# **Online Graphic Novel Management System**

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| --- | --- |
| Course: | Software Development (KCPSD\_D\_Y2) |
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# **Introduction**

This system is a web solution to allow registered users to upload and purchase online novels. The functional component section shows the system with each of its components and their processes. User requirements will give a brief description of each system component whereas the system requirements will show a more detailed description with use case scenarios. The system model, which uses the Gane & Sarson notation for data flow diagrams, and the data model, which uses unified modelling language (UML), shows what information flows and in which direction. This identifies the data storage needs of the system as well as where that data will go after being processed. Finally the database schema section will identify the data storage needs of the system with a relational data model.

# **Functional Components**

# **User Requirements**

The following user requirements have been identified for the system (Online Graphic Novel Management System):

## **3.1 The system Performs Member Administration**

### 3.1.1 Online Graphic Novel Management System will allow a new member to register their details.

### 3.1.2 Online Graphic Novel Management System will allow a members details to be changed.

### 3.1.3 Online Graphic Novel Management System will generate a list of Members.

### 3.1.4 Online Graphic Novel Management System will allow a members category to be changed between Author and Reader.

### 3.1.5 Online Graphic Novel Management System will allow a members status to be changed between active and de-active.

### 3.1.6 Online Graphic Novel Management System will allow members to top up their credit.

## **3.2 The system performs Online Novel Management**

### 3.2.1 Online Graphic Novel Management System will allow a novel to be uploaded.

### 3.2.2 Online Graphic Novel Management System will generate a list of novels.

### 3.2.3 Online Graphic Novel Management System will allow a novels price to be changed.

### 3.2.4 Online Graphic Novel Management System will allow a novel to be removed from the system.

### 3.2.5 Online Graphic Novel Management System will allow a novel to be downloaded.

## **3.3 The system performs income analysis**

### 3.3.1 Online Graphic Novel Management System will list each author and their income.

### 3.3.2 Online Graphic Novel Management System will list the sum value of each reader’s purchases.

# **System Requirements**

## **4.1 System level use case diagram**

**Online Graphic novel management system**

Author

Reader

## **4.2 Member Administration**

Member Administration controls the registration and manipulation of information in relation to a members details.

### 4.2.1 Register Author/Reader

<<extends>>

<<Includes>>

Author

Reader

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name** | Register author/reader | | **Author:James McGarr** |
| **Use Case Id** | 4.2.1 | | **Date:23/10/2014** |
| **Priority** | High | | |
| **Source** | Requirements | | |
| **Primary Business Actor** | Author/Reader | | |
| **Other Participating Actors** |  | | |
| **Description** | This function allows an author or reader to register. | | |
| **Preconditions** |  | | |
| **Trigger** | User wishes to register on the system. | | |
| **Typical Scenario** | **Actor Action** | **System Response** | |
| The new member wishes to register. | **Step 1:** The new member clicks the ‘Sign Up’ button.  **Step 3:** The new member inputs their details.   * User name * First name * Last name * Email * Password * Confirm password * Category (Author/Reader) * Capatch (to confirm entries are made by a human) | **Step 2:** The system displays the sign up page.  **Step 4:** The system validates the input.   * User name * First name * Email * Password * Confirm password * Capatch   **Step 5:** The system assigns a member identification number (MemID).  **Step 6:** The system assigns a status to the new member and sets it to active.  **Step 7:** The system stores the new member’s details in the Member File.  **Step 8:** The system sends a confirmation email to confirm registration. | |
| **Alternate Scenarios** | **Actor Action** | **System Response** | |
|  |  | **Step 4:** Invalid data is entered.  **Step 5:** The system displays an error message. | |
| **Alternate Scenarios** | **Actor Action** | **System Response** | |
|  |  |  | |
| **Conclusions** | A new reader or author is registered. | | |
| **Post conditions** | The member (reader/author) may now upload or download novels. | | |
| **Business Rules** | A member may not use nick names in place of their real name.  A member may not use their real name as their nick name. | | |
| **Implementation Constraints** |  | | |

