

Introduction to Databases

Question	Answers
What type of database type does Shodor use?	Relational Database
What DBMS does Shodor use?	MySQL

MySQL Syntax Guide: Day 1

SQL	MySQL Syntax	Results
Building Table and Table Info	Write proper SQL syntax to query the People table using Sequel Pro.	What Was the Result
CREATE TABLE Step1:	<pre>CREATE TABLE People (id int(11) unsigned NOT NULL auto_increment, firstName varchar(255) default NULL, lastName varchar(255) default NULL, favColor varchar(255) default NULL, shoeSize decimal (3,1)default NULL, PRIMARY KEY (id)) ENGINE=InnoDB DEFAULT CHARSET=utf8;</pre>	Creates a table "People" with the fields "firstName", "lastName", "favColor", and "shoeSize"
SHOW TABLE	SHOW TABLES;	Shows all the tables in the database
DESCRIBE TABLE	DESCRIBE People;	Describes the ids and the data types of the table
DROP TABLE (*Don't Do unless you really want to get rid of a table and all its data. You will have to start over.) DO NOT RUN QUERY!	DROP TABLE people;	DO NOT RUN this query unless you want to destroy a table and data. Once done it cannot be undone.

<p>INSERT INTO Step2:</p>	<pre>INSERT INTO People (firstName, lastName,favColor, shoeSize) VALUES ('Ernie','Edinboro','Orange',11.5), ('Gustavo','Nunez-Vivanco','Blue',9.5), ('Chris','Parker','Red',10), ('Huny','Chung','Light Green',9), ('Aaron','Weeden','Purple',10), ('No','Hope','Black',4), ('Shawn','Kang','Red',10), ('Divya','Aikat','Purple',9.5), ('Michael','Allen Dacany','Blue',12), ('Naylea','Jacob','Blue',7.5), ('Mihir','Khadri','Red',10.5), ('Krista','Katzenmeyer','Cupcake',8.5), ('Erica','Aiello','Yellow',3), ('Joel','Coldren','Green',13.5), ('Rohin','Shahi','Red',12.5), ('Ameya','Rao','Blue',9.5), ('Luka','Ashe-Jones','Orange',8), ('Ernie','Edinboro','Blue',12), ('Ernie','Edinboro','Green',11), ('Leanne','Chan','Green',6), ('Erica','Aiello','Purple',3.5);</pre>	<p>Inserts data into the table People</p>
<p>NOT NULL</p>	<pre>CREATE TABLE People (id int(11) unsigned NOT NULL auto_increment, firstName varchar(255) default NULL, lastName varchar(255) default NULL, favColor varchar(255) default NULL, shoeSize decimal (3,1)default NULL, PRIMARY KEY (id)) ENGINE=InnoDB DEFAULT CHARSET=utf8;</pre>	<p>Sets unsigned data as not null (missing unknown value)</p>
<p>PRIMARY KEY</p>	<pre>CREATE TABLE People (id int(11) unsigned NOT NULL auto_increment, firstName varchar(255) default NULL, lastName varchar(255) default NULL, favColor varchar(255) default NULL, shoeSize decimal (3,1)default NULL, PRIMARY KEY (id)) ENGINE=InnoDB DEFAULT CHARSET=utf8;</pre>	<p>Sets the primary key as id</p>
<p>AUTO_INCREMENT</p>	<pre>CREATE TABLE People (</pre>	<p>Allows a unique number</p>

	<pre>id int(11) unsigned NOT NULL auto_increment, firstName varchar(255) default NULL, lastName varchar(255) default NULL, favColor varchar(255) default NULL, shoeSize decimal (3,1) default NULL, PRIMARY KEY (id)) ENGINE=InnoDB DEFAULT CHARSET=utf8;</pre>	to be generated automatically when a new record is inserted into a table
ALTER Step3:	<pre>ALTER TABLE People ADD coinFlip VARCHAR(5) NOT NULL;</pre>	Adds a coinFlip field with the data type VARCHAR
DELETE Be careful! DO NOT RUN QUERY!	<pre>DELETE * FROM People;</pre>	Do not run query
Ernie's FREEBIE! Add Data to the newly created coinFlip field. Step4:	<pre>INSERT INTO People (id, coinFlip) VALUES ('1','Tails'),('2','Tails'),('3','Tails'), ('4','Heads'),('5','Heads'),('6','Tails'), ('7','Heads'),('8','Tails'),('9','Heads'), ('10','Heads'),('11','Tails'),('12','Heads'), ('13','Heads'),('14','Heads'),('15','Tails'), ('16','Heads'),('17','Heads'),('18','Heads'), ('19','Heads'),('20','Tails'),('21','Heads') ON DUPLICATE KEY UPDATE id=VALUES(id), coinFlip=VALUES(coinFlip);</pre>	Inserts data for the field coinFlip
Useful SQL Syntax		
UPDATE	<pre>UPDATE People SET firstName = 'Bob', lastName = 'Joe' WHERE id = 1;</pre>	Updates the People table
SELECT	<pre>SELECT id, firstName, lastName FROM People;</pre>	Shows all of the id, first name, and last name for the People table
WHERE	<pre>UPDATE People SET firstName = 'Bob', lastName = 'Joe' WHERE id = 1;</pre>	Updates the People table where the for the id of 1

