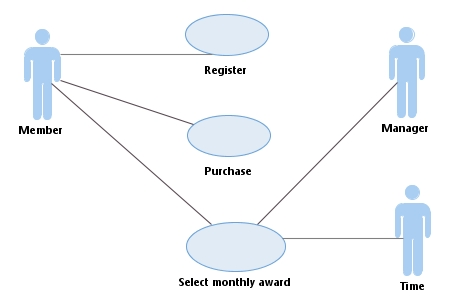
**Assignment 1 Sample Solution**

There is no model answer in software engineering. The following document serves only as a sample solution to help students to understand the main concepts and practice in object-oriented analysis. It should not be interpreted as the only possible specification or the best specification.

Step 1: Identifying Actors and Use Cases

|  |  |  |
| --- | --- | --- |
| Actor | Use Case Name | Use Case Description |
| Member | Register | Customer registers as a member |
| Member | Purchase | Members buy film tickets |
| Time, Manager, Member | Select monthly award | Select the top 3 members to send an e-coupon |

Step 2: Constructing a Use Case Diagram



Step 3: Documenting Typical and Alternative Course of Event of Use Cases

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|  |  |  |
| --- | --- | --- |
| **Use Case Name:** | Register | |
| **Actor(s):** | Member | |
| **Description:** | This use case describes the membership registration process | |
| **Reference:** | TS-1 | |
| **Typical Course of Events:** | **Actor Action** | **System Response** |
| **Step 1**: Initiate the use case when a new customer registers to join as a member.  **Step 3**: Input the personal information. | **Step 2**: The system ask for the personal information, such as name, address and mobile phone number.  **Step 4**: Conclude the use case when a membership number and a password is given to the customer together with a membership card. |
| **Alternative Course(s):** | None. | |
| **Precondition:** | None. | |
| **Postcondition:** | The membership card, membership number and password are given to the member. | |
| **Assumptions:** | None. | |

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|  |  |  |
| --- | --- | --- |
| **Use Case Name:** | Purchase | |
| **Actor(s):** | Member | |
| **Description:** | This use case describes the process of purchasing film tickets | |
| **Reference:** | TS-2 | |
| **Typical Course of Events:** | **Actor Action** | **System Response** |
| **Step 1**: Initiate the use case when a member wants to purchase film tickets.  **Step 3**: The member selects a film.  **Step 5**: The member selects the preferred date and time.  **Step 7**: The member selects the preferred seats and paid the price. | **Step 2**: If the member enters the correct password, display the available films.  **Step 4**: Display the available dates and times.  **Step 6**: Display the available seats.  **Step 8**: Conclude the use case when the system recorded the membership number, date, time, film, seats, amount paid and payment method. |
| **Alternative Course(s):** | None. | |
| **Precondition:** | The member has logged in by tapping the membership card at the RFID sensor or entering their membership number and entering the password. | |
| **Postcondition:** | Purchase record is recorded in the system. | |
| **Assumptions:** | None. | |

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|  |  |  |
| --- | --- | --- |
| **Use Case Name:** | Select monthly award | |
| **Actor(s):** | Time, Manager, Member | |
| **Description:** | This use case describes the process of selecting members for the monthly award | |
| **Reference:** | TS-3 | |
| **Typical Course of Events:** | **Actor Action** | **System Response** |
| **Step 1**: Initiate the use case at the end of each month.  **Step 4**: The manager confirms to send the discount e-coupons. | **Step 2**: Sort the members according to their total payment for that month.  **Step 3**: Select the top 3 members.  **Step 4**: Conclude the use case when the system sent the e-coupons to those selected members by email. |
| **Alternative Course(s):** | None. | |
| **Precondition:** | None. | |
| **Postcondition:** | E-coupons are sent by email. | |
| **Assumptions:** | The manager has logged in. | |

Step 4: Finding Potential Classes

By discovering nouns from use case document, potential classes are highlighted in above document when they first appeared, and listed as follows:

|  |
| --- |
| Potential Object Checklist |
| Customer |
| Member |
| Personal Information |
| Name |
| Address |
| Mobile Phone Number |
| Membership Card |
| Membership Number |
| Password |
| Member |
| Purchasing Film Tickets |
| Membership Card |
| RFID Sensor |
| Password |
| System |
| Membership Number |
| Dates |
| Times |
| Film |
| Seats |
| Price |
| Amount |
| Payment Method |
| Monthly Award |
| Time |
| Manager |
| Member |
| Top 3 Members |
| End of Each Month |
| Total Payment |
| Discount e-coupon |
| Email |

Step 5: Selecting the Proposed Classes

|  |  |  |
| --- | --- | --- |
| Potential Object Checklist | Decision | Reason |
| Customer |  | Outside the scope of the system |
| Member |  | Class “Member” |
| Personal Information |  | Not clear |
| Name |  | Attribute of “Member” |
| Address |  | Attribute of “Member” |
| Mobile Phone Number |  | Attribute of “Member” |
| Membership Card |  | Outside the scope of the system |
| Membership Number |  | Attribute of “Member” |
| Password |  | Attribute of “Member” |
| Member |  | Repeated class |
| Purchasing Film Tickets |  | Class “Purchase” |
| Membership Card |  | Outside the scope of the system |
| RFID Sensor |  | Outside the scope of the system |
| Password |  | Not persistence |
| System |  | Not clear |
| Membership Number |  | Attribute of “Purchase” |
| Dates |  | Attribute of “Purchase” |
| Times |  | Attribute of “Purchase” |
| Film |  | Attribute of “Purchase” |
| Seats |  | Attribute of “Purchase” |
| Price |  | Same as Amount |
| Amount |  | Attribute of “Purchase” |
| Payment Method |  | Attribute of “Purchase” |
| Monthly Award |  | Class “Monthly Award” |
| Time |  | Not persistence |
| Manager |  | Not persistence |
| Member |  | Repeated class |
| Top 3 Members |  | Attribute of “Monthly Award” |
| End of Each Month |  | Attribute of “Monthly Award” |
| Total Payment |  | Not persistence |
| Discount e-coupon |  | Attribute of “Monthly Award” |
| Email |  | Outside the scope of the system |

Step 6: Class Diagram