### 4.2.2 Change author/reader details

Author

<<extends>>

<<Includes>>

Reader

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name** | Change author/reader details | | **Author:James McGarr** |
| **Use Case Id** | 4.2.2 | | **Date:23/10/2014** |
| **Priority** | High | | |
| **Source** | Requirements | | |
| **Primary Business Actor** | Author/Reader | | |
| **Other Participating Actors** |  | | |
| **Description** | This function changes a Readers/Authors details. | | |
| **Preconditions** | The member must be already registered. | | |
| **Trigger** | The member wishes to change their details. | | |
| **Typical Scenario** | **Actor Action** | **System Response** | |
| The member wishes to change their details. | **Step 1:** The new member clicks the ‘edit profile’ button.  **Step 4:** The member edits the required fields.   * User name * First name * Last name * Email * New password * Confirm password * Category (Author/Reader) * Capatch (to confirm entries are made by a human)   (Optional Paypal link)   * Username * Password | **Step 2:** The system displays the profile page with appropriate input fields.  **Step 3:** The system gives appropriate default values for each input field based on the members details which are stored in the members file.  **Step 5:** The system validates the input.   * User name * First name * Email * Password * Confirm password * Capatch * Category (Author/Reader)   **Step 6:** The system updates the member’s record.  **Step 7:** The system sends a confirmation email to confirm registration. | |
| **Alternate Scenario 1** | **Actor Action** | **System Response** | |
|  |  | **Step 5:** Invalid data is entered.  **Step 6:** The system displays an error message. | |
| **Alternate Scenario 2** | **Actor Action** | **System Response** | |
|  |  |  | |
| **Conclusions** | A members details have been changed. | | |
| **Post conditions** | The member’s details have been updated. | | |
| **Business Rules** | A member may not use nick names in place of their real name.  A member may not use their real name as their nick name. | | |
| **Implementation Constraints** |  | | |

### 4.2.3 List members

Author

Reader

|  |  |
| --- | --- |
| Sample list | |
| **Member** | **Category** |
| Alan | Reader |
| Bob | Author |
| Carla | Author |
| Daniel | Author |
| Eric | Reader |

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name** | List Members | | **Author:James McGarr** |
| **Use Case Id** | 4.2.3 | | **Date:23/10/2014** |
| **Priority** | Low | | |
| **Source** | Requirements | | |
| **Primary Business Actor** | Author/Reader | | |
| **Other Participating Actors** |  | | |
| **Description** | This function generates a list of members. | | |
| **Preconditions** | There must be more than one members. | | |
| **Trigger** | A member wishes to list members. | | |
| **Typical Scenario** | **Actor Action** | **System Response** | |
| The member wished to view a list of other members. | **Step 1:** The member clicks the ‘list members’ button. | **Step 2:** The system retrieves details of all members from the members file and displays:   * User name * Category   The list will be displayed in the user interface in ascending alphabetical order.  **Step 3:** The system will give the member the option to print the list. | |
| **Alternate Scenario** |  | | |
| **Conclusions** | A list of members will be displayed. | | |
| **Post conditions** |  | | |
| **Business Rules** | Only member user names and categories will be shown on the list. | | |
| **Implementation Constraints** |  | | |

### 4.2.4 Change member category

<<extends>>

<<Includes>>

Reader

Author

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name** | Change member category | | **Author:James McGarr** |
| **Use Case Id** | 4.2.4 | | **Date:23/10/2014** |
| **Priority** | Low | | |
| **Source** | Requirements | | |
| **Primary Business Actor** | Author/Reader | | |
| **Other Participating Actors** |  | | |
| **Description** | This function changes the member’s category. | | |
| **Preconditions** | The member must be active. | | |
| **Trigger** | A member wishes to change their category. | | |
| **Typical Scenario** | **Actor Action** | **System Response** | |
| The member wishes to change their category. | **Step 1:** The member clicks the ‘change member category’ button.  **Step 3:** The member selects from the two options available (Author/Reader). | **Step 2:** The system displays the profile page with their category according to their MemberFile record.  **Step 4:** The system sets the member’s category to ‘Author’ or ‘Reader’ as selected. | |
| **Alternate Scenario 1** | **Actor Action** | **System Response** | |
|  |  |  | |
| **Conclusions** | A members details will be changed. | | |
| **Post conditions** | Member’s email cannot be completely removed from the system.  A member’s status may be changed to inactive.  A member’s data will be encrypted. | | |
| **Business Rules** | A Member must have a category. | | |
| **Implementation Constraints** |  | | |

