SHA-256 challenge

Attached, you will find:
1. The RockYou file- a leaked file containing a list of common passwords.
2. The sha256 hash of the password we chose. The password is a random string of unknown length.
3. A basic shell of the code.

Your goal is to perform a dictionary attack- use brute force in order to find the password.
Note- without multi-threading, this will take too long!

The flag will be the password.
Good luck!