

Case Study -- Fly-by-Night Travel

Fly-By-Night Travel Agencies organise tours. The company has an agency in the capital cities of various countries around the world. Each travel agency organises a range of tours within their own country. The company does not organise any inter-country tours. Customers book on these tours (a given customer may book on many tours) and may pay for the tour in a series of instalments. For each payment, a receipt is issued containing a receipt number (5 digit max - 99999), date of payment (Date), customer number, amount of payment and the tour number.

For each tour the company maintains a worldwide unique tour number (99999), the tour name (20 characters - C20), tour description (C50), maximum number of participants (maximum of 99), the date of departure (date), and return (date), the adult tour cost (99999.99), the child tour cost (99999.99) and details for each overnight stop on the tour which include the date of stop (date), hotel name (C20), hotel fax number (C15), and city (C20) for each overnight stop in the tour.

Each customer is assigned a worldwide unique customer number (99999). The company also maintains data on family name (C20), given name (C20), street address (C20), town/city (C20), postcode/zip (C4), and telephone number (C10 - not all customers have a telephone number), of each customer. When a customer books a tour, the company also records the date of the booking, the number of adults and number of children booked on the tour, the total amount owed by the customer on this tour and their current outstanding balance on this tour. If the customer pays for a tour by instalments, this outstanding balance is modified each time a payment is made.

For each agency, the agency code (C2), agency name (C20), agency address (C40), telephone number (C10), and manager's name (C20) are recorded.

Note:

C30 - represents a data item which has been identified as 30 characters

999 - represents a numeric data item containing a maximum value of 999

1. List the major entities in the system.

- Look for nouns in the case study descriptions
- Example :

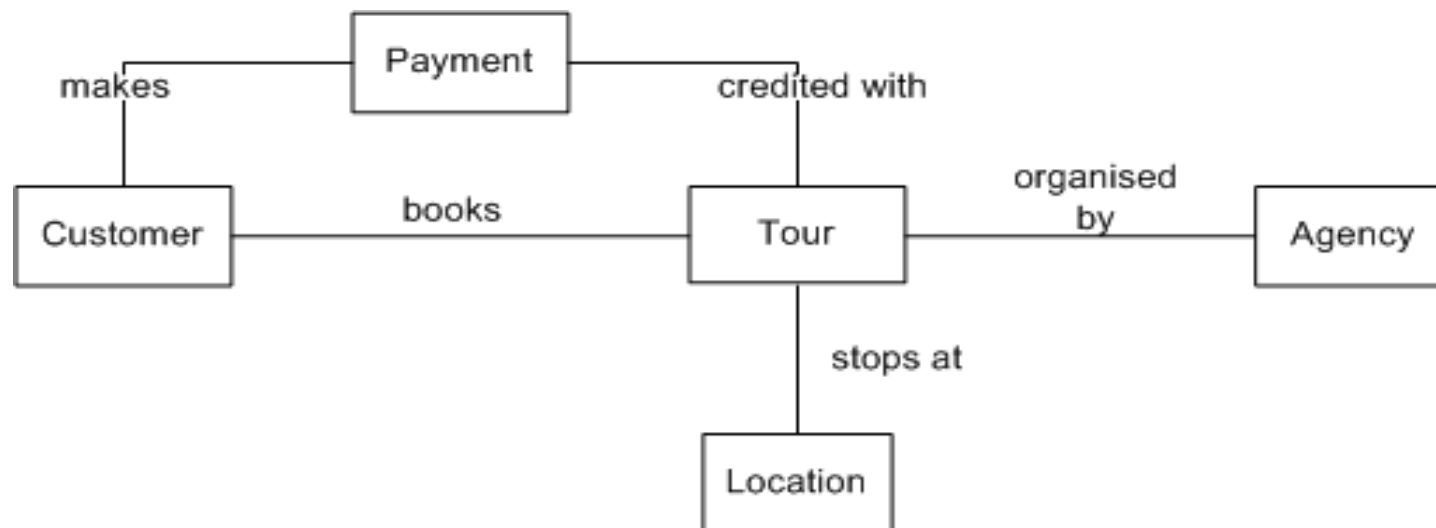
“Fly-By-Night Travel Agencies organise tours. The company has an agency in the capital cities of various countries around the world. Each travel agency organises a range of tours within their own country. The company does not organise any inter-country tours. Customers book on these tours (a given customer may book on many tours) and may pay for the tour in a series of instalments. For each payment, a receipt is issued containing a receipt number (5 digit max - 99999), date of payment (Date), customer number, amount of payment and the tour number.”

