IS 475/675 - Database Design & Implementation Project Part 3

To: Professor Edberg

From: Team 4 - Ricky Genz and David Rhodes

Date: May 5, 2016

Subject: Database Information

Data Model Description

In the logical data model, we looked at all the data Replica Toys wanted to capture and put it in the category it most aligned. The general categories were registration data, return data, survey data, review data and quality control data. One of our priorities was ensuring there was no data redundancy. This process helps us meet the goals and requirements of Replica Toys. For instance, by segmenting out the data and reducing redundancy, we are able to efficiently pull data such as figuring out what features the customer was most interested in when they bought the toy.

For the physical data model, we took what we thought would be most essential to create a basic prototype. For this, we included the Model, Registration, Feature, RegestrationFeaure, Distributor and Customer. We chose these as they are the core of the database and are good for prototype testing.

Data Model Abbreviations:

- Location Table = City and State Attributes derived from zipcode which equals LocationID
- Referral Table = “Where did you first learn about toys from Replica Toys?” Registration Data
- Repurchase Attribute = “Do you anticipate buying similar toys in the future?” Registration Data
- SurveyQuestionAnswer Table = “possible answers to questions for a survey” Survey Data
- Response Table = “specific answer to a specific question by a specific customer” Survey Data
- PersonID Attribute = “Person Reporting Problem” Quality Control Data

- Mode Table = “Complaint Made” Quality Control Data
- Type Table = “Type of Problem” & “Test Type” in Quality Control Report & Test Data

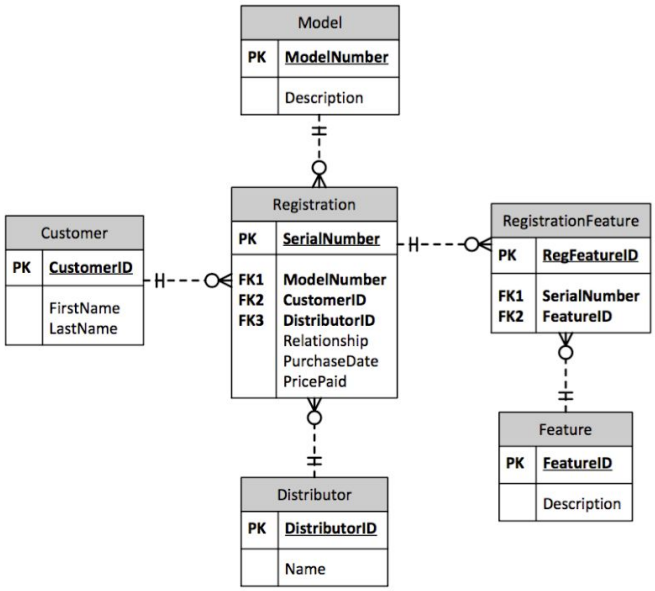
For the company to implement this system, we would still need to build out the whole system. Right now we only have the prototype of the registration system which is bare functionality to prove validity.