### 4.2.5 Change member status

<<Includes>>

Reader

Author

Administrator

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name** | Change member status | | **Author:James McGarr** |
| **Use Case Id** | 4.2.5 | | **Date:24/10/2014** |
| **Priority** | High | | |
| **Source** | Requirements | | |
| **Primary Business Actor** | Author/Reader | | |
| **Other Participating Actors** |  | | |
| **Description** | This function will change a member’s status to in-active. | | |
| **Preconditions** |  | | |
| **Trigger** | A member wishes to de-activate their account. | | |
| **Typical Scenario** | **Actor Action** | **System Response** | |
| The member wishes to delete their account. | **Step 1:** The author or reader clicks the ‘delete account’ button.  **Step 3:** The author or reader confirms the account deletion. | **Step 2:** The system prompts the user to confirm the account deletion.  **Step 4:** The system emails a message to the member with the date of account deletion.  **Step 5:** The member’s record in the member file has its status changed to in-active. | |
| **Alternate Scenario 1** | **Actor Action** | **System Response** | |
| If the user does not confirm account deletion when prompted. |  | **Step 4:** The system returns the author or reader to the ‘Log In’ page. | |
| **Conclusions** | A member’s account will be de-activated. | | |
| **Post conditions** | Member’s email cannot be completely removed from the system. | | |
| **Business Rules** |  | | |
| **Implementation Constraints** |  | | |

### 4.2.6 Top Up Account

<<Includes>>

Reader

Author

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name** | Top Up Account | | **Author:James McGarr** |
| **Use Case Id** | 4.2.6 | | **Date:19/04/2015** |
| **Priority** | High | | |
| **Source** | Requirements | | |
| **Primary Business Actor** | Author/Reader | | |
| **Other Participating Actors** |  | | |
| **Description** | This function will top up a members account. | | |
| **Preconditions** |  | | |
| **Trigger** | A member wishes to top up their account. | | |
| **Typical Scenario** | **Actor Action** | **System Response** | |
| The member wishes to top up their account. | **Step 1:** The author or reader clicks the ‘Top Up Credit’ button.  **Step 3:** The author or reader confirms the account top up. | **Step 2:** The system prompts the user to confirm the account top up.  **Step 4:** The member’s account is topped up. | |
| **Alternate Scenario 1** | **Actor Action** | **System Response** | |
| If the user does not confirm account top up when prompted. |  | **Step 4:** The system shows a “top up cancelled” message. | |
| **Conclusions** | A member’s account will be topped up. | | |
| **Post conditions** |  | | |
| **Business Rules** |  | | |
| **Implementation Constraints** |  | | |

## **4.3 Manage Novels**

Novel management deals with information related to novels. This includes the information storing and retrieval of each novel.

### 4.3.1 Upload Novel

<<extends>>

<<Includes>>

Author

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name** | Upload Novel | | **Author:James McGarr** |
| **Use Case Id** | 4.3.1 | | **Date:24/10/2014** |
| **Priority** | High | | |
| **Source** | Requirements | | |
| **Primary Business Actor** | Author | | |
| **Other Participating Actors** |  | | |
| **Description** | This function will upload a novel. | | |
| **Preconditions** | The member must have a category of Author. | | |
| **Trigger** | An author wishes to upload a novel. | | |
| **Typical Scenario** | **Actor Action** | **System Response** | |
| An author wishes to upload their novel. | **Step 1:** The author clicks the ‘upload novel’ button.  **Step 3:** The author uploads the novel file and inputs the following data for the novel.   * Title * Genre * Price | **Step 2:**  The system displays the upload novel page.  **Step 4:** The system validates the data and input.   * Title * Genre * Price   **Step 5:** The system assigns attributes.   * NovelID * Date   **Step 6:** The system stores the new novels details in the Novel File. | |
| **Alternate Scenario 1** | **Actor Action** | **System Response** | |
| If the data type of the novel or the input is invalid. | **Step 7:** The author uploads the novel with an appropriate file type and valid input. | **Step 5:** The input or file type is invalid. An error message is displayed.  **Step 6:** The system refreshes the upload novel page. | |
| **Conclusions** | An authors’ novel will be uploaded. | | |
| **Post conditions** |  | | |
| **Business Rules** | A novel cannot be adult orientated.  The novel price can be no less than €1.00  The novel price can be no more than €5.00 | | |
| **Implementation Constraints** |  | | |

