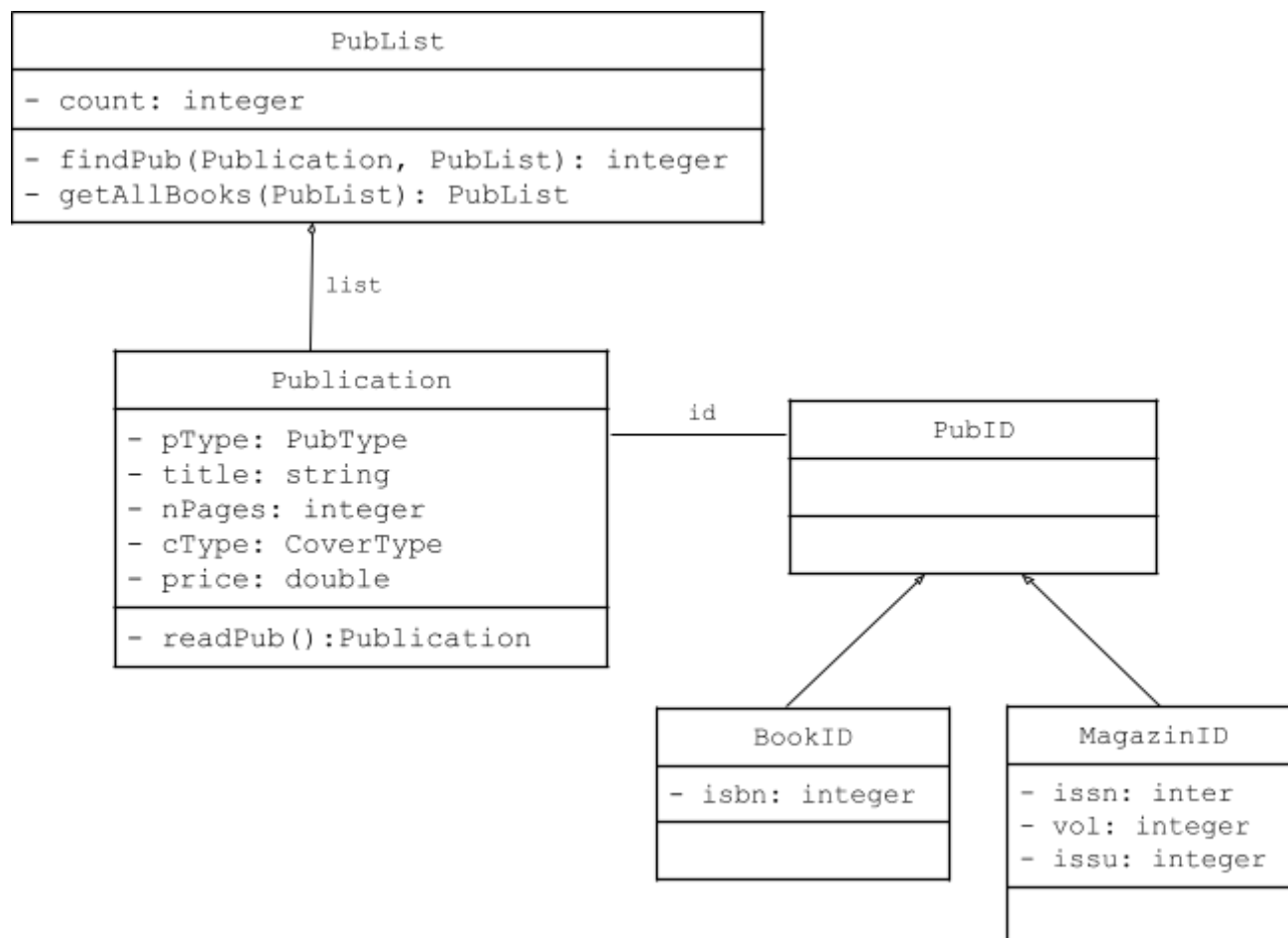


Exercise 1:

In this exercise you will write a library that provides types and functions to handle two kinds of publications: books and magazines.

1. Launch the terminal
2. Create a new directory with the name "Lab06" inside "CSC215"
3. Write a C file "pub.h" the contains the following definitions:



- a. A type `PubType` that has two values `Book` and `Magazine`
- b. A type `CoverType` that has two values `Hardcover` and `Paperback`
- c. A structure `Publication` that contains the following members:
 - i. type of the publication (book or magazine)
 - ii. title of the publication
 - iii. number of pages of the publication
 - iv. type of the cover (hardcover or paperback)
 - v. price of the publication
 - vi. more info to id the publication, namely:
 1. isbn if the publication is a book
 2. issn, volume, issue if the publication is a magazine
- d. A structure `PubList` that contains the following members:
 - i. number of items in the list
 - ii. array of publications to be allocated dynamically 3 points

Exercise 2:

1. Write a C file "pub.c" that defines the following functions:
 - a. function `readPub`: reads a publication information from the keyboard and returns it
 - b. function `findPub`: takes a pointer to a publication and a publication list, and search for the publication in the list. If the publication is found, returns its index and -1 otherwise.
 - c. function `getAllBooks`: takes a publication list and returns a new publication list that contains only the books from the original list.
2. Add prototypes for these functions to the header file.
3. Compile and check your code. 4 points

Note: Two publications match if they are both books and have the same isbn, or both magazines and have the same issn, volume and issue numbers.

Exercise 3:

1. Write a C program "test.c" that uses pub.c to do the following:
 - a. Asks the user to enter the number of publications to read
 - b. Creates a publication list with sufficient room to hold those publications
 - c. Reads the publications information from the user into the list, making sure that each publication is entered only once
 - d. Creates a new publication list the contains only books and prints the sum of their prices to the screen
2. Compile and test your code. 3 points

Lab assignment:3 points

Write a C program `assignment.c` that reads the information of n students, then prints the name of the student with higher GPA, then prints the names of the rest of the students. Student's information includes: student's numeric ID, student's name and student's GPA. n is a positive integer to be read once the program starts.

Sample run

```
Enter the number of students: 4
Enter ID of student 1: 438101
Enter name of student 1: Ali
Enter GPA of student 1: 3.25
Enter ID of student 2: 438171
Enter name of student 2: Mhmd
Enter GPA of student 2: 2.87
Enter ID of student 3: 438422
Enter name of student 3: Omar
Enter GPA of student 3: 4.76
Enter ID of student 4: 437100
Enter name of student 4: Fahd
Enter GPA of student 4: 4.10
Omar
Ali
Mhmd
Fahd
```