Next Step

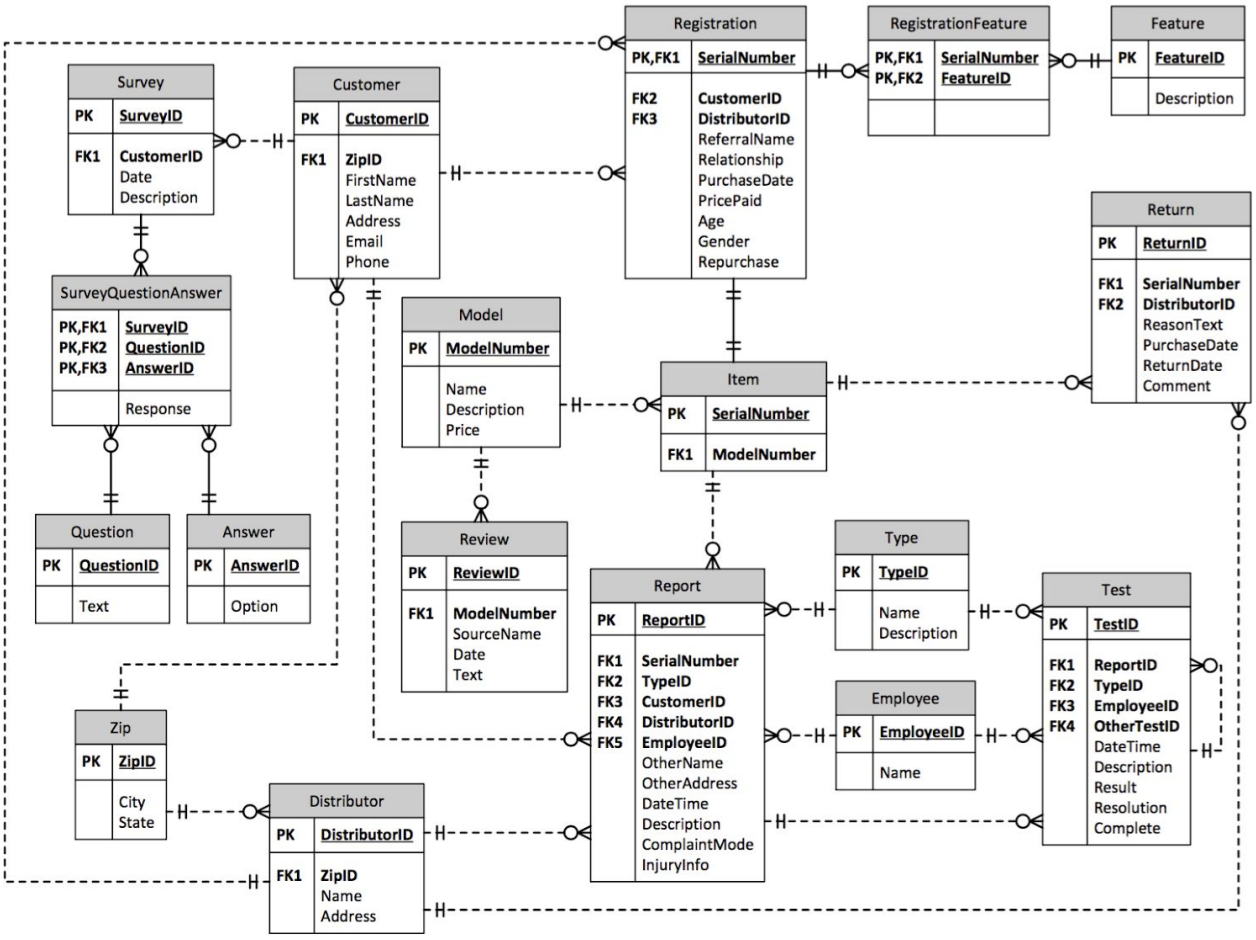
We believe that the best way to successfully implement the project is to phase out the development. While it may initially take longer, we strongly believe that this is the best road to success. Our next step will be building out the prototype for the Quality Assurance as it is a big project like the registration project. From there, we need to meet with the marketing department to see their timeline for the survey functionality. After all these pieces are put together, we can start to do a more polished full fledged version of the software.

The name of the database in which all this is stored is called kgenziii.

Physical Database



Logical Database



SQL Queries

One Code

```
Select      reg.SerialNumber 'Serial Number',
            mdl.ModelNumber 'Model Number',
            mdl.Description 'Model Description',
            (cus.LastName + ', ' + cus.FirstName) 'Buyer Name',
            CONVERT(varchar, reg.PurchaseDate, 101) 'Purchase Date',
            reg.PricePaid 'Price',
            dis.Name 'Distributor',
            reg.Relationship 'Relationship of Buyer to User'
From        tblRegistration reg
Inner Join  tblModel mdl
On          reg.ModelNumber = mdl.ModelNumber
Inner Join  tblCustomer cus
On          reg.CustomerID = cus.CustomerID
Inner Join  tblDistributor dis
On          reg.DistributorID = dis.DistributorID
Order By    reg.SerialNumber;
```

