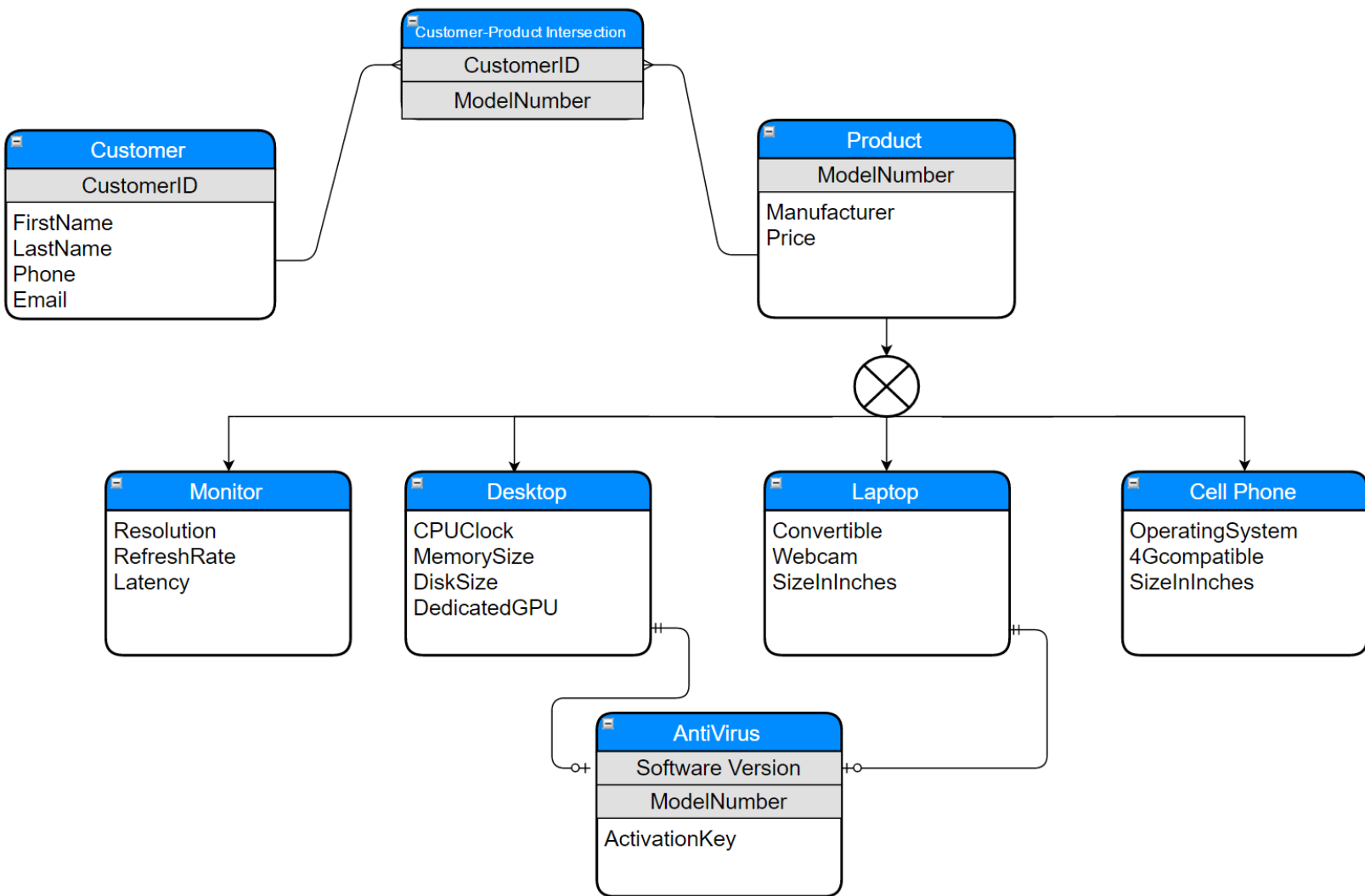


Patrick Goddard

Database Part One

1. My enterprise is a small-scale electronics store. The store is a single location, with only 20-30 employees.
2. The users of my system are the store's sold-product tracking management team. The system will track which product was sold to a certain customer, in order to track a customer's purchasing history.
3. The database will store all unique products that my enterprise offers, and will only handle the association of a product with a customer once a sale is complete. The database does not handle sales, but rather the association of the sold product with the customer. In layman's terms, my system is a "who-purchased-what" database. So, many different customers can be linked to many different products. The product tracking managers must be able to:
 - Add a new customer to the database
 - Associate an existing customer with a product
 - Create a new product
 - Monitor/Desktop/Laptop/Cell Phone
 - Delete an old product that is no longer offered
 - Create a new Anti-Virus Software that can be installed on sold Desktops and Laptops
 - Delete an old Anti-Virus Software
 - View all products via different sorting methods
 - View specific products via different sorting methods
 - View all customers via different sorting methods
4. See next page for ER-Diagram:



5. The following basic **forms** are guaranteed to be implemented via **querying**:

- The ability to add a new instance of a product
[*New unit for sale that was not already in database*]
- The ability to remove an instance of a product
[*Unit is no longer being sold/recall/out of stock*]
- The ability to add a new customer
[*The store now has a new customer*]
- The ability to associate a customer with a product
[*Customer purchased product, and is now associated with it*]
- The ability to add or remove an Anti-Virus Software
[*A new Anti-Virus can be sold or one is no longer available*]

The following basic **reports** are to be implemented:

- The ability to sort all products or a specific sub-type of product by price
[Returns a report of products in order of ascending/descending price]
- The ability to sort all products or a specific sub-type of product by Model Number