ORDER BY	<pre>SELECT * FROM People ORDER BY lastName</pre>	Shows all of the data from the table People ordered by last name
AND, OR, Not	<pre>SELECT firstName FROM People WHERE coinFlip = 'Heads' AND favColor='Blue'; SELECT firstName FROM People WHERE coinFlip = 'Heads' OR favColor='Blue'; SELECT firstName FROM People WHERE NOT coinFlip = 'Heads';</pre>	<p>Shows all of the first names of people who landed on heads and their favorite colour was blue</p> <p>Shows all of the first names of people who landed on heads or their favorite colour was blue</p> <p>Shows all of the first names of people who did not land on heads</p>
Count, Avg, Sum	<pre>SELECT COUNT(id) FROM People WHERE favColor='Blue'; SELECT AVG(shoeSize) FROM People WHERE favColor='Blue'; SELECT SUM(shoeSize) FROM People WHERE favColor='Blue';</pre>	<p>Counts the number of ids where the favorite color is blue</p> <p>Averages the shoe sizes of people who's favorite color is blue</p> <p>Adds all the shoe sizes of people who's favorite color is blue</p>
LIKE	<pre>SELECT favColor FROM People WHERE firstName LIKE 'E%';</pre>	Shows the favorite colors of people who have a name that starts with E
IN	<pre>SELECT favColor FROM People WHERE firstName IN ('Leanne', 'Joel');</pre>	Shows the favorite color of Leanne and Joel

BETWEEN	<pre>SELECT favColor FROM People WHERE shoeSize BETWEEN 9 AND 11;</pre>	Shows the favorite colors of people who have a shoe size between 9 and 11
ALIAS	<pre>SELECT favColor AS Color FROM People;</pre>	Shows the favorite colors under the alias Hello
SQL Operators	Best to use Arithmetic and Comparison Operators on shoeSize field	
Arithmetic Operators		
Add	<pre>SELECT 10 + 5;</pre>	15
Subtraction	<pre>SELECT 10 - 5;</pre>	5
Multiplication	<pre>SELECT 10 * 5;</pre>	50
Division	<pre>SELECT 10 / 5;</pre>	2
Modulos	<pre>SELECT 10 % 5;</pre>	0
Comparison Operators		
Equal to	<pre>Select firstName FROM People WHERE shoeSize = 10;</pre>	Shows the first names of all people who have a shoe size of 10
Greater than >	<pre>Select firstName FROM People WHERE shoeSize > 10;</pre>	Shows the first names of all people who have a shoe size greater than 10
Less than <	<pre>Select firstName FROM People</pre>	Shows the first names of all people who have

	WHERE shoeSize < 10;	a shoe size less than 10
Greater than equal to >=	Select firstName FROM People WHERE shoeSize >= 10;	Shows the first names of all people who have a shoe size greater than or equal to 10
Less than equal to <=	Select firstName FROM People WHERE shoeSize <= 10;	Shows the first names of all people who have a shoe size less than or equal to 10
Not equal to <>	Select firstName FROM People WHERE shoeSize <> 10;	Shows the first names of all people who have a shoe size not equal to 10
List 10 SQL Data Types	What types of Data do they Store?	
CHARACTER(n)	Stores character string with a fixed length of n	
VARCHAR(n)	Stores character string with a maximum length of n	
BOOLEAN	Stores true or false values	
INTEGER(p)	Stores integers with the precision of p	
DATE	Stores year, month, and day values	
TIME	Stores hour, minute, and second values	
SMALLINT	Stores integers with 5 digits	
BIGINT	Stores integers with 19 digits	
DECIMAL(p,s)	Stores exact numerical with p total digits and s digits after the decimal point	
ARRAY	Stores a set length and ordered collection of elements	
SQL MINI Challenge	Write SQL query to answer the questions	Result
What is Erica's favorite color?	SELECT favColor	Yellow

	<pre>FROM People WHERE firstName = 'Erica';</pre>	Purple
Whose shoe size is 3? Show First and last name	<pre>SELECT firstName, lastName FROM People WHERE firstName = 'Erica';</pre>	Erica Aiello
Whose favorite color is Cupcake? Show First Name only	<pre>SELECT firstName FROM People WHERE favColor = 'Cupcake';</pre>	Krista
What is the average shoe size?	<pre>SELECT AVG(shoeSize) FROM People</pre>	9.09524
Whose favorite color is Red? Show Last Name only ORDER BY ASCending order.	<pre>SELECT lastName FROM People WHERE favColor = 'Red' ORDER BY lastName ASC;</pre>	Kang Khadri Parker Shahi
What is the favorite color of people with shoe size 10? Show First and Lastname ORDER BY ASC on Lastname	<pre>SELECT firstName, lastName FROM People WHERE shoeSize = 10 ORDER BY lastName ASC;</pre>	Shawn Kang Chris Parker Aaron Weeden
Select all data for user(s) id =13	<pre>SELECT * FROM People WHERE id = 13;</pre>	13 Erica Aiello Yellow3.0 Heads
Select first name for user(s) where favorite color is red	<pre>SELECT firstName FROM People WHERE favColor = 'Red';</pre>	Chris Shawn Mihir Rohin
Select favorite color where shoe size greater than or equal to 12	<pre>SELECT favColor FROM People WHERE shoeSize >= 12;</pre>	Blue Green Red Blue