One Result

	Serial Number	Model Number	Model Description	Buyer Name	Purchase Date	Price	Distributor	Relationship of Buyer to User
1	16047465-21	JLSFIM	Jeep Liberty	Jones, Jacob	02/08/2016	450.94	Engines for Kids	Parent
2	18068999-13	TR4GGS	Toyota Rav4	Jones, Jacob	02/03/2016	432.46	Deadmond Toy World	Aunt/Uncle
3	21737859-07	JGCSUV	Jeep Grand Cherokee	Mince, John	02/05/2016	504.11	Cars Toys Cars	Grandparent
4	21737859-08	JLSFIM	Jeep Liberty	Wood, Emma	04/17/2016	328.83	Ooops Kids Market	Friend
5	22342160-18	TR4GGS	Toyota Rav4	Mince, John	03/21/2016	429.77	Kids Have Toys	Aunt/Uncle
6	22559667-15	TTAACT	Toyota Tundra	Thomson, Kade	02/17/2016	354.75	Rich Kids	Parent
7	23756459-23	TYLLBD	Toyota Yaris	Gordon, Karen	01/30/2016	491.76	Cars Toys Cars	Parent
8	25844953-12	TTITIC	Toyota Tacoma	Ward, Emily	03/23/2016	301.90	Toys Gone Viral	Grandparent
9	27969986-26	JPLEGA	Jeep Patriot	Thomson, Kade	01/08/2016	631.59	Dorphington	Grandparent
10	45332874-03	JRFJLC	Jeep Renegade	Brown, Liam	02/12/2016	516.61	Once Upon My Car	Aunt/Uncle
11	51352201-09	TCGGLI	Toyota Camry	Scott, Sophia	03/22/2016	429.77	King of Kings	Other Relative
12	55162202-11	TPNFBE	Toyota Prius	Parker, Olivia	01/09/2016	329.71	Dorphington	Parent
13	58513124-10	TYLLBD	Toyota Yaris	Brown, Liam	02/23/2016	302.15	Kids Have Toys	Grandparent
14	59482084-28	TCGGLI	Toyota Camry	Johnson, Mason	02/27/2016	515.92	Engines for Kids	Aunt/Uncle
15	60011232-04	JWSCIA	Jeep Wrangler	Gordon, Karen	04/07/2016	696.03	Motor Time	Friend
16	63388078-14	T4RBCC	Toyota 4Runner	Johnson, Mason	03/12/2016	347.22	Motor Time	Grandparent
17	70359072-24	JRFJLC	Jeep Renegade	Wood, Emma	02/03/2016	351.80	Deadmond Toy World	Grandparent
18	72557082-19	T4RBCC	Toyota 4Runner	Smith, Noah	01/28/2016	673.35	Expensive Much	Other Relative
19	75042755-05	JWSCIA	Jeep Wrangler	Linker, Adolf	03/01/2016	453.12	King of Kings	Other Relative
20	75100900-29	TTAACT	Toyota Tundra	Mince, John	04/14/2016	302.15	Kids Have Toys	Parent
21	76841161-25	JGCSUV	Jeep Grand Cherokee	Johnson, Mason	03/22/2016	453.12	Rich Kids	Other Relative
22	78141265-27	TPNFBE	Toyota Prius	Parker, Olivia	04/18/2016	350.54	Ooops Kids Market	Aunt/Uncle
23	79127520-30	TTITIC	Toyota Tacoma	Parker, Olivia	03/29/2016	430.44	Toys Gone Viral	Parent
24	84901274-06	JCSCNC	Jeep Compass	Foster, Madison	01/28/2016	347.22	Once Upon My Car	Other Relative
25	86821416-20	JWSCIA	Jeep Wrangler	Linker, Adolf	04/07/2016	476.63	Motor Time	Aunt/Uncle
26	88345980-22	TYLLBD	Toyota Yaris	Thomson, Kade	03/15/2016	577.60	Market Kids	Grandparent
27	90109631-02	JGCSUV	Jeep Grand Cherokee	Jones, Jacob	03/19/2016	350.54	Deadmond Toy World	Grandparent
28	93374276-16	JGCSUV	Jeep Grand Cherokee	Foster, Madison	04/14/2016	302.15	King of Kings	Grandparent
29	93934869-17	JCSCNC	Jeep Compass	Parker, Olivia	01/11/2016	539.30	Once Upon My Car	Parent
30	94590241-01	JCCSVU	Jeep Cherokee	Smith, Noah	04/07/2016	577.60	Motor Time	Parent

