

CS 4323 Design and Implementation of Operating Systems I

Assignment 01: Full Marks 100 (Due Date: 09/23/2020, 11:59 PM CDT)

All these assignments must be completed on CSX machine. Logging on to the CSX account and other relevant information can be easily accessed in: <http://www.cs.okstate.edu/loggingon.html>

You are given three files on Book review:

- Books.txt
- Ratings.txt
- User.txt

The Books.txt file contains:

- ISBN
- Book-Title
- Book-Author
- Year of publication
- Publisher
- Image-URL-S
- Image-URL-M
- Image-URL-L

The Ratings.txt file contains:

- User-ID
- ISBN
- Book-rating

The User.txt file contains:

- User-ID
- Location
- Age

All the column names are self-explanatory.

You need to write a C program which needs to satisfy following condition:

- Make a single c program (hence process P0), which will create additional processes (P1, and P2) each one of this process will run one of the file.
For example, consider P0 will run User.txt file, P1 will run Books.txt file, P2 will run Ratings.txt file.
- P0 will accept the ISBN as the user input and it passes this information to processes P1 and P2, where these two processes (P1 and P2) run in parallel.

- P0 and P1 shares information using memory sharing
 - P0 and P2 shares information using message passing
- P1 will search Books.txt file and returns Book-Title, Book-Author, Year-of publication and Publisher information to P0
- P2 will search Ratings.txt file and returns User-ID and Book-Rating to P0.
- P0 then uses this information to search User.txt file and finds the corresponding user location.
- P0 should print the following information back on the console:
 - For the given ISBN, display Book-Title, , Book-Author, Year-of publication, Publisher information, User-ID, Book-Rating and Location.

The grading will be as follows:

- Memory sharing from P0 to P1 and return results back to P0. **[15 + 25 Points]**
- Message passing from P0 to P2 and return results back to P0. **[15 + 25 Points]**
- PO correctly displays all relevant information. **[10 Points]**
- Processes P1 and P2 running parallel. **[10 Points]**

Failure to compile the program correctly will deduct 20 points automatically.

- Your program will be evaluate based on the correctness
- Points will be deducted for any bad programming practices like:
 - not using proper variable name,
 - not using comments
- Points will be deducted if the instruction is not followed properly.

Submission Guidelines:

- Submit the file following the naming convention given in the syllabus.
- In the main file, use the following header information:
 - Author Name:
 - Email: <Use only official email address>
 - Date:
 - Program Description:
- Use comments throughout your program.
- Each function should be properly commented:
 - Mention each argument type, purpose
 - Function description
 - Return type of the function

- Failure to follow standard programming practices will lead to points deduction, even if the program is running correctly. Some of the common places where you could lose points are:
 - Program not compiling successfully: -20 points
 - No comments on code (excluding function): -5 points
 - No comments on function: -5 points
 - Not writing meaningful identifiers: -5 points
 - Failure to submit files as specified: -10 points