# Extra Credit: x86 reverse engineering
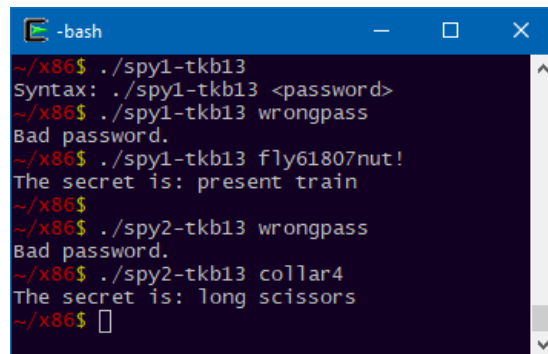
Due date: see course website
**You must do all work individually, and you must submit your work electronically via GradeScope.**

Here's a fun exercise for those of you that want to play with reverse engineering and the x86 assembly language. We have prepared two Linux executable files for each student in the course: `spy1-<NETID>` and `spy2-<NETID>`, where `<NETID>` is your Duke NetID. These can be found in `spy-<NETID>.tgz`.

Each program takes a single argument: a password. If the correct password is provided, the program reveals a short text secret. See the example run below, where the passwords are known.



Here we see that the password for `spy1` in this case is "fly61807nut!", which provides the secret "present train". The password for `spy2` here was "collar4" which provides secret "long scissors". Passwords for `spy2` are a simple English word and a single digit, passwords for `spy1` are more complex, and all secrets are an adjective/noun combination. The two programs work the same way, except the `spy2` program is a bit fancier in how it obscures its data internally, and `spy1` delays for a second before providing output.

**Here is the challenge: you will not be given either password.** Instead, you must use any means of analysis you wish (short of getting help from someone else) to obtain the passwords and/or secrets.

Rubric:

- 4 points for the <u>secret</u> in the <u>spy1</u> program associated with your NetID.
- 4 points for the <u>password</u> to the <u>spy1</u> program associated with your NetID.
- 4 points for the <u>secret</u> in the <u>spy2</u> program associated with your NetID.
- 4 points for the <u>password</u> to the <u>spy2</u> program associated with your NetID.
- 4 points if you get *all* of the above.

**To apply for this extra credit, submit a PDF with your answers and an explanation of how you obtained them, including screenshots.**

Points awarded will be added to your homework score, which itself is 55% of the grade. If you do the math, a perfect submission is worth about a 1.6% bump to your course grade.