

CS 631 Data Management Systems Design  
The Online Computer Store  
Project Deliverable 1

Team Number – 10

Team Members –

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## Goals -

- ❖ The primary goal of project deliverable 1 is to design an extended ER diagram according to the requirements specified for “The Online Computer Store”.
- ❖ The design of the diagram must satisfy all the requirements while keeping real world factors in mind.
- ❖ The extended ER diagram must show entity types, their attributes, relations between these attributes along with appropriate notation denoting cardinalities and participation constraints.
- ❖ All the assumptions made in the process of designing Entity Relationship diagram are to be specified.

## Description of the ER diagram -

Entity Types	Attributes
Customer	<u>Cust_ID</u> , <u>Name</u> (Composite Key) First_name, Surname Email_Address, Phone
Shipping_Address	Country, Zip code, Street Name, City, State, <u>Label</u> , <u>Customer ID</u>
Transaction	Transaction_ID, Total_Cost
Products	<u>Product_ID</u> , Price, Description, Name
Status	<u>Status_ID</u> , Regular, Silver, Gold, Platinum
Desktop	CPU_Desktop
Laptop	CPU_Laptop, Battery, Weight
Printers	Printer_Type, Resolution
Shopping_Cart	Quantity, Card_ID, Cost
Credit_Card	<u>Card_ID</u> (Primary key), <u>Name</u> , <u>Billing Address</u> , <u>Number</u> , Security_Number, Type, Expiry_Date
Shipment	<u>S_Status</u> (Primary key), Shipment_ID

### Relationship Types between Entity Types -

Relationship Type	Entity Type One	Entity Type Two	Description
BUYS	Customer	Products	A customer can buy several products
HAS_OFFER	Products	Status	Product can have an offer
HAS_STATUS	Customer	Status	A customer can have any one status of the four
ADDS_TO	Products	Shopping_Cart	The products selected by the customer are added to the shopping cart.
PAYMENT	Transaction	Shopping_Cart	The total cost of the shopping basket is calculated
DOES	Transaction	Customer	The customer does transaction.
DONE_USING	Transaction	Credit_Card	The transaction is one using credit card of the customer
HAS_CARD	Credit_Card	Customer	Credit card details of the customer.
TRANSCATION_SUCCESS	Transaction	Shipment	Once the transaction is approved, the shipment starts.

### Assumptions -

1. A customer can have home address as their shipping address or different.
2. It is not necessary that every product will be on offer.
3. The assumption for shopping cart is (1,N) because shopping cart cannot be empty according to the description.
4. Customer can have 1 or more credit cards (1,N)
5. Customer can have one and only one shipping address (1,1)

### Constraints -

1. If a customer tries to buy a product above the credit line, the transaction will get cancelled.

2. A customer must have one of the four statuses to buy any product or place any order.

### Difficulties in Conceptual Design -

Assumptions were to be made which formed important decisions in conceptual design of the database. Formulating these assumptions such that entity types and relationship types depict real world scenarios accurately was a difficulty. In order to overcome this, real instances were taken and attributes were assigned accordingly for both entity types and relationship types.