2. Represent the entities graphically by a rectangle.

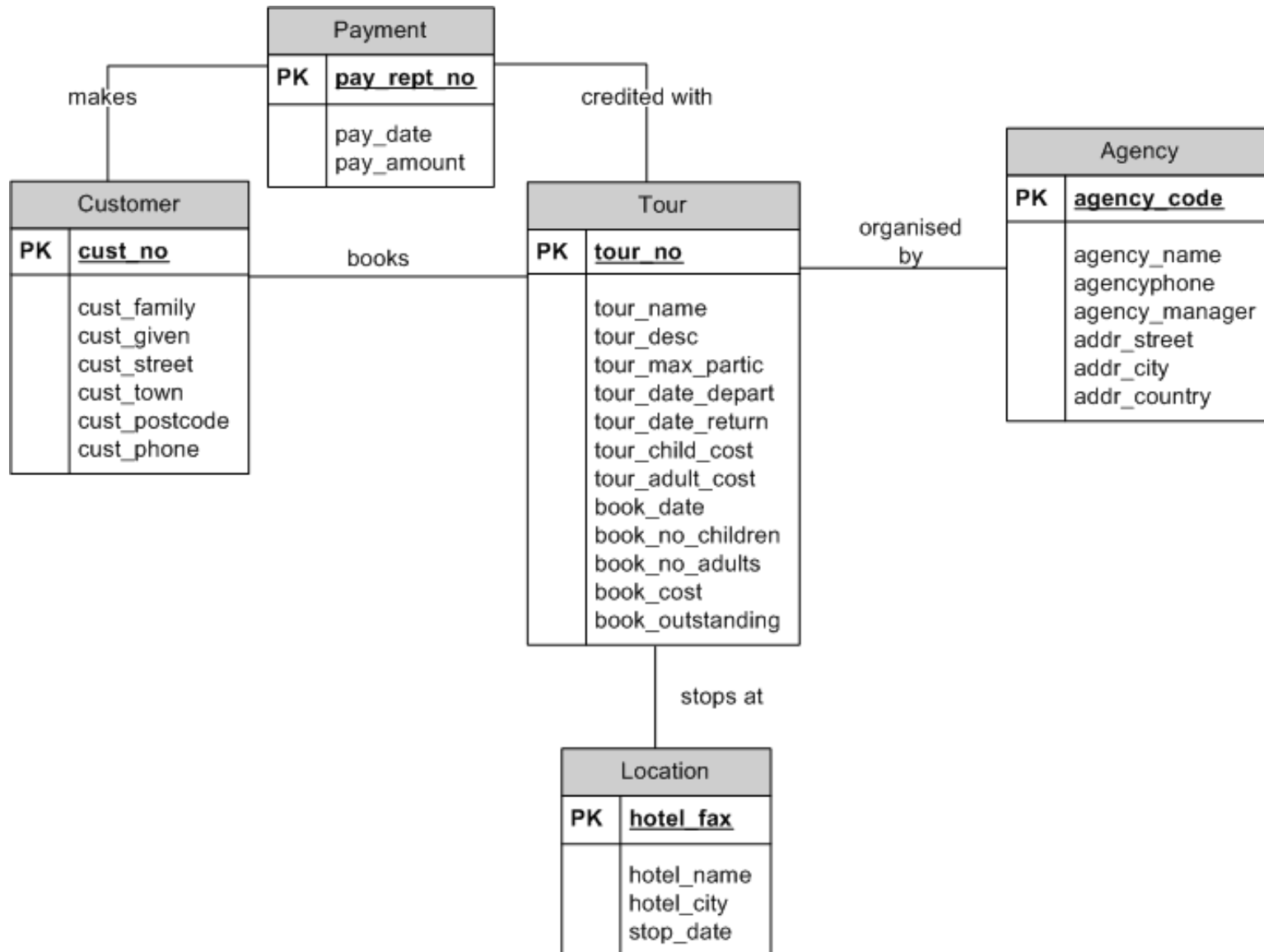
3. Search for relationships between the entities and represent them graphically with the proper symbol (e.g. a diamond if Chen's notation is used). Determine if there are supertypes and subtypes relationships between entities.

