The academic world is an interesting example of international cooperation and exchange. This problem is concerned with modeling of a system that contains information on articles published in scientific journals. The system must include only one class (i.e. **Article**), the mentioned member functions and data members.No global variables shall be declared. Use appropriate data types, return types and function arguments if not explicitly mentioned. Provide appropriate constructors and destructors if required.

1-      Module Name: **Input()**.The working of this module goes as follows:

i-                    It must not receive any argument.

ii-                  Each article has an ID, a title, and information on where to find it (name of journal, what issue, and on which pages). The following information on the attributes is provided:

•         The endpage of an article is never smaller than the startpage.

•         Each article has a unique (no duplicates allowed), randomly generated, immutable, ordered two digit ID such that if the ID for first article is 42 then it must be 43 for the second article and so on.

•         Name of journal must be four characters long.

•         All the attributes must remain hidden when directly accessed from outside the class(**Hint:** use appropriate access specifier)

•         **Journal**and**Author**must be declared using pointer to character.

**Example:**The following data can be used for testing.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Title** | **Journal** | **Issue** | **Year** | **startPage** | **endPage** | **Author** |
| 42 | Cuckoo Hashing | JAIg | 51 | 2004 | 121 | 133 | Robert Tarjan |
| 43 | Deterministic Dictionaries | JAIg | 41 | 2001 | 69 | 85 | Robert Lafore |
| 44 | Deterministic Dictionaries | JAIg | 41 | 2001 | 69 | 85 | Paul Bailey |
| 45 | Dictionaries in less space | SICO | 31 | 2001 | 111 | 133 | Mary Balogh |
| 46 | P vs NP resolved | JACM | 51 | 2008 | 1 | 3 | Burl Barer |
| 47 | What Godel missed | SICO | 51 | 2008 | 1 | 5 | Paul Bailey |

2-      Module Name: **Check\_Author()**.This module searches the data for all the articles authored by “Robert Tarjan” and changes the author to “Robert Lafore”. If no such articles exist the function must display “Not Found”.

3-      Module Name: **AVG\_Year()**.This module  displays the average of years for the articles where

journal = “JACM” and issue = 55. If no such articles exist the function must display “Average cannot be calculated as no such data found.”

4-      Module Name: **Group\_By\_Journal()**.This module displays all the data arranged in alphabetical order with respect to journal.

5-      Module Name: **Check\_Starting()**.This module searches for articles with titles starting with ‘C’ and sets the journal for them to“SICO”. If no such articles exist the function must display “Not Found”.

6-      Module Name: **Display()**.This module  displays the data without being able to make changes to it.

7-      Module Name: **main()**.

i-        Create an array of six objects. (**HINT**: Article obj[2]={Article(id),Article(id+1)}; where id is randomly generated as discussed above.)

ii-      Provide a menu for the execution of each function such that:

         Press ‘A’, for executing Input().

         Press ‘B’, for executing Check\_Author().

         Press ‘C’, for executing AVG\_Year().

         Press ‘D’, for executing Group\_By\_Jornal().

         Press ‘E’, for executing Check\_Starting().

         Press ‘F’, to Display the current array of objects.

         Press ‘G’, to enter input again.

         Press ‘H’, to create an object **article**containing the content of first object from the array of objects in such a manner that if the assigned object gets destroyed **article** still exists. Implement and call the required functions to show this complete process.

         Press ‘I’, to Exit the program

Allow the user to type in a menu choice. This should continue until the user enters the command to exit. Both Upper and lowercase letters should be allowed for the menu choices. The menu should be displayed whenever a choice is required to be made.