

# Fun with \*Pointers



# Binky the pointer!

<http://www.youtube.com/watch?v=f-pJInpkLp0>

# Warm-up

```
int *p;
```

```
int a;
```

```
p = &a;
```

```
*p = 10
```

```
cout << a; // Whats the output?
```

```
int *x;
```

```
int *y;
```

```
x = new int;
```

```
y = x;
```

```
*y = 10;
```

```
cout << *x; // Whats the output?
```

```
int *x;
```

```
int *y;
```

```
y = x;
```

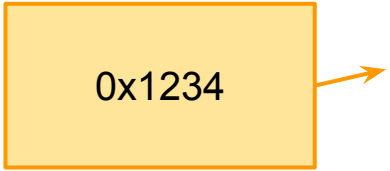
```
y = new int;
```

```
*y = 10;
```

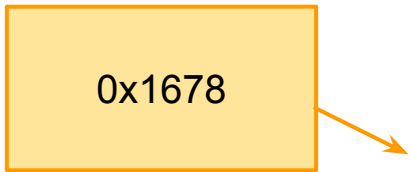
```
cout << *x; // What happens?
```

```
int *x, *y;
```

x

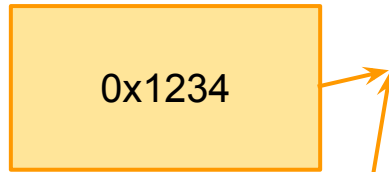


y

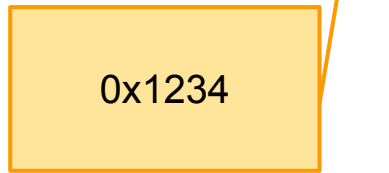


```
y = x;
```

x

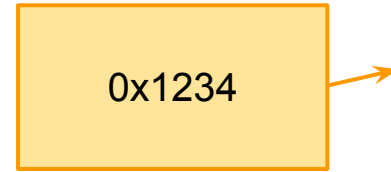


y

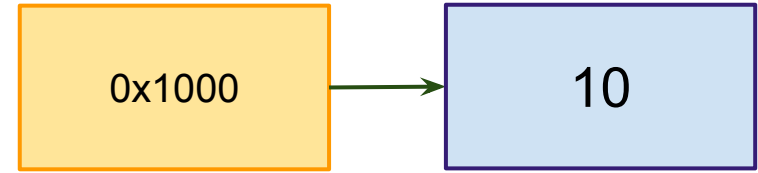


```
y = new int;  
*y = 10
```

x



y



# Passing arguments to Functions

- By value
- By reference
- By pointer

# Pass argument by value

```
void fn ( int copy) {  
    copy = 10;  
}
```

```
int main() {  
    int x = 200;  
    fn(x);  
    cout << x; // Whats the output?  
}
```



```
int x=200;  
fn (x);
```

x



```
fn (int copy)
```

x



copy

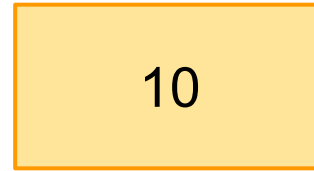


```
copy = 10
```

x



copy

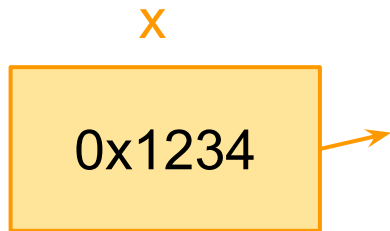


# Pass pointer by value

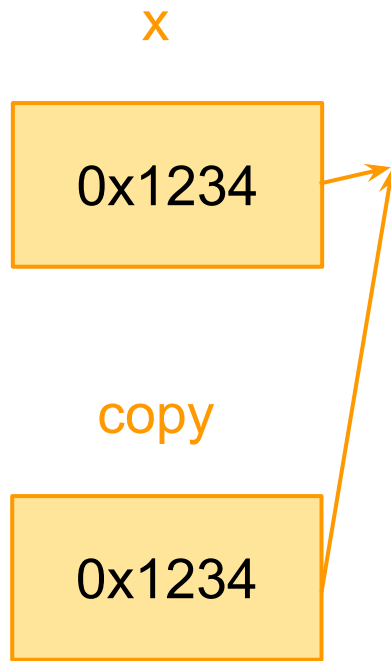
```
void fn ( int * copy) {  
    copy = new int;  
    *copy = 10;  
}
```

```
int main() {  
    int *x;  
    fn(x);  
    cout << *x; // Whats the output?  
}
```

