

S2.10: REVISION

Gamez2Go Case Study

Gamez2Go is an independent retailer of computer games for most modern consoles. An interview with Gamez2Go's owner, Amanda, has provided the following information.

Amanda, opened her first shop around five years ago in the centre of Preston. She now owns six other small stores in the North-West and is finding it difficult to keep track of her stock, customer's, and staff. She has a limited budget but hopes to improve her stores' viability with a new information system to help her keep track of things better.

At the moment, sales are entered into the till by just entering the price of the game. Each store has a computer that is used to record details of the game being sold on a daily spreadsheet: time, game title, console, price and loyalty scheme discount (if applicable).

The stores operate a loyalty scheme across all six stores, whereby anyone producing a Gamez2Go loyalty card will receive a 5% discount on any purchase. When someone uses their loyalty card, the loyalty card number is written onto a slip of paper, along with the total purchase price and the amount of discount given and put inside the till. There are now stacks of these slips of paper in Amanda's office from all of the stores. She would like to make use of the information as part of her marketing strategy by profiling her customers by their purchases, how often they buy, the type of games they buy, etc., but doesn't really have the time to do it.

Preston is the biggest store and holds most of the stock. The stock is replenished either direct from suppliers or from trade fairs. All deliveries from suppliers or trade fairs come to the Preston store. The stock is accompanied by a delivery note and is checked by a member of staff, before being added to the stock spreadsheet, priced, and put out on the shelves. An invoice usually arrives a few days later and this is checked against the delivery note, before being paid and then both are filed together.

The stock is distributed to the other stores when needed by one of the Preston staff. A list of the stock being transferred is made and a copy is sent with the stock so that the stock records can be updated at both stores, i.e., Preston's stock reduced, and the receiving store's stock increased.

At the end of each day, the takings are tallied against the sales spreadsheet. Any discrepancies are recorded in a book that is kept under the counter. The sales spreadsheet is then used to update the stock records. The takings are banked roughly every other day depending on how much business there has been.

The case study on Gamez2Go should be used for the following questions.

1. This question is about use case diagrams:
 - a. Using the information given about the Gamez2Go, draw a use case diagram that captures the key functions/requirements. **(14 marks)**
 - b. Draw and label the parts of a use case diagram. **(6 marks)**
2. This question is about activity diagrams:
 - a. Draw an activity diagram to satisfy the use case “Buy Item” in terms of buying an item from the Gamez2Go shop, such as a PS4 or Wii game. Note: the details in the case study don't cover the whole process of making a sale, so you will have to think carefully about what you think happens. **(14 marks)**
 - b. Draw and label the parts of an activity diagram. **(6 marks)**
3. Imagine you have taken over as the lead role in the Gamez2Go development. You need to go to the Preston store to ‘fill the gaps’ in the information you have already got. Prepare for a one-hour interview with someone from the store. You have never met them before or been to the store, so you will need to think about the whole meeting, from walking in the store door to walking back out an hour later (justifying who you should talk to, timings for the interview, the main questions to ask, etc). **(10 marks)**
4. The Management at Gamez2Go have been reading up on Lifecycles and have decided that they will use an agile lifecycle for the development of their new system. Discuss agile lifecycles and how using an agile approach may help or hinder their success. **(10 marks)**

5. The questionnaire below is about to be sent to all employees across all of the Gamez2Go stores, to help analyse the needs for a new computer system:

Hi! All Employees

What's new? I'm thinking we might get some new computers. Here are some questions for you to think about.

- a. How long have you used the old computer? _____
- b. How often does it go down? _____
- c. Who repairs it for you? _____
- d. When was the last time you suggested an improvement to the computer system and was it put into use? What was it? _____
- e. When was the last time you suggested an improvement to the computer system and nobody used it? What was it? _____
- f. Do you use a VDT or printer or both? _____
- g. How fast do you type? _____
- h. How many people need to access the sales spreadsheet regularly in your store? Is there anyone not using the computer who would like to?

Thanks, Amanda

- a. Advise Amanda on the suitability of the questionnaire. **(12 marks)**
- b. Write two questions that could be added as part of the questionnaire that would be more suitable for gathering information about the current systems used at Gamez2Go. **(8 marks)**

6. To keep track of invoice sales at Gamez2Go, i.e., which products are sold in each invoice, we could devise a tabular structure, as shown below, where INO is the Invoice Number, IDate is the Invoice Date, PNO is the product number, PName is the product name, PCode is the product category code, PCName is the product category name, Qty is the Quantity and unsurprisingly Price is the Selling Price:

INO	IDate	Products Sold
1136	11/04/2016	PNO=13, PName= Pokken Tournament with Shadow Mewtwo, PCode=C1, PCName= WiiU, Qty=1, Price=39.99 PNO=7, PName= Grand Theft Auto V, PCode=C2, PCName= PS4, Qty=1, Price=36.20
1137	11/04/2016	PNO=15, PName= Call of Duty 3, PCode=C2, PCName= PS4, Qty=1, Price=37.50 PNO=7, PName= Grand Theft Auto V, PCode=C2, PCName= PS4, Qty=1, Price=36.20 PNO=22, PName= FIFA 16, PCode=C3, PCName= PS3, Qty=1, Price=34.75
1138	11/04/2016	PNO=16, PName= Pokemon Super Mystery Dungeon, PCode=C4, PCName= 3DS, Qty=1, Price=32.50 PNO=17, PName= Mario Kart 7, PCode=C4, PCName= 3DS, Qty=1, Price=32.00
...	...	...(more records)

- Explain why we need to normalise data **(4 marks)**
- There are 3 types of anomalies that could jeopardise the integrity of a dataset that has not been normalised. Explain TWO of these anomalies, using examples from the data above. **(4 marks)**
- Propose a structured table-based organisation that satisfies the First Normal Form conditions for the data shown above. Explain the conditions for 1NF, what you did, justifying any assumptions or decisions that you made. You can add more fields if necessary to give better clarity. **(12 marks)**

7. This question is about data dictionaries:

- a. Explain why data dictionaries are an important part of database design. **(4 marks)**
- b. You are designing an information system for Gamez2Go. You have identified the need for tables (entities) called Product, Product Category, Sale, Member, etc. Provide a data dictionary for the entity Product in the format described below. **(16 marks)**

Field Name	Data Type	Field Size	Other Valid Information (primary keys, input masks, other constraints, etc)

8. There are a number of approaches to installing systems available to systems developers. With regards to Gamez2Go, discuss which of the approaches would be suitable for installing their new systems. **(10 marks)**
9. Discuss the importance of being able to maintain the system at Gamez2Go after installation: what factors influence maintenance, the different types of maintenance strategies, is documentation important, etc. **(10 marks)**