CSE 314
Online (A2)
Time: 40 minutes

A bookstore stores books of three writers (A, B, C), the number of books for each writer will be random. There is a book catalog which contains the number of books are available to borrow and the number of books borrowed. For example, if 2 books of a writer A and 4 books of writer B are borrowed, then the catalog contains entries like (A, x - 2, 2), (B, y - 4, 4) and (C, z, 0). The catalog is updated if any borrower either borrow or return a book.

Each borrower can randomly want to borrow or return a random writer's book. If the book is available, then the borrower can borrow the book and the catalog is updated. The borrower can return any book of any random writer, i.e., the book is not required to be borrowed earlier by the same borrower. Assume that there are 10 borrowers (with ID from 1 to 10) and each borrower will get 5 chances to either borrow or return books.

You have to implement the catalog as an array of structures and a borrower as a Process. Write a program to implement the bookstore maintaining proper IPC communications.

N.B.: Always print the status of the processes to trace their work and also the catalog.