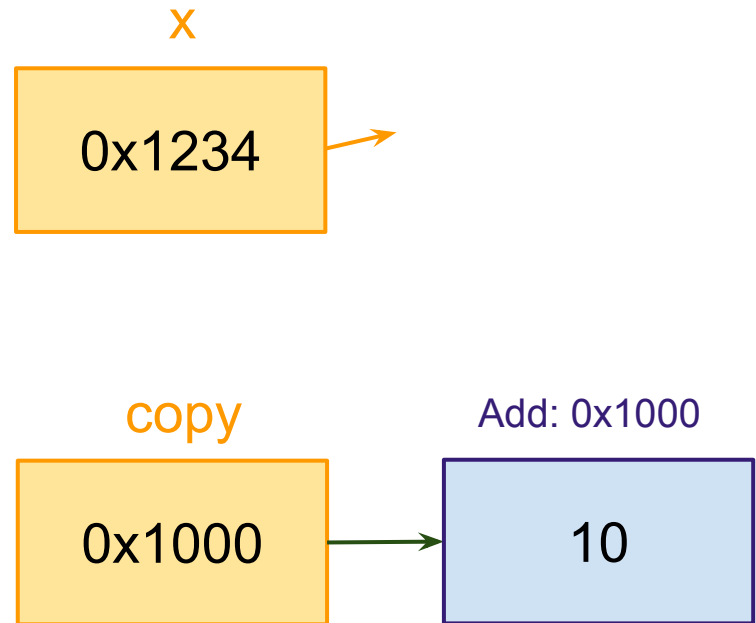
```
int *x;  
fn (x);
```



```
fn (int * copy)
```



```
copy = new int;  
*copy = 10
```

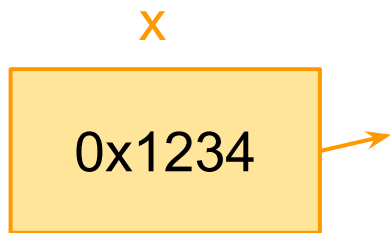


# By reference

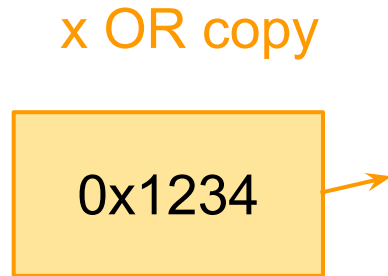
```
void fn ( int * &copy) {  
    copy = new int;  
    *copy = 10;  
}
```

```
int main() {  
    int *x;  
    fn(x);  
    cout << *x; // Whats the output?  
}
```

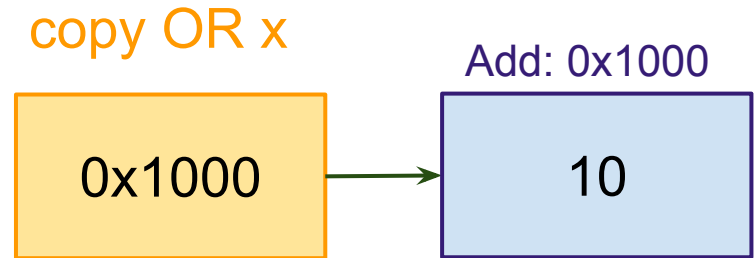
```
int *x;  
fn (x);
```



```
fn (int * &copy)
```



```
copy = new int;  
*copy = 10
```

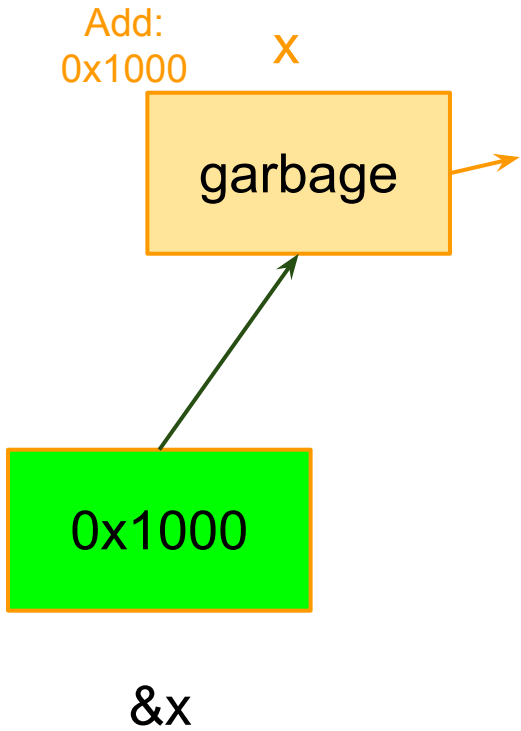


# By pointer

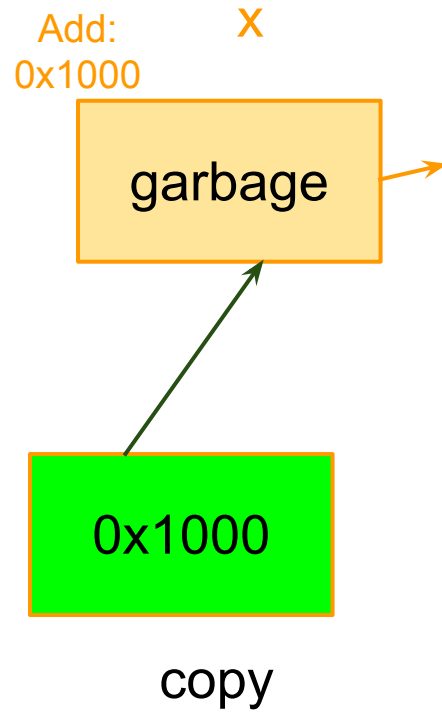
```
void fn ( int * *copy) {  
    *copy = new int;  
    **copy = 10;  
}
```

```
int main() {  
    int *x;  
    fn(&x);  
    cout << *x; // Whats the output?  
}
```

```
int *x;  
fn (&x);
```



```
fn (int **copy)
```



```
*copy = new int;  
**copy = 10
```

