

Lab 3- Introduction to Normalization (Chp 6)

Every paint store offers a variety of paint colors using a formula of base paint mixed with a pre-defined set of colorants (there is not a set standard of colorants). Shots of colorant are added to the base and the mixture yields the desired paint color. Below are the colorants used by Ralph Lauren along with formulas for some of their *fancy* color paints, using a **1-1/48-1/96** formula scheme. At the end of the lab, under Colorant & Paint Formula Tables, is a screenshot of an Access file, *PaintFormulas.accdb*. NOTE: The Volume column represents the number in the denominator (i.e., 1 is for 1, 48 for 1/48, and 96 for 1/96). If you did not complete the pre-lab ahead of time, then answer questions 1-5, which are to be turned in with your Lab 3 scripts. Otherwise, skip to question 6.

1. What is your composite key? This is a little tricky because I only list gallon paint formulas. Consider that paint also comes in quart size cans!
2. Does any attribute of your composite key by itself determine another attribute? If so, what is the attribute and what does it determine?
3. What potential problems do you identify with this type of setup for a table (what update, insert and delete anomalies might exist)?
4. Do any of your non-composite key attributes determine other attributes? If so, which ones?
5. Over time, color formulas change. What database records would need to be changed if Dusty Mauve changed to the following formula instead? Give the Colorant name, the volume, and the quantity.

| |
|--|
| Dusty Mauve: B 0-20-0 T 0-29-1 V 1-10-1 |
|--|

6. Now, for lab 3, you will answer question 5 from the pre-lab using MySQL. Download the *PaintFormulas.sql* file on Blackboard and *sftp* it to your turing account. Within your MySQL engine, *source PaintFormulas.sql* to create and populate the Paint1NF table. *DESCRIBE Paint1NF* and note the fields are the same names as in your Access database from the pre-lab.

Open a text editor such as Notepad++ and save your file as **<yourLastName>DustyMauve.sql**, replacing <yourLastName> with your own last name. Within this file, write the SQL commands to change the current Dusty Mauve paint formula in the *Paint1NF* table to the Dusty Mauve formula Listed in 5. above. To make all of the necessary changes, you will need to use three new SQL commands in addition to the INSERT INTO command. Go to <http://www.w3schools.com> and select SQL. From the left menu look at the UPDATE, DELETE, INSERT INTO, and ORDER BY commands. You will need to use all of these to update the formula.

NOTE: You may not simply drop my *Paint1NF* table and re-create the entire *Paint1NF* table with the updated formula. Instead, you must MODIFY the current formula in the already created *Paint1NF* table.

ALSO NOTE: If the Qty field is 0, it SHOULD NOT DISPLAY when the formula is output (i.e., there are only 6 records that should be output for the updated Dusty Mauve formula). For example, BlackOxide 1/96th should not display since its new quantity is 0.

End your script file with a select
select * from Paint1NF where COLORCODE='004';

Because a database will pull records in no particular order, modify the above SQL statement such that it orders in ascending order by the colorant code.

Once you have all of the bugs out of your sql file, create a script file within turing, **<yourLastName>Lab3.txt**. Run your sql file within the MySQL engine. Turn in your answers to questions 1-5 along with your **<yourLastName>DustyMauve.sql** and **<yourLastName>Lab3.txt** files (upload all to Blackboard).

