

To compile and run C files (including those using threads) via the Command Prompt (cmd) in Windows, you'll need a C compiler like **GCC** (from **MinGW** or **MSYS2**) or **Microsoft's MSVC** (via **Visual Studio**).

Here are the commands for **GCC (MinGW)** since it's commonly used for multi-threaded C programs:

## 1. Install GCC (MinGW)

If you don't have GCC installed:

- Download **MinGW** from <https://sourceforge.net/projects/mingw/>
- Install it and add `gcc` to your **PATH** (e.g., `C:\MinGW\bin` ).

Alternatively, use **MSYS2** (recommended for better package management):

- Download from <https://www.msys2.org/>
- Run in MSYS2 terminal:

```
pacman -S mingw-w64-x86_64-gcc
```

- Add `C:\msys64\mingw64\bin` to **PATH**.

## 2. Compile a C File (Without Threads)

```
gcc myfile.c -o myprogram
```

- `myfile.c` → Your C source file.
- `-o myprogram` → Output executable name.

## 3. Compile a C File With Threads (POSIX Threads - pthread )

If your program uses `pthread.h` (common for threading in C), link the `pthread` library:

```
gcc myfile.c -o myprogram -pthread
```

- `-pthread` ensures proper thread linking.

## 4. Run the Compiled Program

myprogram

or

.\myprogram.exe

## Example: Full Process for a Threaded Program

Suppose you have `thread_example.c` :

```
#include <stdio.h>
#include <pthread.h>

void* thread_func(void* arg) {
    printf("Thread running!\n");
    return NULL;
}

int main() {
    pthread_t thread;
    pthread_create(&thread, NULL, thread_func, NULL);
    pthread_join(thread, NULL);
    printf("Main thread done.\n");
    return 0;
}
```

### Compile & Run:

```
gcc thread_example.c -o thread_example -pthread
.\thread_example.exe
```

## Alternative: Using Microsoft's MSVC (Visual Studio)

If you have **Visual Studio** installed, you can use **MSVC**:

1. Open **Developer Command Prompt for VS** (search in Start menu).
2. Compile:

```
cl myfile.c
```

3. Run:

```
myfile.exe
```

- For threads, MSVC uses `<windows.h>` and `CreateThread()` instead of `pthread.h`.

## Summary

Task	Command
Compile normally	<code>gcc file.c -o output</code>
Compile with threads	<code>gcc file.c -o output -pthread</code>
Run	<code>.\output.exe</code>