### 4.3.2 List Novel

Reader

Author

|  |  |
| --- | --- |
| Sample list | |
| **Novel** | **Price** |
| To Kill A Mocking Bird | €1.00 |
| Ulysses | €1.00 |
| The Great Gatsby | €1.00 |
| Brave New World | €1.00 |
| Invisible Man | €1.00 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name** | List Novel | | **Author:James McGarr** |
| **Use Case Id** | 4.3.2 | | **Date:24/10/2014** |
| **Priority** | Low | | |
| **Source** | Requirements | | |
| **Primary Business Actor** | Author/Reader | | |
| **Other Participating Actors** |  | | |
| **Description** | A list of novels will be displayed. | | |
| **Preconditions** | There must be at least one record in the novel file. | | |
| **Trigger** | A member wishes to view a list of novels. | | |
| **Typical Scenario** | **Actor Action** | **System Response** | |
|  | **Step 1:** The member clicks the ‘list novels’ button. | **Step 2:** The system accesses the NovelFile and displays all the novel names and prices. | |
| **Alternate Scenario** |  | | |
| **Conclusions** | A list of novels will be displayed. | | |
| **Post conditions** |  | | |
| **Business Rules** |  | | |
| **Implementation Constraints** |  | | |

### 4.3.3 Change novel price

Author

<<extends>>

<<Includes>>

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name** | Change novel price | | **Author:James McGarr** |
| **Use Case Id** | 4.3.3 | | **Date:24/10/2014** |
| **Priority** | High | | |
| **Source** | Requirements | | |
| **Primary Business Actor** | Author | | |
| **Other Participating Actors** |  | | |
| **Description** | The price of a novel will be changed | | |
| **Preconditions** | The member must be the uploader of the novel. | | |
| **Trigger** | A member wishes to change the price of their novel. | | |
| **Typical Scenario** | **Actor Action** | **System Response** | |
| The member wishes to change the price of their novel. | **Step 1:** The member clicks the ‘change novel price’ button.  **Step 3:** The member selects which novel they wish to change the price of.  **Step 5:** The member inputs the new price. | **Step 2:** The system displays the novel page and lists the novels uploaded by the user according to the Novel File.  **Step 4:** The system prompts the member to input the new price.  **Step 6:** The system validates the input.  **Step 7:** The system stores the new price in the Novel File. | |
| **Alternate Scenario 1** | **Actor Action** | **System Response** | |
| When an invalid value is entered for the input field. | **Step 9:** The member inputs a price. | **Step 7:** The system displays an error message.  **Step 8:** The system prompts the user to re-enter the new price.  **Step 10:** The system stores the new price in the Novel File. | |
| **Conclusions** | The price of a novel will be changed. | | |
| **Post conditions** |  | | |
| **Business Rules** | A single novel cannot be greater €10 in price | | |
| **Implementation Constraints** |  | | |

### 4.3.4 Remove novel

Author

Administrator

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name** | Remove Novel | | **Author:James McGarr** |
| **Use Case Id** | 4.3.4 | | **Date:24/10/2014** |
| **Priority** | High | | |
| **Source** | Requirements | | |
| **Primary Business Actor** | Author | | |
| **Other Participating Actors** |  | | |
| **Description** | A novel will be removed from the novel file | | |
| **Preconditions** | The member must be the author of the novel. | | |
| **Trigger** | A member wishes to remove a novel. | | |
| **Typical Scenario** | **Actor Action** | **System Response** | |
| A member wishes to remove a novel. | **Step 1:** The member clicks the ‘remove novel’ button.  **Step 3:** The member selects which novel to remove. | **Step 2:** The system displays a list of novel names uploaded by the member according to the Novel File.  **Step 4:** The system deletes the data of where the novel is being stored according to the Novel File.  **Step 5:** The system changes the novels status in the Novel File to inactive. | |
| **Alternate Scenario 1** |  | | |
| **Conclusions** | A novel will be removed. | | |
| **Post conditions** |  | | |
| **Business Rules** |  | | |
| **Implementation Constraints** |  | | |

