

Question # 1

Consider a reservation system for an inter-city transportation company that operates buses on different routes. Each route is determined by a source and destination. On each route different buses run at different timings. There are two categories of buses that differ in services and consequently fare. Economy buses provide standard transportation facility and their fare is computed as a product of the route distance and base rate (fare per km). Luxury buses on the other hand have a higher base rate, considering reduced seating capacity. In addition, luxury buses provide different options for refreshments as well as extra luggage, the cost of which can be added to the fare.

Question # 2

The uml diagram in this question is to introduce some common terms, "dictionary" for online shopping - Customer, Web User, Account, Shopping Cart, Product, Order, Payment, etc. and relationships between. It could be used as a common ground between business analysts and software developers.

Each customer has unique id and is linked to exactly one account. Account owns shopping cart and orders. Customer could register as a web user to be able to buy items online. Customer is not required to be a web user because purchases could also be made by phone or by ordering from catalogues. Web user has login name which also serves as unique id. Web user could be in several states - new, active, temporary blocked, or banned, and be linked to a shopping cart. Shopping cart belongs to account.

Account owns customer orders. Customer may have no orders. Customer orders are sorted and unique. Each order could refer to several payments, possibly none. Every payment has unique id and is related to exactly one account.