- verbs normally provide us with clues on the relationships between entities.
- **Example :**

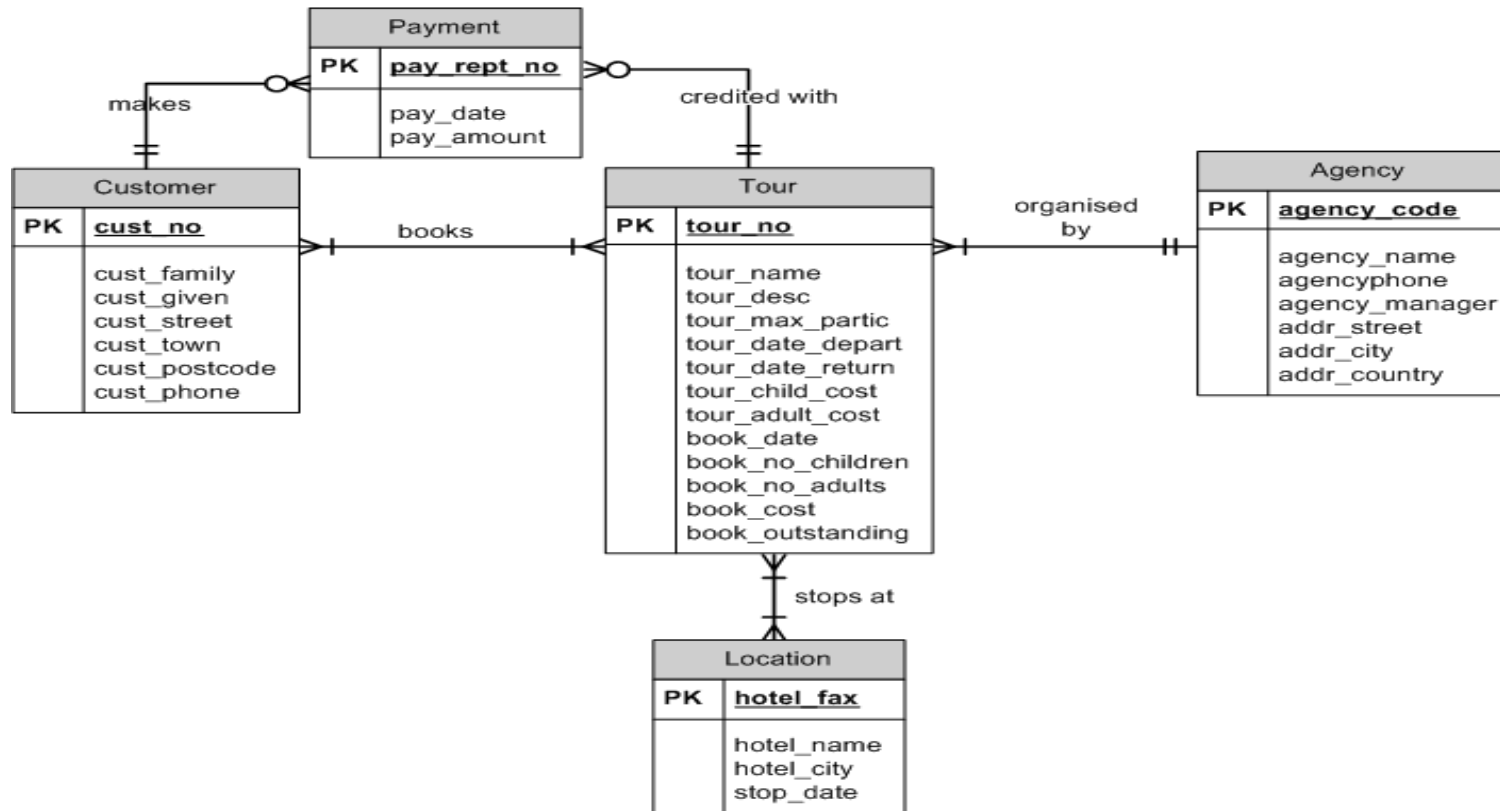
“agency *organises* a range of tours” and “Customers *book* on these tours”. Verbs - ‘*organises*’ and ‘*book*’, indicate the relationships between entities “agency” and “tour”, “Customer” and “tour” respectively.



