Exercise 3 - Sharing a Vector class between threads

In this exercise a class Vector is supplied.
A thread-function writer must be created, that will use Vector::setAndTest() to set and test the value of a shared vector object.
A main() function must be made, that creates a user-defined number of writer threads (between 1 and 100), with each their own unique ID. The thread-function writer must set and test the shared Vector to its ID, every second.
If writer detects an inconsistency, it will write an error message.

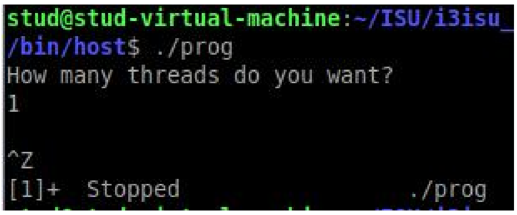
Implementation

The given class Vector is used as a header for the following function. Every thread will pass through the following function:

```
void* writer(void* argument)
{
  data *dataPtr = static_cast<data *>(argument);
  for (;;)
    {
      bool test = (*dataPtr).vectorPtr_->setAndTest((*dataPtr).id_);
      if (!test)
    {
      cout << "Failed test at thread: " << (*dataPtr).id_ << endl;
      sleep(1);
    }
    }
  return nullptr;
}
```

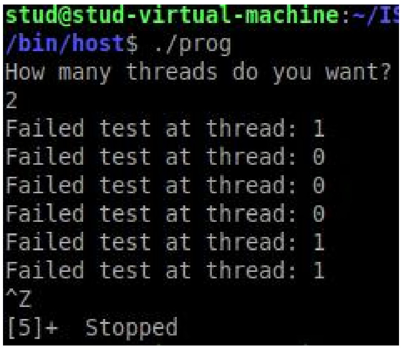
The function calls setAndTest() on the shared vector, while testing with its own ID.

Results



```
stud@stud-virtual-machine:~/ISU/i3isu_
/bin/host$ ./prog
How many threads do you want?
1

^Z
[1]+  Stopped                 ./prog
```



```
stud@stud-virtual-machine:~/IS
/bin/host$ ./prog
How many threads do you want?
2
Failed test at thread: 1
Failed test at thread: 0
Failed test at thread: 0
Failed test at thread: 0
Failed test at thread: 1
Failed test at thread: 1
^Z
[5]+  Stopped
```

Discussion

Run the program with different number of threads. Do your writers detect any problems? Are
there any problems in this program? Do you see them? Why do you (not) see them?

There is no failed tests when only running one thread, because there is nothing to be shared with another thread.
More threads wil result in more failed tests, at the same time. This is because the threads are given ID's while the function

setAndTest() is running.

Filer

shared_2.png	10,7 KB	2018-09-18	Brian Nymann
shared_1.png	10,4 KB	2018-09-18	Brian Nymann