[Returns a report of products in order of ascending Model Number]
- The ability to sort all customer's by last name
- The ability to sort all customer's by first name
- The ability to generate a report of all products a certain customer is associated with
- The ability to generate a report of all customers a product is associated with

6. Rules:

- An AntiVirus Software cannot be associated with a customer standalone; it has to be associated with a Desktop or Laptop. i.e: The customer has to buy a Desktop or Laptop in order to have the AntiVirus Software installed

7.

Keys:

- All Products — ModelNumber
 - Desktop [subtype of product]
 - Laptop [subtype of product]
 - Monitor [subtype of product]
 - Cell Phone [subtype of product]
- Customer
 - CustomerID
- AntiVirus [weak entity]
 - Software Version

Attribute Constraints:

- Customer
 - CustomerID: non-NULL
 - FirstName: non-NULL
 - LastName: non-NULL
 - Phone: NULL
 - Email: NULL

- Product
 - ModelNumber: non-NULL
 - Manufacturer: non-NULL
 - Price: non-NULL
 - Monitor
 - Resolution: non-NULL
 - RefreshRate: non-NULL
 - Latency: NULL
 - Desktop
 - CPUClock: non-NULL
 - MemorySize: non-NULL
 - DiskSize: NULL
 - DedicatedGPU: non-NULL
 - Laptop
 - Convertible: non-NULL
 - Webcam: non-NULL
 - SizeInInches: NULL
 - Cell Phone
 - OperatingSystem: non-NULL
 - 4GCompatible: NULL
 - SizeInInches: non-NULL

- AntiVirus
 - SoftwareVersion: non-NULL
 - ModelNumber: non-NULL [foreign key]
 - ActivationKey: non-NULL

Intra-relation Constraints:

- All ModelNumbers must be unique.
 - No sub-type of Product (Monitor/Desktop/Laptop/Cell phone) can have an identical ModelNumber of another sub-type.
 - All CustomerIDs must be unique
 - All AntiVirus' Software Versions must be unique

Referential Integrity Constraints:

- AntiVirus is a weak entity and cannot exist on its own
 - A Desktop or Laptop can be sold with AntiVirus software preloaded on the machine, but the AntiVirus software cannot be sold standalone.
 - For an AntiVirus entity to exist there **MUST** be a ModelNumber of a Desktop or Laptop in which the software is installed on, and that ModelNumber **MUST** exist in either the Desktop or Laptop table.