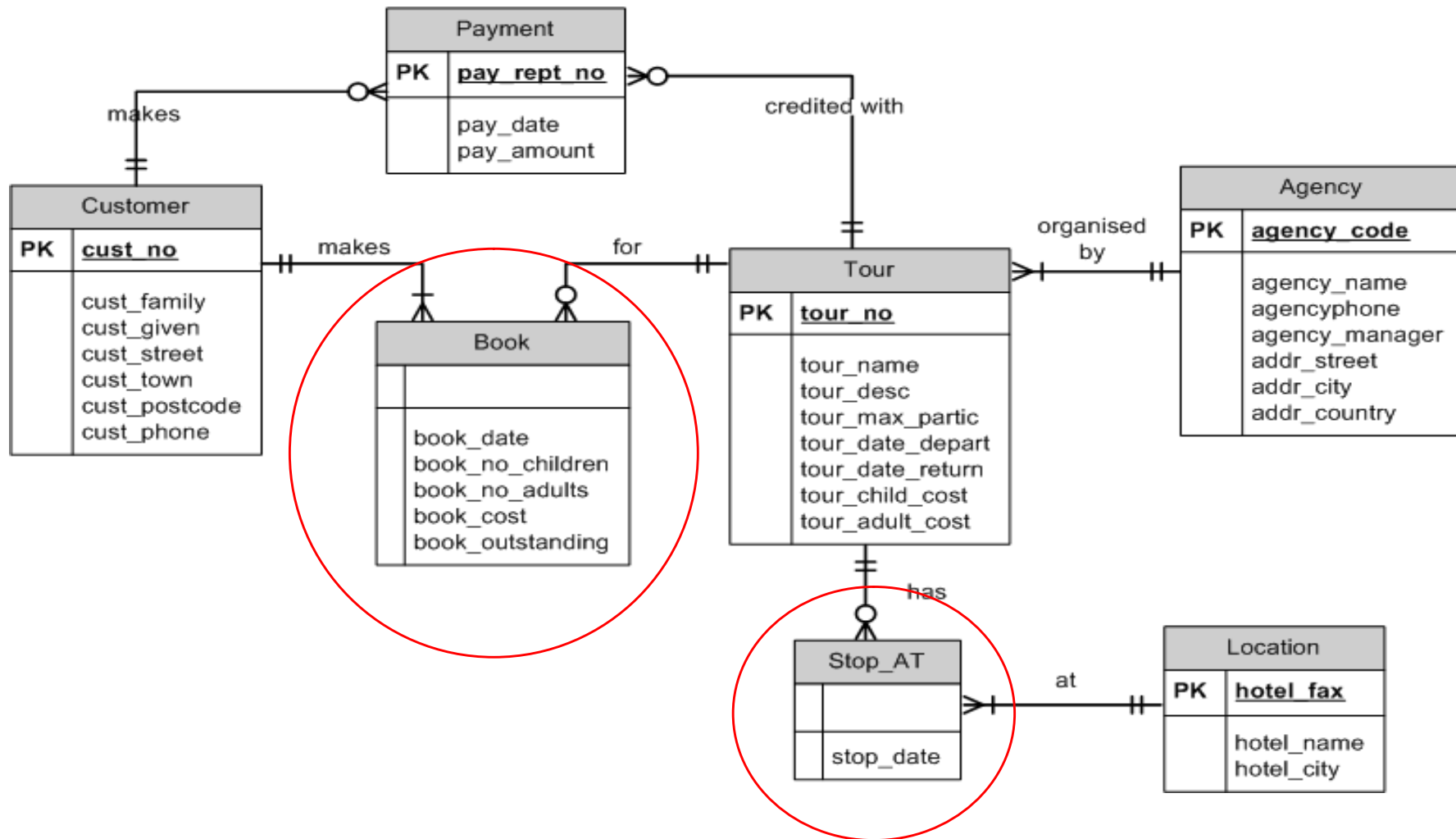
4. Add attributes; remember to establish the primary key for every entity.



5. Model relationship connectivity between each pair of entities.
6. Model relationship cardinalities between each pair of entities (i.e. the minimum and maximum participation).



7. Determine if composite entities are to be created. If required, refine the connectivity and cardinality of entities affected.



8. Verify the ERD you have created by going through each component you have created from Steps (1) to (7). Ensure that they properly represent the business rules of the system you are developing the database for. Repeat this process until your ER diagram is complete.

