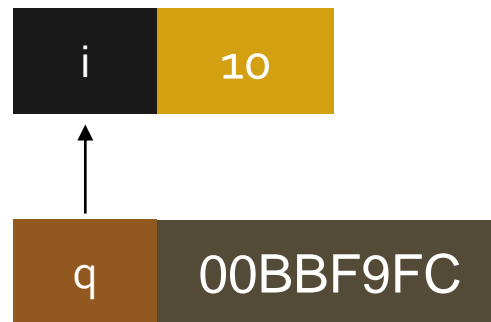
q	?
---	---

## Example 2: (call by value)



```
int i;  
i = 10;  
int* q;  
q = &i;  
f(q);  
cout<< i << q;
```

```
void f(int *p)  
{  
    *p = 7;  
    p = NULL;  
}
```



## Example 2: (call by value)

```
int i;  
i = 10;  
int* q;  
q = &i;  
f(q);  
cout<< i << q;
```

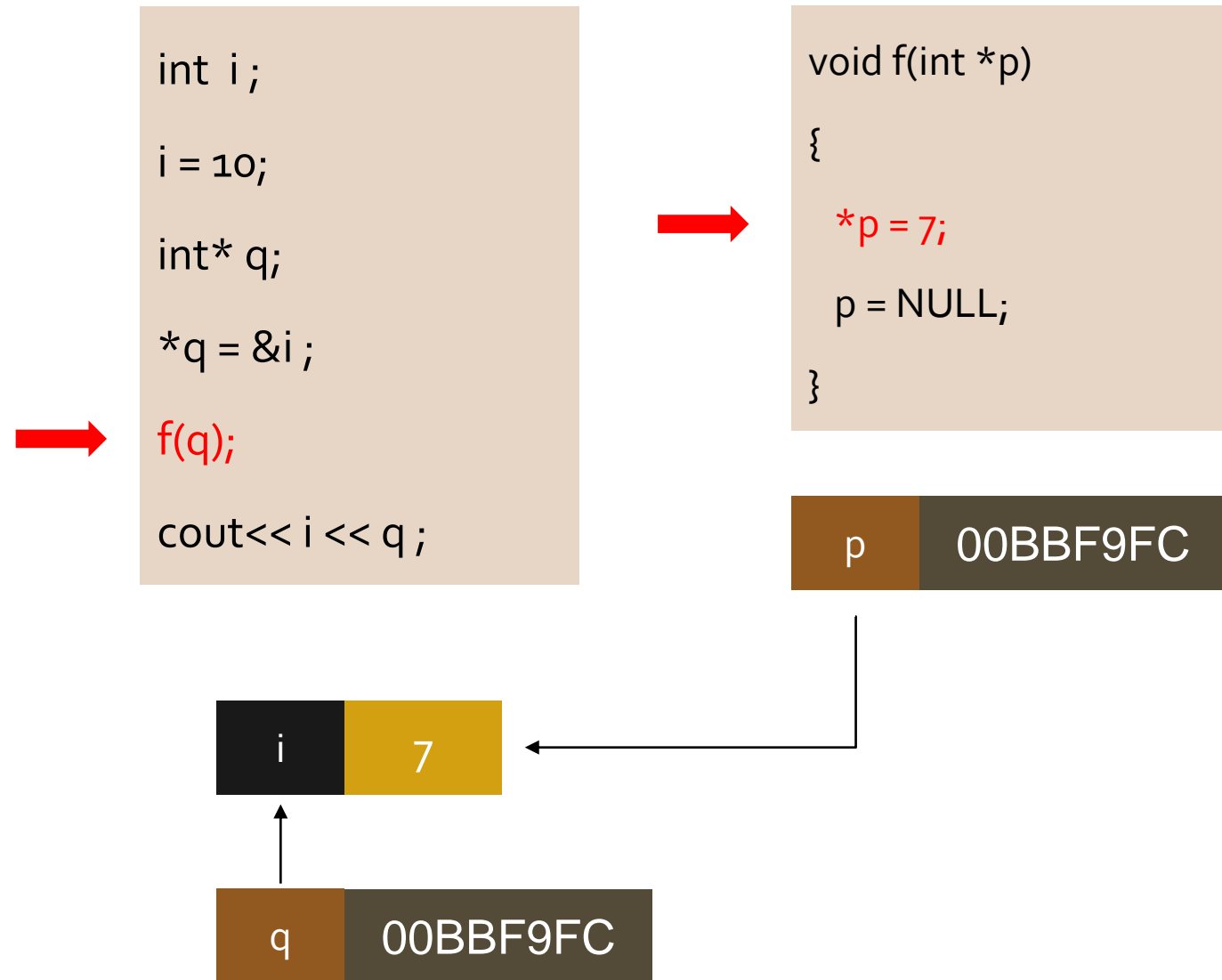
```
void f(int *p)  
{  
    *p = 7;  
    p = NULL;  
}
```

