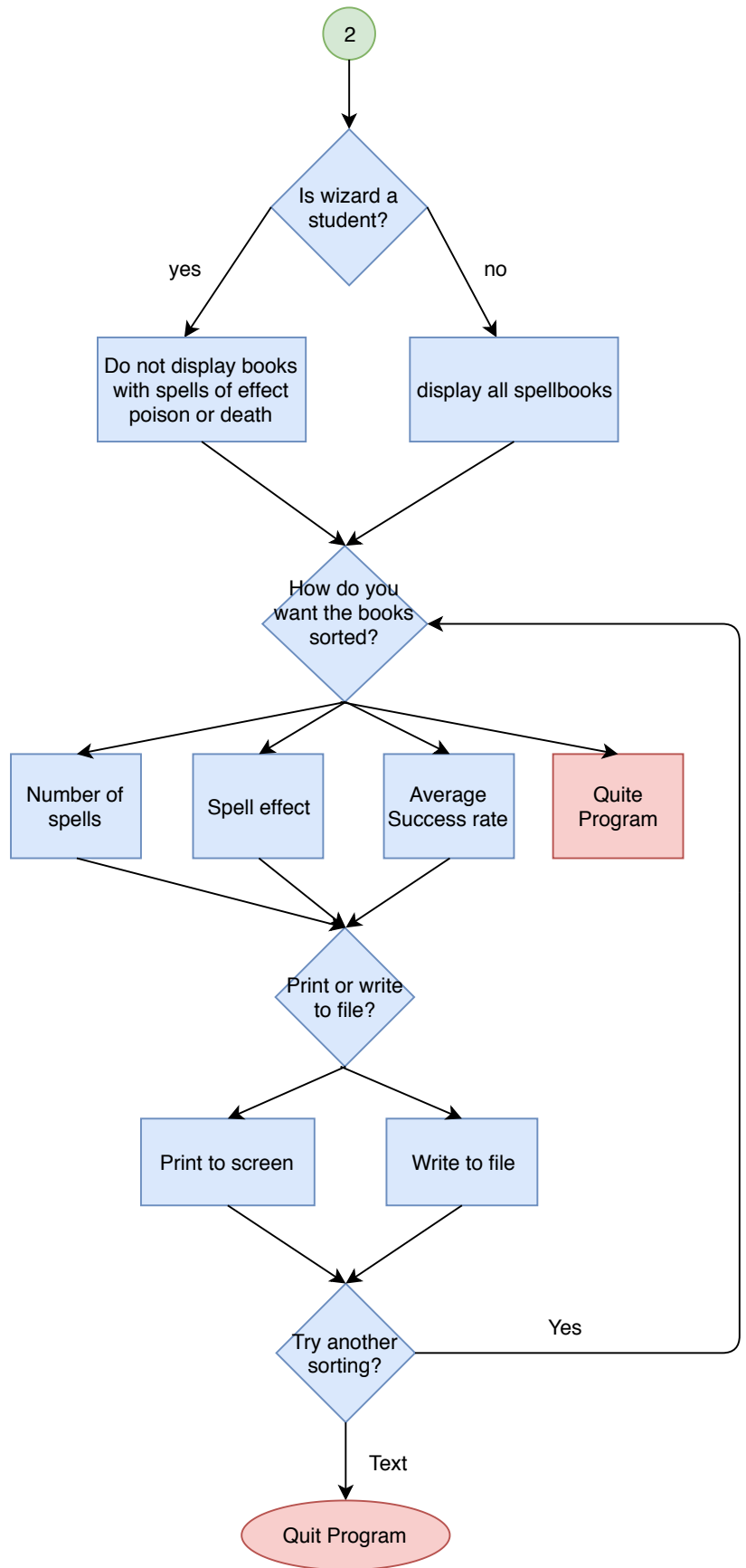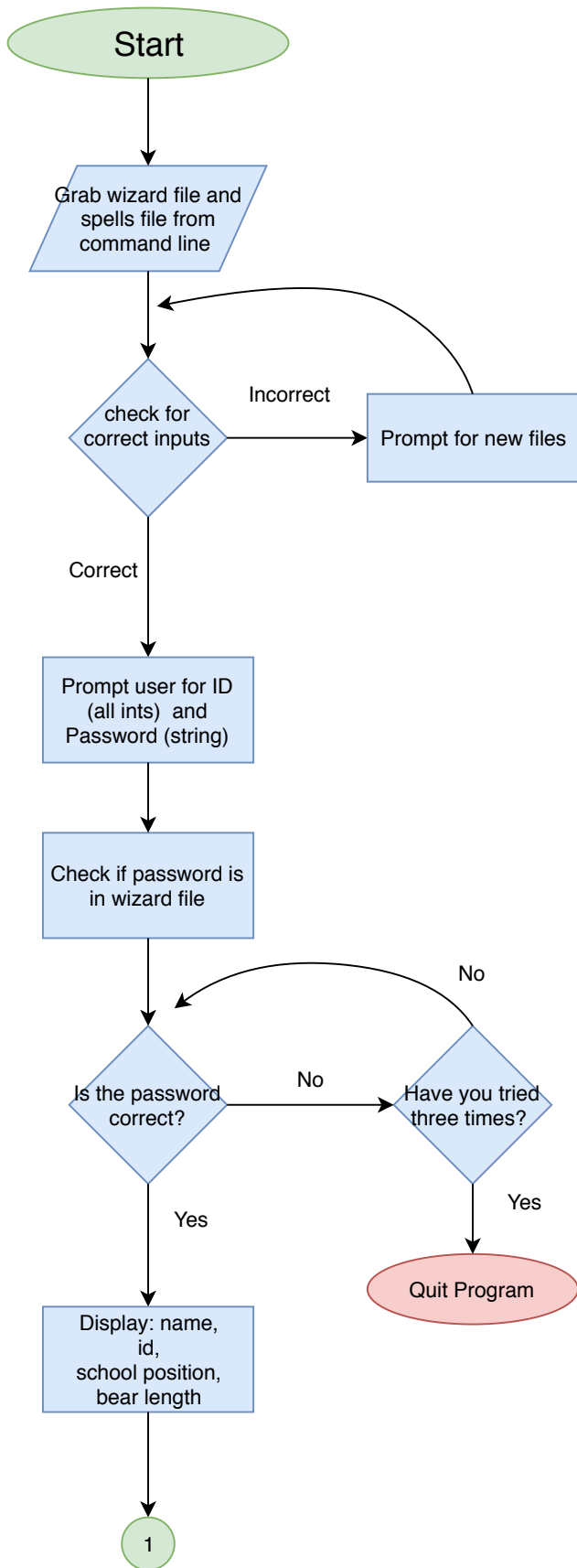## Understanding the problem