### 4.3.5 Download novel

Author

Reader

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name** | Download Novel | | **Author:James McGarr** |
| **Use Case Id** | 4.3.5 | | **Date:24/10/2014** |
| **Priority** | High | | |
| **Source** | Requirements | | |
| **Primary Business Actor** | Author/Reader | | |
| **Other Participating Actors** |  | | |
| **Description** | A novel will be downloaded. | | |
| **Preconditions** |  | | |
| **Trigger** | A member wishes to download a novel. | | |
| **Typical Scenario** | **Actor Action** | **System Response** | |
| A member wishes to download a novel. | **Step 1:** The member clicks the ‘download novel’ button.  **Step 4:** The user clicks the download link and downloads the novel. | **Step 2:** The system checks the Payment File to see if the member has permission to download, and the system checks the novel file to see if the member uploaded the novel.  **Step 3:** The system provides a download link to where the novel is being stored according to the Novel File. | |
| **Alternate Scenario 1** | **Actor Action** | **System Response** | |
| The user did not upload the novel and there is no record of payment in the payment file. The member does not have permission to download the novel. | **Step 4:** The user confirms payment. | **Step 3:** The system prompts the user to log into Paypal and make a payment.  **Step 5:** The system adds a record to the Payment File with the members MemID from the members file and the novels NovelID from the novels file.  **Step 6:** The system provides a download link to where the novel is being stored according to the Novel File. | |
| **Conclusions** | A novel will be downloaded. | | |
| **Post conditions** | After one payment, the member can now download the novel any time provided the novel is still active. | | |
| **Business Rules** | The member can only download the entire novel ten times each hour. | | |
| **Implementation Constraints** |  | | |

## **4.4 Monetary Analysis**

Monetary analysis provides an analysis of incoming and outgoing transactions.

### 4.4.1 Author income analysis

Author

Reader

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name** | Author Income Analysis | | **Author:James McGarr** |
| **Use Case Id** | 4.4.1 | | **Date:24/10/2014** |
| **Priority** | High | | |
| **Source** | Requirements | | |
| **Primary Business Actor** | Author/Reader | | |
| **Other Participating Actors** |  | | |
| **Description** | An author’s income will be analyzed. | | |
| **Preconditions** |  | | |
| **Trigger** | A member wishes to do an income analysis. | | |
| **Typical Scenario** | **Actor Action** | **System Response** | |
| A member wishes to analyze their income. | **Step 1:** The member click the ‘show author income analysis’ button. | **Step 2:** The system retrieves details of the member from the members file and purchases file and displays:   * Total Uploads * Most Expensive Novel * Least Expensive Novel * Total Credit Earned * Average Credit Earned Per purchase | |
| **Alternate Scenario 1** | **Actor Action** | **System Response** | |
|  |  |  | |
| **Conclusions** | Income analysis for a member will be displayed. | | |
| **Post conditions** |  | | |
| **Business Rules** |  | | |
| **Implementation Constraints** |  | | |

### 4.4.2 Reader purchase analysis

Author

Reader

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name** | Reader Purchase Analysis | | **Author:James McGarr** |
| **Use Case Id** | 4.4.2 | | **Date:24/10/2014** |
| **Priority** | High | | |
| **Source** | Requirements | | |
| **Primary Business Actor** | Author/Reader | | |
| **Other Participating Actors** |  | | |
| **Description** | The purchases a member has made will be analyzed. | | |
| **Preconditions** |  | | |
| **Trigger** | A member wishes to do a purchase analysis. | | |
| **Typical Scenario** | **Actor Action** | **System Response** | |
| A member wishes to analyze their purchases. | **Step 1:** The member click the ‘show author income analysis’ button. | **Step 2:** The system retrieves the details of the members from the members file and purchases file and displays:   * Total Downloads * Most Expensive Purchase * Lease Expensive Purchase * Total Credit Spent * Average Cost Per Purchase | |
| **Alternate Scenario 1** | **Actor Action** | **System Response** | |
|  |  |  | |
| **Conclusions** | Income analysis for a member will be displayed. | | |
| **Post conditions** |  | | |
| **Business Rules** |  | | |
| **Implementation Constraints** |  | | |

