# Class Diagram – Case Studies

* A telephone company offers a number of different discount schemes to its customers, including:
* Family and Friends – any calls made to one of six previously declared numbers is calculated at a 5% discount.
* Senior Citizen – any customer over the age of 60 gets a 10% discount on local calls made
* Early Bird – bills that are promptly paid ensure that the customer gets a 5% discount on their total bill next month.

Build a class diagram to support this business model. Ensure that the model is appropriate for all potential customer circumstances.

* A graphics package allows the user to render a number of different shapes, set line and fill colour properties, and rotate or move shapes. Current shapes supported include squares, rectangles, circles and triangles.

Design a class structure with extensibility in mind. It may be desirable to add the capability to render new shapes in future.

* IDEA Furniture Warehouse sells items of Swedish-style furniture including both self-assembly and pre-assembled items. They require a new information system to help automate their sales and stock control operations. They will be retaining the database from their existing stock control system.

In the sales department, Sales Assistants assist customers with queries on price and specification. They also perform sales transactions. Prior to performing a sale, the customer must agree with the catalogue number of the item they wish to purchase. A sales manager controls the sales operation with responsibility for reviewing past monthly sales and setting future sales targets.

The stock manager varies levels of stock according to demand and issues orders for one or more items when the stock gets low. When new items arrive the goods handlers have responsibility for loading the new stock into the warehouse and for restocking empty shelves. Goods handlers are also called upon to assist customers who are loading bulky items at the customer pickup point.

Some customers pay in cash or with credit/debit cards at the point of sale. Other customers have accounts which are settled every 28 days.

Design a class structure to describe the above business model. Be sure to include all of the methods mentioned in the description.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Customer |  | Item |  | Transaction |  | Targets |  | Stock |
| Name  Address  Number  Card  Balance |  | Cat No  Price  Colour  MinLevel  Location |  | Items []  Salesperson  Date  Time  Customer  Cash/Card |  | Transactions[]  Manager  Date  Value |  | Items[]  TotalVal |
| Buy()  Pay() |  | Reorder()  Move()  Sell()  Discount() |  | Create() |  | Set()  Alter() |  | Reorder()  Sell()  Print()  Query() |

Actors – Sales Assistants, Goods Handlers, Sales Manager, Stock Manager