In your own words, explain what YOU think the problem is asking you to do. Document your uncertainties about the problem and anything else that you feel was unclear or vague

The problem is asking us to design a program that will check a prompt a user for login credentials, see if those credentials match a the user information in a wizard file. After loging in, the program should print the user information and then ask how they would like the spellbooks to be organized. If the user is a student, then they will not be allowed to see certain spellbooks containing evil spells. After deciding how to sort, the user should then choose either to print the information or write it to a file. Finally, the user will be prompted to re-sort the spellbooks or quit the program.

Devising a plane/design

Provide an algorithm/pseudo code to help solve the problem. In addition, draw pictures/flow charts to help you devise your plan, as well as any other design decisions you make, such as how to manage your time, how to decompose the problem, where to start first, etc.

See flowchart on next page

```
                                                              ( 2 )
    ( Start )
                                                               │
        │                                                      ▼
        ▼                                                 ┌──────────┐
  ╱────────────╲                                          │ Is wizard a │
 ╱ Grab wizard  ╲                                         ╲ student?   ╱
╱  file and      ╲                                         ╲────────╱
╲ spells file from╱                                    yes ╱      ╲ no
 ╲ command line  ╱                                        ╱        ╲
  ╲────────────╱                                         ▼          ▼
        │                                      ┌──────────────┐  ┌──────────────┐
        ▼                                      │ Do not display│  │ display all   │
  ╱───────────╲      Incorrect  ┌────────────┐ │ books with    │  │ spellbooks    │
 ╱  check for   ╲──────────────▶│ Prompt for  │ │ spells of     │  │               │
 ╲ correct inputs╱              │ new files   │ │ effect poison │  └──────────────┘
  ╲───────────╱                 └────────────┘ │ or death      │         │
        │                                      └──────────────┘         │
     Correct                                          │                 │
        │                                              ▼                 ▼
        ▼                                          ╱──────────────╲
 ┌──────────────┐                                 ╱ How do you      ╲
 │ Prompt user   │                                ╲ want the books   ╱
 │ for ID        │                                 ╲ sorted?        ╱
 │ (all ints) and│                                  ╲──────────────╱
 │ Password      │                            ┌────────┬────────┬────────┐
 │ (string)      │                            ▼        ▼        ▼        ▼
 └──────────────┘                    ┌────────┐ ┌────────┐ ┌────────┐ ┌────────┐
        │                            │ Number │ │ Spell  │ │ Average│ │ Quite  │
        ▼                            │ of     │ │ effect │ │ Success│ │ Program│
 ┌──────────────┐                    │ spells │ │        │ │ rate   │ │        │
 │ Check if      │                    └────────┘ └────────┘ └────────┘ └────────┘
 │ password is   │                         │        │        │
 │ in wizard file│                         ▼        ▼        ▼
 └──────────────┘                          ╱──────────────╲
        │                                 ╱ Print or write  ╲
        │      ┌──── No ────┐             ╲ to file?        ╱
        ▼      │            │              ╲──────────────╱
  ╱─────────╲  │    ╱─────────╲            ┌──────┴──────┐
 ╱ Is the     ╲ │   ╱ Have you   ╲          ▼             ▼
 ╲ password    ╱─┘  ╲ tried three ╱  ┌────────────┐  ┌────────────┐
  ╲ correct?  ╱  No  ╲ times?    ╱   │ Print to    │  │ Write to    │
   ╲───────╱         ╲────────╱     │ screen      │  │ file        │
       │                  │         └────────────┘  └────────────┘
      Yes              Yes  │              │              │
       │                    ▼              ▼              ▼
       ▼            ( Quit Program )      ╱──────────────╲
 ┌──────────────┐                        ╱ Try another     ╲──── Yes ────┐
 │ Display: name,│                       ╲ sorting?        ╱
 │ id,           │                        ╲──────────────╱
 │ school        │                              │
 │ position,     │                            Text
 │ bear length   │                              │
 └──────────────┘                              ▼
        │                              ( Quit Program )
        ▼
      ( 1 )
```

Looking back / testing

This includes any checking/self-reflection you did while solving the problem, which includes using a calculator to make sure the output is correct, testing to make sure your code executes correctly and behaves the way you expect under specific circumstances, using sources of information to make sense of the results, etc. However, you need to think about the input prior to implementation!!!

Value	Expected	Met expectation?
Incorrect id	could not find wizard. please try again	
Incorrect pass	Incorrect password Please try again	
Incorrect pass (x3)	You failed to log in. (Quit program)	
Correct user and pass	Login successful. Display wizard info	
Test each sort option	Correctly sorts	
Print to screen	correctly displays information	
Print to file	correctly writes to file	