2016

Fantastic Mobiles Database Model

Version 1.0

**Northeastern University | Team: Fantastic Mobiles**

**INFO 6210 DATA MANAGEMENT AND Database design**

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# **Revision History**

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| --- | --- | --- | --- |
| **Date** | **Version** | **Description** | **Author** |
| 11/08/2016 | 1.0 | Cellular Model | Shantam Gupta, Vaishali Lambe,  Yuxin Zhang,  Zhiyi Wang |
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**Introduction**

The Database Model for Fantastic Mobile is a representation of a small scale Cellular Company database model. This model contains information about the services provided by the company with a special focus of the tracking mechanism to regulate the services

This model is used as a tool to understand the design and development of a database system created for a small scale Cellular Company. It also helps to understand the flow and storage of information within the database system.

This document covers the following:

* Assumptions used for creating this model
* Description of Entities and attributes
* The mapping of attributes and entities
* Primary, Unique and Foreign key constraints
* High Level Image of the model

The model has been created by Shantam Gupta , Vaishali Lambe, Yuxin Zhang, Zhiyi Wang for academic purposes under the guidance of Mr. Vincent Lattuada as part of his coursework for ***INFO6210 18748 Data Mgt and Database Design SEC 09 - Fall 2016*** at Northeastern University.

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# **Scope**

Scope describes the domain and the design boundaries of the associated database model including the rules and assumption used for designing the model. This document contains information about the database design for a Cellular Company. It is composed of the definition of entities, description of the attributes rules for mapping it.

## **IN SCOPE:**

**It includes all the details about the rules and assumptions made while designing this model that are present in the model. It helps to determine the inner domain of the model.**

|  |  |
| --- | --- |
| **Sr.No.** | **Description** |
| **IS01** | **Each Customer can have more than one connection.** |
| **IS02** | **A Connection cannot exist on its own (without the customer).** |
| **IS03** | **The main focus of the Cellular Company is in providing data/text/voice services.** |
| **IS04** | **Each tower can receive and transmit multiple signals from innumerous devices within its specified range.** |
| **IS05** | **A phone device could change towers for signal transmission.** |
| **IS06** | **A customer can call /send text messages/ browse multiple webpages at the same instant.** |
| **IS07** | **The customer has the flexibility to modify and change its contract.** |
| **IS08** | **There exists a head customer for a family plan type of contract.** |
| **IS09** | **Billing takes into consideration the overshoot in consumption of services provided by the company.** |
| **IS10** | **Only the meta Data for voice/call/ text services are being collected.** |
| **IS11** | **Non sharing plans should be at phone level.** |
| **IS12** | **Tracking of unique identification numbers like IMEI is required for each device.** |
| **IS13** | **Each Customer can have more than one equipment.** |
| **IS14** | **Each Customer can have more than one contract.** |
| **IS15** | **Employee can be a customer at the same time.** |
| **IS16** | **Employee can serve one or more customers.** |
| **IS17** | **Company tracks the customer usage based on service used.** |
| **IS18** | **Bill generated is based on service, usage and contract.** |
| **IS19** | **Discounts are available with plans** |
| **IS20** | **One sim card can be switched from one equipment to another** |
| **IS21** | **The bill generated includes tax associated with the services** |
| **IS22** | **The head of the family plan customer pays the bill of the contract** |

## **OUT OF SCOPE:**

**It provides details about the assumptions that have been used as a parameter for defining the design boundary for the development of the model. It includes those details which are not present in the model but are necessary to understand the functionality of the model.**

|  |  |
| --- | --- |
| **Sr. No.** | **Description** |
| **OS01** | **More than one towers cannot send /receive the same signal at the same instance.** |
| **OS02** | **Customer feedback and other Quality features are beyond the scope of this model.** |
| **OS03** | **Collection of Marketing and Advertisement data is not in the scope of this model.** |
| **OS04** | **In house Manufacturing of products/services is beyond the scope of this model.** |
| **OS05** | **Provision of exceptional plans like international calling are beyond the scope of this model.** |
| **OS06** | **Tracking of malfunctioned equipment(s) is out of scope.** |
| **OS07** | **Postpaid Services are not incorporated in the design of the model.** |
| **OS08** | **The content of the data services consumed by a customer is not being collected.** |
| **OS09** | **More than one towers cannot send /receive the same signal at the same instance.** |
| **OS10** | **Customer feedback and other Quality features are beyond the scope of this model.** |
| **OS11** | **Detail supplier info which not relevant to our business for future use, like supplier credibility** |
| **OS12** | **Detail employee info for company insurance policy use is not required** |
| **OS13** | **Employee family phone/service discounts** |
| **OS14** | **Exchange of contracts is not permissible** |
| **OS15** | **Validation of customers’ identity is not done for purchase done by debit/credit card** |
| **OS16** | **Employee payroll system is not included the design** |
| **OS17** | **Sharing of unconsumed services is not permissible** |
| **OS18** | **Tracking of inventory of equipment is out of scope** |
| **OS19** | **Unconsumed services cannot be carry forwarded** |
| **OS20** | **Usage rollover is out of scope** |

# **Entities & Attributes**

## **Contract:**

The entity of contract lists, which indicates the all the available contracts by the company

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Contract** | | | | | |
| **Attribute Name:** | **Description:** | **Data Type (size)** | **Key:** | **Null or not null** | **Sample Data** |
| ContractID | Contract ID, identifies each unique kind of the contract | Integer | Primary Key | Not null | 13112293, 13322989, 21322199, 21363278 |
| Type | Bicycle name, describes the model name | Char |  | Not Null | Family Plan, Personal Contract, Pre-paid |
| ContractText | Contract Text, the text allowed for the customer based on certain contract | Integer |  | Not Null | 500, 1000, 900 |
| ContractVoice | Contract Voice, the voice of minutes allowed for the customer based on the certain contract | Time |  | Not Null | 100, 300, 500, 1000 |
| ContractData | Contract Data, the data plan in megabyte in the contract | Float |  | Not Null | 1000.23, 500.001, 3000.002 |
| CustomerID | Indicates which customer this contract belongs to | Integer | Foreign Key |  |  |

**Usage:**

The record of usage entity which is used to check the usage of certain customer based on certain contract, so the company can generate the bill for that customer

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Usage** | | | | | |
| **Attribute Name:** | **Description:** | **Data Type (size)** | **Key:** | **Null or not null** | **Sample Data** |
| UsageID | Usage ID, identifies each unique kind of the usage | Integer | Primary Key | Not null | 001239292, 013322989, 021322199, 021363278 |
| UsageUnitPrice | Usage Unite Price, the unit price of usage for a certain customer based on contract | Char |  | Not Null | 5c/min-1c/text-$1/mb,  10c/min-2c/text-$0.5/mb,  3c/min-10c/text-$0.1/mb |
| ContractID | Contract ID, to indicates how usage should be comparison based on specific contract | Integer | Foreign Key |  | 13112293, 13322989, 21322199, 21363278 |