i	10
---	----

q	00BBF9FC
---	----------

p	00BBF9FC
---	----------

## Example 2: (call by value)



## Example 2: (call by value)

```
int i;  
i = 10;  
int* q;  
*q = &i;  
f(q);  
cout<< i << q;
```

```
void f(int *p)  
{  
    *p = 7;  
    p = NULL;  
}
```

p

NULL

i	7
---	---



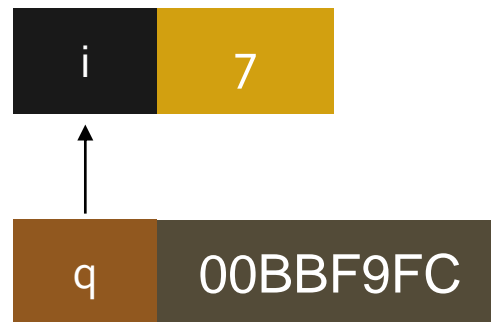
q

00BBF9FC

## Example 2: (call by value)

```
int i;  
i = 10;  
int* q;  
*q = &i;  
f(q);  
cout<< i << q;
```

```
void f(int *p)  
{  
    *p = 7;  
    p = NULL;  
}
```



## Example 3:

(call by value)



```
int i=10 ;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

i	10
---	----

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```



## Example 3:

(call by value)



```
int i=10 ;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

i	10
---	----

q	?
---	---

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```

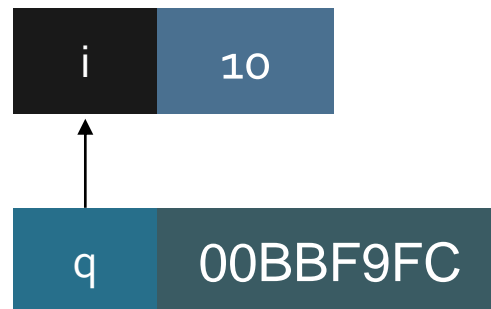
## Example 3:

(call by value)



```
int i=10 ;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```



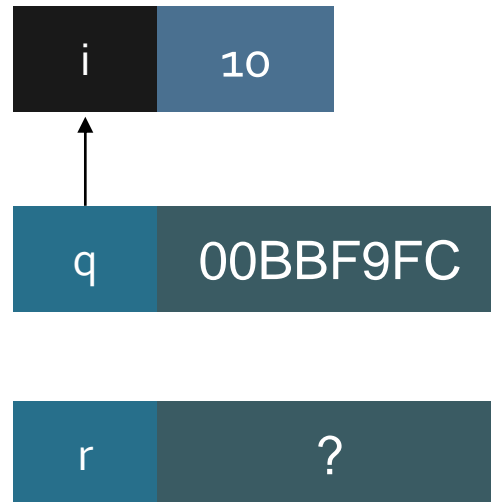
## Example 3:

(call by value)



