

### Analysis and Design of Star Trek Games Shop

1. You are required to identify the functional Requirements for the Star Trek Games Shop.
2. You are required to derive a top-down Initial Entity-Relationship Diagram (Logical Data Model) for the Star Trek Games Shop.
3. Refer to the sample data given below. Normalise separately the Stock Enquiry, Membership & Rentals Enquiry, Reservations Enquiry, Rental History Data and Catalogue Data showing all appropriate Normal Forms for each normalisation task. You may include **any additional attributes** required for the **new system** that are not included in the examples given. State any **assumptions** you make and note if they differ from those for previous parts of the assignment.
4. Merge and optimise the sets of fully normalised relations that you have produced, giving them **names** and **listing their attributes**. Produce a **Third Normal Form Entity Relationship Diagram** derived from these merged relations.
5. Compare your **Initial Data Model from Part 1** and the **Third Normal Form Entity Relationship Diagram you have just produced**. Identify and explain **any differences** between these two diagrams and then produce a revised version of your Entity-Relationship Model taking account of these differences. Please ensure you include a copy of your Part 1 Initial Data Model for reference and comparison. **You do not need to label relationships that are clearly self-evident. State any new or changed assumptions.** You should attempt to **validate any assumptions** that you make. You may request further information about any aspect of the case study. This additional information should be documented and included with your submission.

You should also consider:

- If there are any other (possible) entities, attributes or relationships for which you require more information
- Any additional investigations you wish to carry out to validate your final model to support the assumptions you have made

## Sample Data

Some examples of the output for enquiries that can be made using the current system are provided below. There are data requirements for the new system that are not included in the current system such as records of rentals that have been returned and more information about the Games for the catalogue. Suggestions for this data are provided but you should consider carefully if these are adequate and make any further additions you find necessary. Explain any such additions.

### Stock Enquiry Screen from the old system.

Includes current rental (if there is one). Catalogue No. 01852GAME	Platform XBox	No. of discs 1	copies held 2			
Title Grand Theft Auto V		Rating 18		Rental Rate 4		
<b>Copies &amp; Current Rentals</b>						
Stock No.	Supplier	Date Acquired	Cost	Return Due	Member ID (Rental)	Member Name
1956	Games	28/08/13	£16.50	12/12/09	45632	Kermit Frog
9513	Amazon	12/6/08	£11.30	11/12/09	51231	Bob Marley

### Membership & Rentals Enquiry Screen from the old system.

The current system does not handle charges and payments for rentals.

<b>Member ID No.</b> 45632			<b>Address</b> 10 New St. Crownhill Plymouth PL1 6TY			<b>Tel. No.</b> 01752 633212		
<b>Surname</b> Frog						<b>Email</b> gt91jones@hotmail.com		
<b>Forenames</b> Kermit						<b>Date of Birth (if under 18)</b> 28/06/1985		
						<b>Max. No. concurrent rentals</b> 4		
<b>Current Rentals</b>								
<b>Issue date</b>	<b>Return due</b>	<b>N<sup>o</sup>. of renewals</b>	<b>Stock No.</b>	<b>Platform</b>	<b>Cat. No.</b>	<b>Title</b>	<b>N<sup>o</sup>. of discs</b>	<b>Notes</b>
1/09/13	15/09/13	1	3124	XBox	SP004	Marvel Lego heroes	1	Box damaged
5/09/13	12/09/13	0	3642	3DS	7952262	Jewel Link – Arctic Quest	4	
5/09/13	12/09/13	0	1956	Playstation	01852GAM E	Angry Birds Trilogy	1	

**Reservation Enquiry Screen** from the old system.

Includes copies held and current rentals.

Catalogue No. CDR42094	Platform XBox	Title LEGO Marvel Super Heroes	
<b>Reservations</b>			
Member ID	Member Name	Requested	Date Issued
51456	Drummer Animal	6/10/13	8/10/13
55347	Great Gonzo	10/10/13	
<b>Copies Held &amp; Current Rentals</b>			
Stock No.	Return Due	Member ID	Member Name
6623	15/12/13	51456	Drummer Animal
7010	11/12/13	51231	Cookie Monster

**Rental History Data**

No records of completed rentals exist in the current system. This should be included in the new system. The data required by the shop manager for each completed rental is as follows:

Stock No.  
 Catalogue No.  
 Platform  
 Title/Short Description  
 Member (Borrower) ID  
 Member Name  
 Date issued  
 Date due - *date game should have been returned*  
 Date returned - *date game was actually returned*  
 Overdue (yes or no) - *indicates if game was late being returned*  
 Total rental charges paid - *requires charges for **current** rentals to be recoded*

**Catalogue Data** - available for borrowers (as well as staff) to search.

This is not included in the current system but the new system should provide some details about contents of the games. The following suggestions for the required information were made by the Shop Manager but you should decide what needs to be included. **You may include other attributes not listed below.**

- Platform, Catalogue No. and Title
- Number of disks
- Synopsis and Review(s?)
- Category, Genre, Age Rating, Release Date
- Screenshots
- User Rating

Further examples of the information that could be held for each game can be found by looking by visiting suitable web sites selling or renting games..

As stated previously, you may email the Shop Manager (your tutor for the practical sessions) with concise and specific questions. You should keep your email enquiries brief and make them early. The Shop Manager is very busy so you should expect to receive only very brief replies. Lengthy answers will NOT be provided.