

Example:

From Single-thread to Multi-threaded

From Single-threaded to Multithreaded

- Many programs are written as a single threaded process.
- If we try to convert a single-threaded process to multi-threaded process, we have to be careful about the following:
 - the **global variables**
 - The used **library functions**

From Single-thread to Multi-threaded

```
int status; // a global variable
```

```
func1(...) {  
    ....  
    status = ...  
    do_something_based_on(status);  
}
```

```
func2(...) {  
    ...  
    status = ...  
    do_something_based_on(status);  
}
```

```
main() {  
    ....  
    func1 (...);  
    func2 (...);  
}
```

This is a single
threaded program

From Single-thread to Multi-threaded

```
int status;
```

```
func1(...) {  
    ....  
    status = ...  
    do_something_based_on(status);  
}
```

```
func2(...) {  
    ...  
    status = ...  
    do_something_based_on(status);  
}
```

```
main() {  
    ....  
    thread_create(..., func1, ...);  
    thread_create(..., func2, ...);  
}
```

- We can have problem here.
- Just after **func1** of **thread 1** updated status, a thread switch may occur, and **2nd thread** can run and update status.
- Then thread 1 will run again but will work with a different status value.

Wrong result!