```
int i=10 ;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```



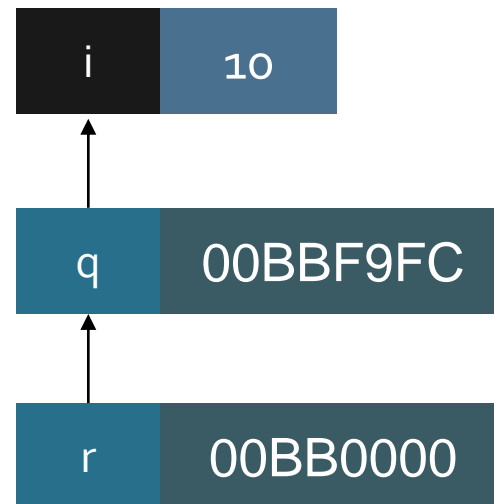
## Example 3:

(call by value)



```
int i=10 ;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```



## Example 3: (call by value)



```
int i=10;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```



```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```

i	10
---	----

q	00BBF9FC
---	----------

r	00BB0000
---	----------

p	00BB0000
---	----------



## Example 3: (call by value)

```
int i=10;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```

i	7
---	---

q	00BBF9FC
---	----------

r	00BB0000
---	----------

p	00BB0000
---	----------



## Example 3:

(call by value)

```
int i=10;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```

i	7
---	---

q	NULL
---	------

r	00BB0000
---	----------

p	00BB0000
---	----------



## Example 3:

(call by value)

```
int i=10;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```

i	7
---	---

q	NULL
---	------

r	00BB0000
---	----------

p	NULL
---	------

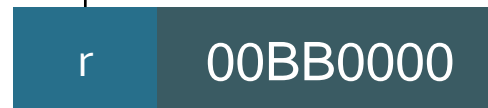


## Example 3:

(call by value)

```
int i=10 ;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```



## Example 1: (call by reference)



```
int i;  
  
i = 10;  
  
f(i);  
  
cout<< i;
```

```
void f (int &j)  
{  
    j = 7;  
}
```



## Example 1: (call by reference)



```
int i;  
i = 10;  
f(i);  
cout<< i;
```

```
void f (int &j)  
{  
    j = 7;  
}
```

i	10
---	----

## Example 1: (call by reference)



```
int i;  
i = 10;  
f(i);  
cout<< i;
```



```
void f (int &j)  
{  
    j = 7;  
}
```



## Example 1: (call by reference)



```
int i;  
i = 10;  
f(i);  
cout<< i;
```



```
void f (int &j)  
{  
    j = 7;  
}
```



## Example 1: (call by reference)



```
int i;  
  
i = 10;  
  
f(i);  
  
cout<< i;
```

```
void f (int &j)  
{  
    j = 7;  
}
```

i	7
---	---

## Example 2: (call by value)



```
int i;  
i = 10;  
int* q;  
q = &i;  
f(q);  
cout<< i << q;
```

```
void f(int *&p)  
{  
    *p = 7;  
    p = NULL;  
}
```



## Example 2:

(call by value)



```
int i;  
i = 10;  
int* q;  
q = &i;  
f(q);  
cout<< i << q;
```

i	10
---	----

```
void f(int *&p)  
{  
    *p = 7;  
    p = NULL;  
}
```



## Example 2: (call by value)



```
int i;  
i = 10;  
int* q;  
q = &i;  
f(q);  
cout<< i << q;
```

```
void f(int *&p)  
{  
    *p = 7;  
    p = NULL;  
}
```

i	10
---	----

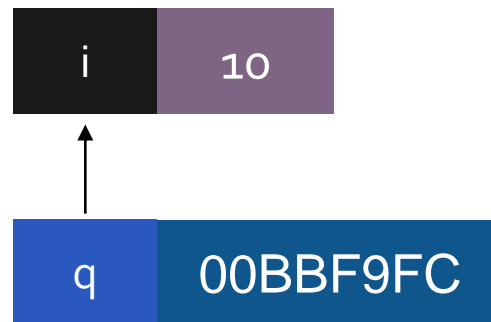
q	?
---	---

## Example 2: (call by value)