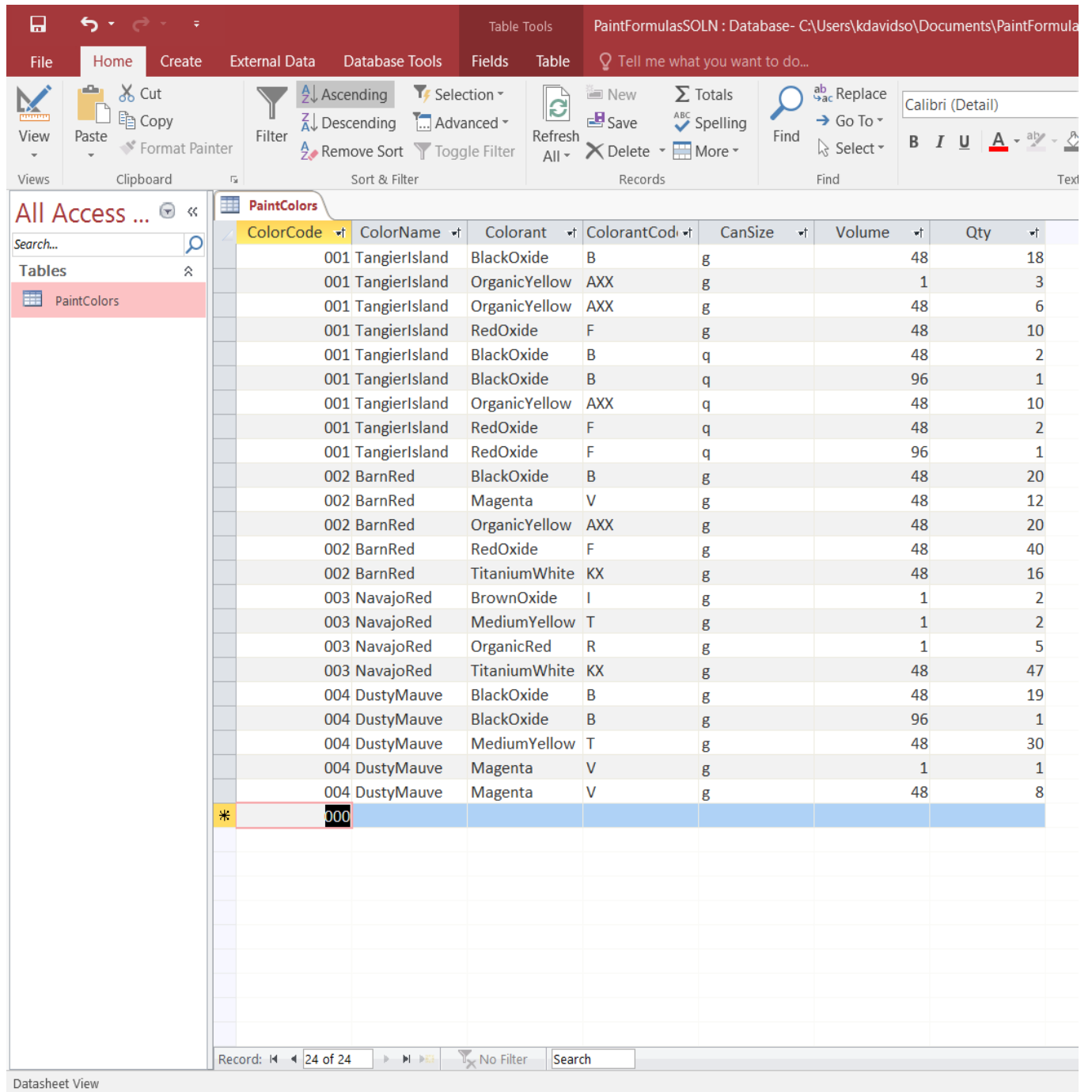
Colorant & Paint Formula Tables

| Colorant Code | Color | Base |
|---------------|----------------|--|
| C | Yellow Oxide | Base A/Ultra White Base B Base C |
| L | Raw Umber | |
| I | Brown Oxide | |
| B | Black Oxide | |
| F | Red Oxide | |
| D | Phalo Green | |
| E | Phalo Blue | |
| R | Organic Red | |
| V | Magenta | |
| T | Medium Yellow | |
| AXX | Organic Yellow | |
| KX | Titanium White | |

Formulas are for 1 gallon

| Color Names/Formulas | oz. | 1/48 | 1/96 |
|-----------------------|-----|------|------|
| Tangier Island | | | |
| B | 0 | 18 | 0 |
| F | 0 | 10 | 0 |
| AXX | 3 | 6 | 0 |
| Barn Red | | | |
| B | 0 | 20 | 0 |
| F | 0 | 40 | 0 |
| V | 0 | 12 | 0 |
| X | 0 | 20 | 0 |
| KX | 0 | 16 | 0 |
| Navajo Red | | | |
| I | 2 | 41 | 1 |
| R | 5 | 47 | 1 |
| T | 2 | 8 | 1 |
| KX | 0 | 47 | 0 |
| Dusty Mauve | | | |
| B | 0 | 19 | 1 |
| T | 0 | 30 | 0 |
| V | 1 | 8 | 0 |
| Silver | | | |
| L | 0 | 36 | 1 |
| E | 0 | 5 | 1 |
| V | 0 | 5 | 1 |
| J Pastel | | | |
| L | 0 | 16 | 1 |
| T | 0 | 34 | 0 |

Paint Formulas Access File (PaintFormulas.accdb):



| ColorCode | ColorName | Colorant | ColorantCode | CanSize | Volume | Qty |
|-----------|--------------|---------------|--------------|---------|--------|-----|
| 001 | TangerIsland | BlackOxide | B | g | 48 | 18 |
| 001 | TangerIsland | OrganicYellow | AXX | g | 1 | 3 |
| 001 | TangerIsland | OrganicYellow | AXX | g | 48 | 6 |
| 001 | TangerIsland | RedOxide | F | g | 48 | 10 |
| 001 | TangerIsland | BlackOxide | B | q | 48 | 2 |
| 001 | TangerIsland | BlackOxide | B | q | 96 | 1 |
| 001 | TangerIsland | OrganicYellow | AXX | q | 48 | 10 |
| 001 | TangerIsland | RedOxide | F | q | 48 | 2 |
| 001 | TangerIsland | RedOxide | F | q | 96 | 1 |
| 002 | BarnRed | BlackOxide | B | g | 48 | 20 |
| 002 | BarnRed | Magenta | V | g | 48 | 12 |
| 002 | BarnRed | OrganicYellow | AXX | g | 48 | 20 |
| 002 | BarnRed | RedOxide | F | g | 48 | 40 |
| 002 | BarnRed | TitaniumWhite | KX | g | 48 | 16 |
| 003 | NavajoRed | BrownOxide | I | g | 1 | 2 |
| 003 | NavajoRed | MediumYellow | T | g | 1 | 2 |
| 003 | NavajoRed | OrganicRed | R | g | 1 | 5 |
| 003 | NavajoRed | TitaniumWhite | KX | g | 48 | 47 |
| 004 | DustyMauve | BlackOxide | B | g | 48 | 19 |
| 004 | DustyMauve | BlackOxide | B | g | 96 | 1 |
| 004 | DustyMauve | MediumYellow | T | g | 48 | 30 |
| 004 | DustyMauve | Magenta | V | g | 1 | 1 |
| 004 | DustyMauve | Magenta | V | g | 48 | 8 |
| * | 000 | | | | | |

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