# **System Model**

## **Data Flow Diagrams – Elements**

### **External Entities:**

* Member

### **Data Stores:**

* D1 Members
* D2 Categories
* D3 Purchases
* D3 Novels

### **Processes:**

* P1 Manage Members
  + P1.1 Register Member
  + P1.2 Change member details
  + P1.3 List members
  + P1.4 Change member category
  + P1.5 Change member status
  + P1.6 Top Up Account
* P2 Manage Novels
  + P2.1 Upload novel
  + P2.2 List Novels
  + P2.3 Change novel price
  + P2.4 Remove novel
  + P2.5 Download novel
* P3 Perform Income Analysis
  + P3.1 Author income analysis
  + P3.2 Reader purchase analysis

## **DFD Level 0 System Context Diagram**

Novel Details

P0

Graphic Novel Management System

Member

Member details

## **DFD Level 1**

Member details

Members

D1

Member details

Novel details

Member category

P1

Manage Members

Novels

D4

Categories

D2

Novel details

Member category

Novel details

Member details

Member details

Novel details

Member

Novel details

P2

Manage

Novels

Members

D1

Purchase details

P3

Perform

Income

Analysis

### **DFD Level 2 Manage Members**

Member details

Members

D1

Member details

Member details

Member details

P1.5

Change member status

P1.3

List members

Member details

Member

Member details

Member details

Member details

Member details

Member details

Member

P1.1

Register member

Members

D1

Member details

Member details

Member details

Categories

D2

P1.2

Change member details

Member details

Member details

Member details

Member details

Member details

Member details

Members

D1

Member details

Member details

Member details

Categories

D2

Member details

Member details

P1.4

Change member category

P1.6

Top Up

Account

Member

Member details

### **DFD Level 2 Novel Management**

Member

Novel details

Novel details

P2.3

Change novel price

Novel details

Member

P2.1

Upload novel

P2.2

List novels

Novel details

Novel details

Novel details

Novel details

Novel details

Novel details

Novels

D4

Novel details

Novel details

Members

D1

Member details

P2.4

Remove novel

Novel details

P2.5

Download novel

Purchase details

Novel details

Novel details

Novel details

Member

Purchase details

Purchases

D3

### **DFD Level 2 Income Management**

P3.1

Author income analysis

Purchase details

Member details

Purchases

D3

Members

D1

P3.2

Reader purchase analysis

Purchase details

Member details

# **Data Model**

Novels

NovelID{pk} date title genre path price

Is for

Is author of

purchase

Have

0..\*

1

0..\*

0..\*

1

1

1..2

1

CatCode{pk}

Categories

PurchaseID PDate Price

Purchases

MemID{pk} uName fName lName eMail credit password

Members

# **Database Schema**

Categories(**MemID**, CatCode)

Members(MemID, uName, fName, lName, eMail, password)

Novels(NovelID, date, title, genre, price, **MemID**)

Purchases(PurchaseID, PDate, **MemID**, **NovelID**)

|  |  |
| --- | --- |
| **Schema:** | NovelSys |
| **Relation:** | Categories |
| **Attributes:** | |  |  | | --- | --- | | MemID | INT(100) | | CatCode | CHAR(1) | |
| **Primary Key:** | MemID, CatCode |

|  |  |
| --- | --- |
| **Relation:** | Members |
| **Attributes:** | |  |  | | --- | --- | | MemID | INT(100) | | uName | CHAR(30) | | fName | CHAR(30) | | lName | CHAR(30) | | eMail | CHAR(50) | | credit | NUMBER(6,2) | | password | CHAR(10) | |
| **Primary Key:** | MemID |

|  |  |
| --- | --- |
| **Relation:** | Novels |
| **Attributes:** | |  |  | | --- | --- | | NovelID | INT(100) | | date | DATE | | title | CHAR(30) | | genre | CHAR(3) | | path | VARCHAR(300) | | price | DOUBLE(6,2) CHECK (price>0) | | MemID | INT(100) | |
| **Primary Key:** | NovelID |
| **Foreign Key:** | MemID REFERENCES Members |

|  |  |
| --- | --- |
| **Relation:** | Purchases |
| **Attributes:** | |  |  | | --- | --- | | PurchaseID | INT(100) | | PDate | DATE | | MemID | INT(100) | | NovelID | INT(100) | |
| **Primary Key:** | PurchaseID |
| **Foreign Key:** | MemID REFERENCES Members  NovelID REFERENCES Novels |

# **Conclusion**

The system fulfils the basic requirements to manage the uploading and downloading of online graphic novel material. Improvements could be made to the system to allow users to interact with social media directly from the user interface.