Two Code

```
Select      reg.Relationship 'Relationship to User',
            COUNT(reg.SerialNumber) 'Count of Registrations',
            COUNT(distinct reg.ModelNumber) 'Count of Distinct Models',
            SUM(reg.PricePaid) 'Sum of Price',
            ROUND(AVG(reg.PricePaid), 2) 'Average Price'
From        tblRegistration reg
Group By    reg.Relationship;
```

Two Result

	Relationship to User	Count of Registrations	Count of Distinct Models	Sum of Price	Average Price
1	Aunt/Uncle	6	5	2721.93	453.66
2	Friend	2	2	1024.86	512.43
3	Grandparent	9	6	3669.06	407.67
4	Other Relative	5	5	2356.58	471.32
5	Parent	8	7	3476.65	434.58

Three Code

```
-- Summarize registrations by the relationship of the purchaser to the primary user of the toy
    Drop View           vRegCount;
    Create View         vRegCount As
    Select              reg.Relationship Relationship,
                        COUNT(reg.SerialNumber) RegCount,
                        COUNT(distinct reg.ModelNumber) MdlCount,
                        SUM(reg.PricePaid) SumPrice,
                        ROUND(AVG(reg.PricePaid), 2) AvgPrice
    From                tblRegistration reg
    Group By            reg.Relationship;

Select          vrc.Relationship 'Relationship to User',
                vrc.RegCount 'Count of Registrations',
                vrc.MdlCount 'Count of Distinct Models',
                vrc.SumPrice 'Sum of Price',
                vrc.AvgPrice 'Average Price'
From            vRegCount vrc
Where           vrc.RegCount = (Select   MAX(vrcInner.RegCount)
                                 From     vRegCount vrcInner);
```

Three Result

	Relationship to User	Count of Registrations	Count of Distinct Models	Sum of Price	Average Price
1	Grandparent	9	6	3669.06	407.67

Four Code

```
Select          mdl.ModelNumber 'Model Number',
                COUNT(reg.SerialNumber) 'Count of Registrations',
                ISNULL(SUM(reg.PricePaid), 0) 'Sum of Price',
                ISNULL(ROUND(AVG(reg.PricePaid),2), 0) 'Average Price',
                ISNULL(CONVERT(varchar, MIN(reg.PurchaseDate), 101), 'None') 'Earliest Reg Date',
                ISNULL(CONVERT(varchar, MAX(reg.PurchaseDate), 101), 'None') 'Latest Reg Date'
From            tblModel mdl
Left Outer Join tblRegistration reg
On              mdl.ModelNumber = reg.ModelNumber
Group By        mdl.ModelNumber;
```

Four Result

	Model Number	Count of Registrations	Sum of Price	Average Price	Earliest Reg Date	Latest Reg Date
1	JCCSVU	1	577.60	577.60	04/07/2016	04/07/2016
2	JCSCNC	2	886.52	443.26	01/11/2016	01/28/2016
3	JGCSUV	4	1609.92	402.48	02/05/2016	04/14/2016
4	JLSFIM	2	779.77	389.89	02/08/2016	04/17/2016
5	JPLEGA	1	631.59	631.59	01/08/2016	01/08/2016
6	JRFJLC	2	868.41	434.21	02/03/2016	02/12/2016
7	JWSCIA	3	1625.78	541.93	03/01/2016	04/07/2016
8	T4RBCC	2	1020.57	510.29	01/28/2016	03/12/2016
9	TCGGLI	2	945.69	472.85	02/27/2016	03/22/2016
10	THDKMA	0	0.00	0.00	None	None
11	TPNFBE	2	680.25	340.13	01/09/2016	04/18/2016
12	TR4GGS	2	862.23	431.12	02/03/2016	03/21/2016
13	TTAACT	2	656.90	328.45	02/17/2016	04/14/2016
14	TTITIC	2	732.34	366.17	03/23/2016	03/29/2016
15	TYLLBD	3	1371.51	457.17	01/30/2016	03/15/2016

