Write a bash script named “minilib.sh” managing a mini library system. Every book corresponds to a record (line) in a text file named “mylibrary.txt”. Each record consists of 6 fields (Book ID, Title, Author, Possession, Checked out Date, Due Date) separated by comma:

<p>| | | | | | |</p>
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Book1</td>
<td>Author1</td>
<td>Library</td>
<td>null</td>
<td>null</td>
</tr>
<tr>
<td>2</td>
<td>Book1</td>
<td>Author1</td>
<td>User1</td>
<td>2014-10-22</td>
<td>2014-11-21</td>
</tr>
<tr>
<td>3</td>
<td>Book2</td>
<td>Author2</td>
<td>User1</td>
<td>2014-10-23</td>
<td>2014-11-22</td>
</tr>
<tr>
<td>4</td>
<td>Book3</td>
<td>Author2</td>
<td>User2</td>
<td>2014-10-23</td>
<td>2014-11-22</td>
</tr>
<tr>
<td>5</td>
<td>Book4</td>
<td>Author3</td>
<td>User2</td>
<td>2014-09-22</td>
<td>2014-10-22</td>
</tr>
</tbody>
</table>

- No comma “,” in title or author name.
- This mini library keeps the record for each book in the library. Different books can share the book “Title”. But the “Book ID” for each book is unique.
- One author may have multiple books. Eg. Both book2 and book3 are written by author1.
- Possession field is “Library” means this book is kept in library, such as book #001. Otherwise, this book is checked out by the corresponding user. Eg. book #3 is checked out by User1.
- A user is allowed to check out up to 3 books.
- The “Checked out Date” field specifies the time of the latest checked out date. The loan period for each book is 30 days. “The Due Date” filed specifies the time the book should be returned. The date format “YYYY-MM-DD” for current time could be obtained by command “date +%F”. And you can use “date –date” option to define a date by string. In the following example, $inputDate will store a date 30 days passed by 2013-12-5.

E.g. $inputDate=`date --date="2013-12-05 30 days" +%F`

$userDate
2014-01-04
• minilib.sh should provide a menu with following functionalities that the bookkeeper can choose from at the top level menu:

1. **Enter “a” to add a book into library**
   • 1) Ask for title (read).
   • 2) Ask for author.
   • 3) Generate a book ID by adding one to the current largest book ID.
   • 4) Add the record of the new book into library with generated book ID, title, author, possession=”library”, checked out date=”null” and due date=”null” (*sed*). After that, print message “book*** added successfully!” and go to step 5).
   • 5) Provide options “t” for “Try again” and “b” for “Back to main menu”. (If “Try again”, go to step 1))

2. **Enter “d” to delete a book from library**
   • 1) Ask for book ID.
   • 2) Examine if this book exists. If no, print a message “No such book!” and then go to 4). Otherwise, 3)
   • 3) Remove the book with the given book ID from the library (*sed*) and then go to 4).
   • 4) Provide options “t” for “Try again” or “b” for “Back to main menu”. (If “Try again”, go to step 1))

3. **Enter “o” to check out a book**
   • 1) Ask for user name.
   • 2) Count how many books this user has already checked out, only proceed the current checkout if less than 3 (go to 3)). Otherwise, go to 5)
   • 3) Ask for book Id, examine if this book exists. If no, print a message “No such book!” and then go to 5). Otherwise, 4)
   • 4) Update the possession , “check out date” and “due date” field of the corresponding book record. After that, print message “book*** checked out successfully!” (awk) and then go to 5).
   • 5) Provide options “t” for “Try again” or “b” for “Back to main menu”. (If “Try again”, go to step 1))
4. Enter “r” to return a book
   ● 1) Ask for book ID.
   ● 2) Examine if this book exists. If no, print a message “No such book!” and then go to 4). Otherwise, 3)
   ● 3) Ask for current date and check if it is a legal date. If illegal, output “illegal input date” and go to step 7); otherwise, 4).
   ● 4) Check if current date has passed “Due Date”. If no, go to step 6). Otherwise, 5)
   ● 5) Output the current fine to this book.
   ● 6) Assume user has already paid for fine if it exists. Update the possession and date fields of the corresponding record. After that, print message “book*** return successfully!” (awk) and then go to 7).
   ● 7) Provide options “t” for “Try again” or “b” for “Back to main menu”. (If “Try again”, go to step 1))

5. Enter “s” for book status query by name
   ● 2) Examine if this book exists. If no, print a message “No such book!” and then go to 4). Otherwise, 3)
   ● 3) List the possession status of these books. If the book is available, report it is in library; otherwise, report the available date to borrow it (the due date for this book).
     e.g.  
     1 Book1 In library  
     2 Book1 Available after 2014-11-21
   ● 4) Provide options “t” for “Try again” or “b” for “Back to main menu”. (If “Try again”, go to step 1))

   ● 1) Ask for author
   ● 2) List records of all books written by this author sorted by the book title.
   ● 3) Provide options “t” for “Try again” or “b” for “Back to main menu”. (If “Try again”, go to step 1))

7. Enter “u” to list books checked out by a given user
   ● 1) Ask for current date and check if it is a legal date. If illegal, output “illegal input date” and go to step 4); otherwise, 2).
● 2) Ask for user name.
● 3) List all books currently checked out by the given user. If the due date is passed, marked the record as “Over Due”.

\[ e.g. Assumng current date is 2014-12-01, for “User1”
\]

2,Book1,Author1,User1,2014-10-22,2014-11-21 Over Due
3,Book2,Author2,User1,2014-10-23,2014-11-22 Over Due

● 4) Provide options “t” for “Try again” or “b” for “Back to main menu”. (If “Try again”, go to step (1))

8. Enter “x” to quit.

Submission

• Upload an electronic copy (MS word or pdf) of your answer sheet (including the content in your shell scripts and screenshots of outputs) to the folder named “Project1” of the dropbox in the desire2learn system.

• Name your file in the format of Project1_FirstnameLastname (eg.Project1_YuanLong.docx, Project1_YuanLong.pdf)

• Please add the Project number and your name at the top of your answer sheet.

• Upload the file “minilib.sh” and your “Mylibrary.txt” to the desire2learn system. And please write your name as a comment at the second line in the file.