```
int i;  
i = 10;  
int* q;  
q = &i;  
f(q);  
cout<< i << q;
```

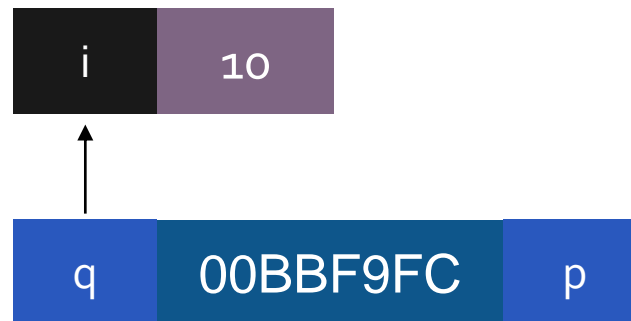
```
void f(int *&p)  
{  
    *p = 7;  
    p = NULL;  
}
```



## Example 2: (call by value)

```
int i;  
i = 10;  
int* q;  
q = &i;  
f(q);  
cout<< i << q;
```

```
void f(int *&p)  
{  
    *p = 7;  
    p = NULL;  
}
```



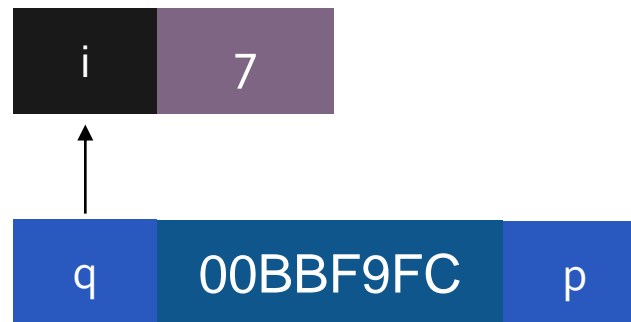
## Example 2: (call by value)



```
int i;  
i = 10;  
int* q;  
q = &i;  
f(q);  
cout<< i << q;
```



```
void f(int *&p)  
{  
    *p = 7;  
    p = NULL;  
}
```



## Example 2: (call by value)

```
int i;  
i = 10;  
int* q;  
q = &i;  
f(q);  
cout<< i << q;
```

```
void f(int *&p)  
{  
    *p = 7;  
    p = NULL;  
}
```

i	7
---	---

q	NULL	p
---	------	---

## Example 2: (call by value)

```
int i;  
i = 10;  
int* q;  
q = &i;  
f(q);  
cout<< i << q;
```

```
void f(int *&p)  
{  
    *p = 7;  
    p = NULL;  
}
```

i	7
---	---

q	NULL
---	------

## Example 3:

(call by value)



```
int i=10 ;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

i	10
---	----

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```

## Example 3:

(call by value)



```
int i=10 ;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```

i	10
---	----

q	?
---	---



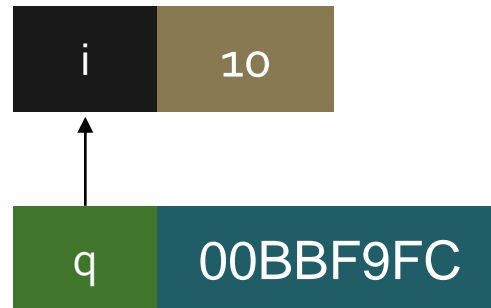
## Example 3:

(call by value)



```
int i=10 ;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```



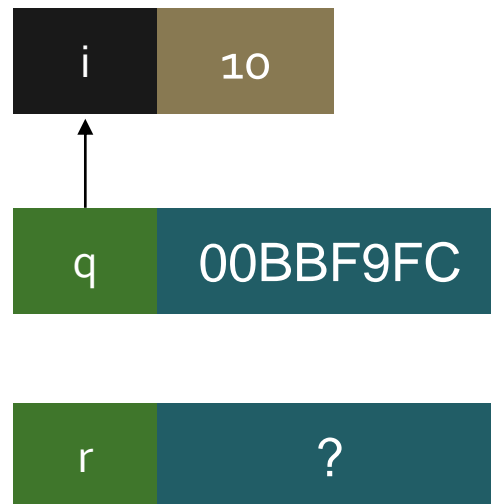
## Example 3:

(call by value)



```
int i=10;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```



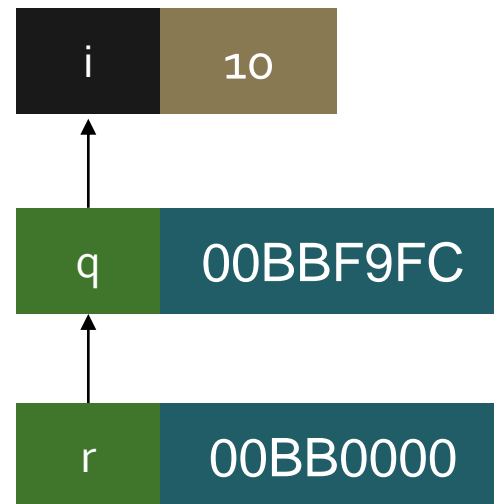
## Example 3:

(call by value)



```
int i=10 ;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

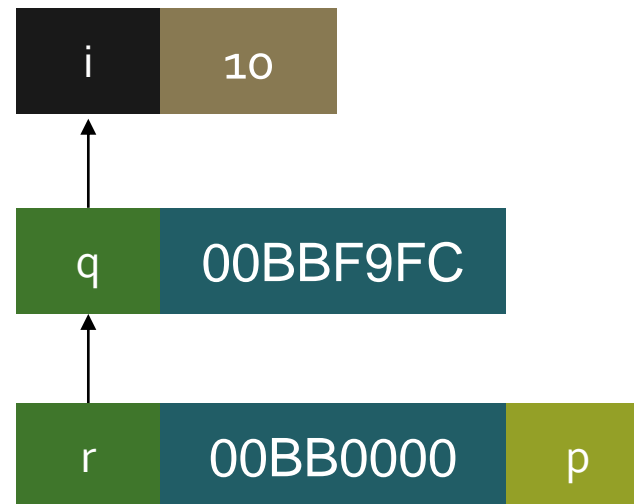
```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```



### Example 3: (call by value)

```
int i=10;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

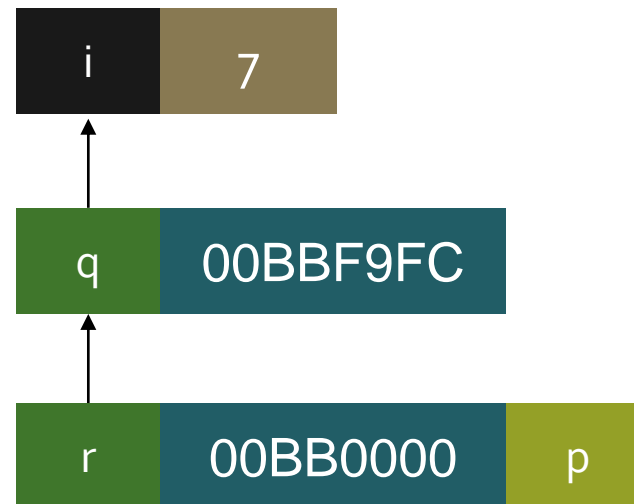
```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```



### Example 3: (call by value)

```
int i=10;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```



### Example 3: (call by value)

```
int i=10;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```



## Example 3:

(call by value)

```
int i=10;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```

i	7
---	---

q	NULL
---	------

r	NULL	p
---	------	---

## Example 3:

(call by value)

```
int i=10 ;  
int* q;  
q = &i;  
int **r;  
r = &p;  
f(r);  
cout<< i << q << r;
```

```
void f(int **p)  
{  
    **p = 7;  
    *p = NULL;  
    p = NULL;  
}
```

i	7
---	---

q	NULL
---	------

r	NULL
---	------