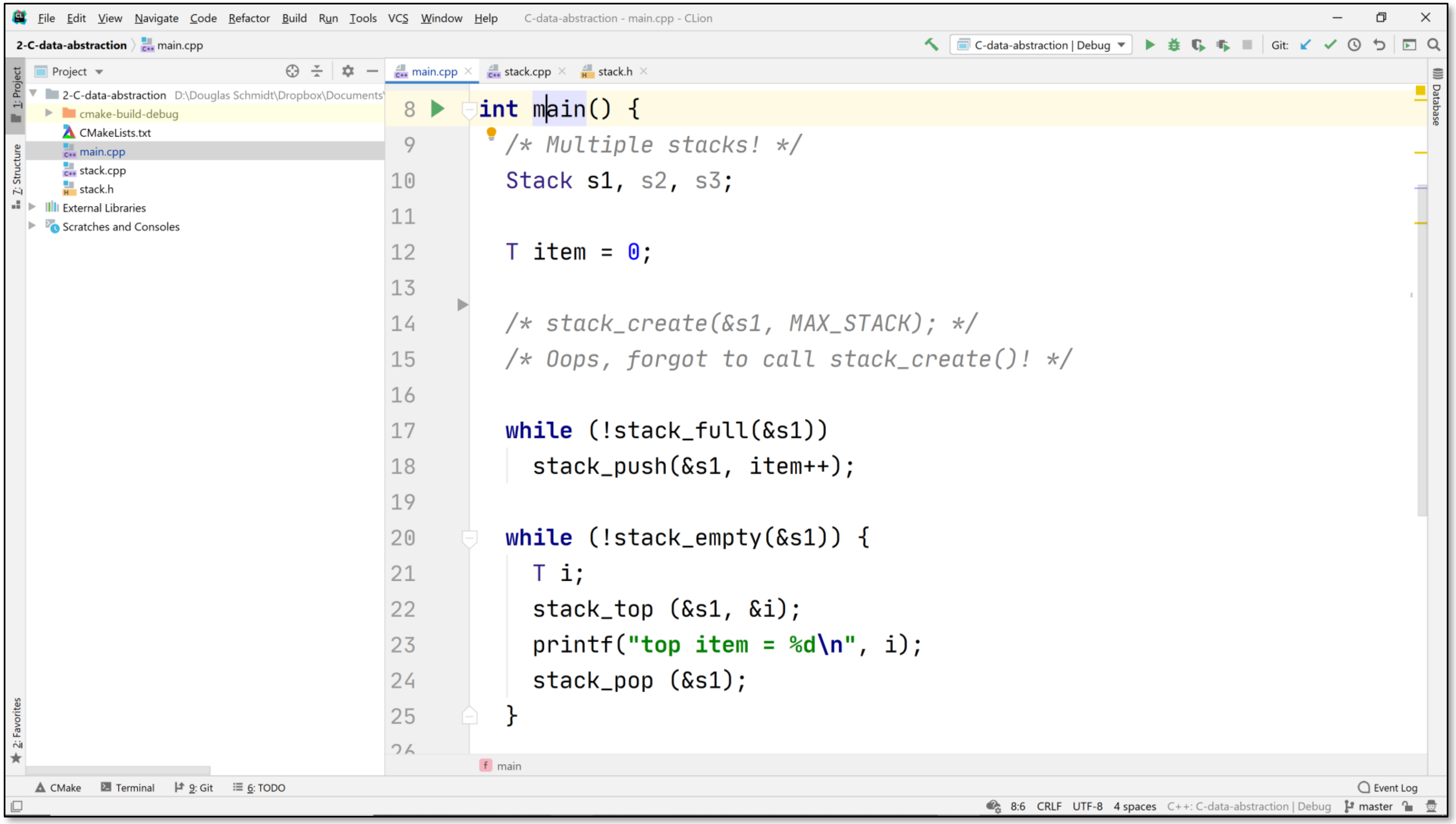
Data Abstraction Implementation in C

- Define the interface & implementation to a stack ADT in C


File Edit View Navigate Code Refactor Build Run Tools VCS Window Help C-data-abstraction - main.cpp - CLion
2-C-data-abstraction main.cpp
C-data-abstraction | Debug
Git:
Project
2-C-data-abstraction D:\Douglas Schmidt\Dropbox\Documents\
cmake-build-debug
CMakeLists.txt
main.cpp
stack.cpp
stack.h
External Libraries
Scratches and Consoles
main.cpp stack.cpp stack.h
main
CMake Terminal 9: Git 6: TODO Event Log
8:6 CRLF UTF-8 4 spaces C++: C-data-abstraction | Debug master

```
int main() {
  /* Multiple stacks! */
  Stack s1, s2, s3;

  T item = 0;

  /* stack_create(&s1, MAX_STACK); */
  /* Oops, forgot to call stack_create()! */

  while (!stack_full(&s1))
    stack_push(&s1, item++);

  while (!stack_empty(&s1)) {
    T i;
    stack_top (&s1, &i);
    printf("top item = %d\n", i);
    stack_pop (&s1);
  }
```

See [CPlusPlus/tree/master/overview/capabilities/2-C-data-abstraction]()

Pros of Data Abstraction Implementation in C

- Can support more than one stack

Cons of Data Abstraction Implementation in C

- No guaranteed initialization, termination, or assignment
- Still only one type of stack supported
- Too much overhead due to function calls
- No generalized error handling...
- The C compiler does not enforce information hiding, e.g.,

```
s1.top_ = s2.stack_[0];
/* Violate abstraction */
```

```
s2.size_ = s3.top_;
/* Violate abstraction */
```

End of C-style Stack Implementations