Five Code

```
-- Summarize models by counting registrations with a relationship of grandparent
        Drop View       vMdlCount;
        Create View     vMdlCount As
        Select          reg.ModelNumber ModelNumber,
                        COUNT(reg.SerialNumber) RegCount
        From            tblRegistration reg
        Where           reg.Relationship Like 'Grandparent'
        Group By        reg.ModelNumber;

Select          mdl.ModelNumber 'Model Number',
                mdl.Description 'Model Description'
From            tblModel mdl
Inner Join      vMdlCount vmc
On              mdl.ModelNumber = vmc.ModelNumber
Where           vmc.RegCount = (Select MAX(vmcInner.RegCount)
                                        From    vMdlCount vmcInner);
```

Five Result

	Model Number	Model Description
1	JGCSUV	Jeep Grand Cherokee

Six Code

```
Select          ftr.Description 'Feature',
                COUNT(rf.SerialNumber) 'Count of Registrations',
                SUBSTRING(CONVERT(varchar, (ROUND((COUNT(rf.SerialNumber) * 100.0 /
                        SUM(COUNT(rf.SerialNumber)) OVER ()), 0))), 0,
                        CHARINDEX('.', (ROUND((COUNT(rf.SerialNumber) * 100.0 /
                        SUM(COUNT(rf.SerialNumber)) OVER ()), 0)))) + '%' 'Percentage of Registrations'
From            tblFeature ftr
Left Outer Join tblRegFeature rf
On              ftr.FeatureID = rf.FeatureID
Group By        ftr.Description;
```

Six Result

	Feature	Count of Registrations	Percentage of Registrations
1	Color	9	14%
2	Cost	4	6%
3	Level of Replication from Original	6	10%
4	Other	0	0%
5	Quality of Design	7	11%
6	Safety Features	5	8%
7	Size	10	16%
8	Sound Features	3	5%
9	Speed	8	13%
10	Type of Toy (car, jeep, etc.)	11	17%

Seven Code

```
Select          ftr.Description 'Feature',
                COUNT(rf.SerialNumber) 'Count of Registrations',
                SUBSTRING(CONVERT(varchar, (ROUND((COUNT(rf.SerialNumber) * 100.0 /
                        SUM(COUNT(rf.SerialNumber)) OVER ()), 0))), 0,
                        CHARINDEX('.', (ROUND((COUNT(rf.SerialNumber) * 100.0 /
                        SUM(COUNT(rf.SerialNumber)) OVER ()), 0)))) + '%' 'Percentage of Registrations'
From            tblFeature ftr
Left Outer Join tblRegFeature rf
On              ftr.FeatureID = rf.FeatureID
Left Outer Join tblRegistration reg
On              rf.SerialNumber = reg.SerialNumber
Where           reg.Relationship Like 'Grandparent'
Group By        ftr.Description;
```

Seven Result

	Feature	Count of Registrations	Percentage of Registrations
1	Color	2	12%
2	Cost	1	6%
3	Level of Replication from Original	3	18%
4	Quality of Design	1	6%
5	Safety Features	1	6%
6	Size	4	24%
7	Speed	3	18%
8	Type of Toy (car, jeep, etc.)	2	12%

Eight Code

```
Select          TOP(3)
                ftr.Description 'Feature',
                COUNT(rf.SerialNumber) 'Count of Registrations',
                SUBSTRING(CONVERT(varchar, (ROUND((COUNT(rf.SerialNumber) * 100.0 /
                        SUM(COUNT(rf.SerialNumber)) OVER ()), 0))), 0,
                        CHARINDEX('.', (ROUND((COUNT(rf.SerialNumber) * 100.0 /
                        SUM(COUNT(rf.SerialNumber)) OVER ()), 0)))) + '%' 'Percentage of Registrations'
From            tblFeature ftr
Left Outer Join tblRegFeature rf
On              ftr.FeatureID = rf.FeatureID
Left Outer Join tblRegistration reg
On              rf.SerialNumber = reg.SerialNumber
Where           reg.Relationship Like 'Grandparent'
Group By        ftr.Description
Order By        COUNT(rf.SerialNumber) DESC;
```

Eight Result

	Feature	Count of Registrations	Percentage of Registrations
1	Size	4	24%
2	Speed	3	18%
3	Level of Replication from Original	3	18%