Higher
Computing Science

Database Design and Development

Analysis

Name:_____

Contents

End User and Functional Requirements

During the analysis stage of database development, you should identify the following requirements:

1 End-user requirements:

- the end users are the people who are going to be using the database
- their requirements are the tasks they expect to be able to do using the database

2 Functional requirements:

- processes and activities that the system has to perform
- information that the system has to contain to be able to carry out its functions

These requirements will help:

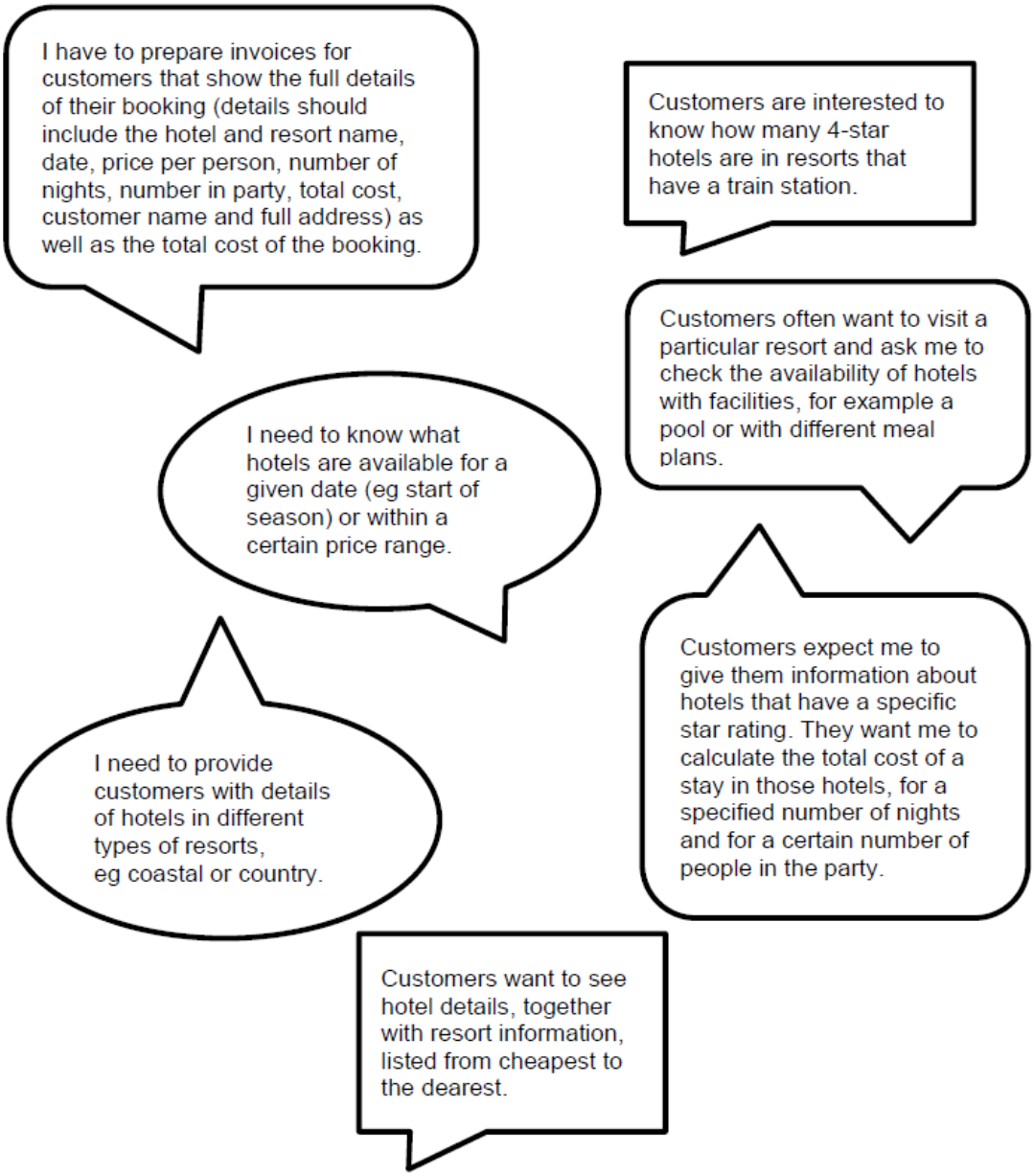
- clarify the design of the database
- identify the features to be implemented on the database
- evaluate whether the system is fit for purpose after development is complete

Worked example

A travel agency wants to create a relational database to store details of bookings for hotels in Scottish holiday resorts. The database will allow travel agents to view details of hotels and make bookings for customers. Four separate entities are required:

- Hotel (used to store details of hotels in each resort)
- Resort (used to store details of Scottish holiday resorts)
- Customer (used to store details of customers who make holiday bookings)
- Booking (used to store details of hotel bookings)

They have appointed a developer team to carry out an analysis of the database requirements. The developers ask some of the travel agency staff about the features they would expect to see in the completed database. The following are a few of the comments made by the staff:



End-user requirements

Travel agency staff should be able to perform a range of searches to display:

- full details of any booking
- availability of hotels in a particular resort, with specified facilities (meal plan or pool)
- details of hotels in a particular type of resort
- details of hotels available for a specified star rating
- resorts that have train stations

Staff should be able to sort search results in order of ascending order of price and should be able to calculate:

- the total cost of any holiday booking
- the number of hotels within a certain price range or available on a certain start date

Functional requirements

The relational database will have four tables: Hotel, Resort, Booking and Customer.
Each table requires a suitable primary key field, with foreign keys linking the four tables.
In addition to a primary key and any necessary foreign keys, the following fields are required:

Hotel:

— hotel name

— start of season date

— check-in time

— price per night

— meal plan

— swimming pool

— star rating

Resort

— resort name

— resort type

— train station

Customer

— first name

— surname

— address

— town

— postcode

Booking

— start date

— number in party

— number of nights

Use the following:

- simple and complex queries to search the database
- a simple sort to order the query results
- a calculation to work out the total cost of a booking
- an aggregate function to work out the number of 4-star hotels located in resorts that have a train station

Practise Questions

SQP Qu 17

In Formula One motor racing, teams can enter two drivers for each race. Every driver has a unique number on their car, which is allocated annually at the start of each new racing season.
A database is required to store data on the teams, drivers and race results since the sport started in 1950. Users would be able to collate information on team or driver wins to find the most successful racers or find how the success of teams has changed over the years.

State two functional requirements of the above database. (2)

2019 Qu 13

A charity called Animal Help has a website that allows people to raise funds through sponsorship. Details entered are stored in a relational database. Fundraisers can see their total donations from all of their sponsors and Animal Help can view the funds being raised on their behalf.

State two functional requirements of the relational database. (2)