Select shoe size where first name = Joel	<pre>SELECT shoeSize FROM People WHERE firstName = 'Joel';</pre>	13.5
Select lastname where favorite color is black	<pre>SELECT lastName FROM People WHERE favColor = 'Black';</pre>	Hope
Insert into People Keith,Kelly, Black, 11, Tails	<pre>INSERT INTO People (firstName, lastName,favColor, shoeSize, coinFlip) VALUES ('Keith','Kelly','Black',11,'Tails');</pre>	No errors; 1 row affected
Update First name of id 1 to Ernest	<pre>UPDATE People SET firstName = 'Ernest' WHERE id = 1;</pre>	No errors; 1 row affected

MySQL Syntax Guide: Day 2

Database Interaction	MySQL Syntax using People table	What where the results?
PRIMARY KEY	<pre>CREATE TABLE People4 (id int(11) unsigned NOT NULL auto_increment, fname varchar(255) default NULL, lname varchar(255) default NULL, PRIMARY KEY (id)) ENGINE=InnoDB DEFAULT CHARSET=utf8;</pre>	Makes a table with the the primary key id.
FOREIGN KEY	<pre>CREATE TABLE Shoe (id int(11) unsigned NOT NULL auto_increment, size decimal (3,1)default NULL, peopleID int(11) unsigned NOT NULL, PRIMARY KEY (id), KEY peopleId (peopleId), CONSTRAINT Shoe_ibfk_1 FOREIGN KEY (peopleId) REFERENCES People4 (id) ON DELETE CASCADE ON UPDATE CASCADE) ENGINE=InnoDB DEFAULT CHARSET=utf8;</pre>	Creates a foreign key of peopleId that references back to the People4 table

JOIN	<pre>SELECT * FROM CoinFlip JOIN People4 ON CoinFlip.PeopleID = People4.id</pre>	<pre>1 heads 1 1 1 Chris P 2 tails 2 1 1 Chris P 3 tails 3 1 1 Chris P 4 tails 1 2 2 Mihir K 5 heads 2 2 2 Mihir K 6 heads 1 3 3 Michael D 7 tails 2 3 3 Michael D 8 heads 3 3 3 Michael D 9 heads 1 4 4 RitvikB 10 heads 2 4 4 RitvikB 11 tails 3 4 4 RitvikB 12 heads 4 4 4 RitvikB 13 heads 5 4 4 RitvikB 14 heads 1 5 5 LeanneC 15 tails 2 5 5 LeanneC 16 heads 3 5 5 LeanneC</pre>
INNER JOIN	<pre>SELECT * FROM CoinFlip INNER JOIN People4 ON CoinFlip.PeopleID = People4.id</pre>	<pre>1 heads 1 1 1 Chris P 2 tails 2 1 1 Chris P 3 tails 3 1</pre>

		<pre> 1 Chris P 4 tails 1 2 2 Mihir K 5 heads 2 2 2 Mihir K 6 heads 1 3 3 Michael D 7 tails 2 3 3 Michael D 8 heads 3 3 3 Michael D 9 heads 1 4 4 RitvikB 10 heads 2 4 4 RitvikB 11 tails 3 4 4 RitvikB 12 heads 4 4 4 RitvikB 13 heads 5 4 4 RitvikB </pre>
LEFT JOIN	<pre> SELECT * FROM CoinFlip LEFT JOIN People4 ON CoinFlip.PeopleID = People4.id </pre>	<pre> 1 heads 1 1 1 Chris P 2 tails 2 1 1 Chris P 3 tails 3 1 1 Chris P 4 tails 1 2 2 Mihir K 5 heads 2 2 2 Mihir K 6 heads 1 3 3 Michael D 7 tails 2 3 3 Michael D 8 heads 3 3 3 Michael </pre>

		<pre> D 9 heads 1 4 4 RitvikB 10 heads 2 4 4 RitvikB 11 tails 3 4 4 RitvikB 12 heads 4 4 4 RitvikB 13 heads 5 4 4 RitvikB 14 heads 1 5 5 LeanneC 15 tails 2 5 5 LeanneC 16 heads 3 5 5 LeanneC </pre>
RIGHT JOIN	<pre> SELECT * FROM CoinFlip RIGHT JOIN People4 ON CoinFlip.PeopleID = People4.id </pre>	<pre> 1 heads 1 1 1 Chris P 2 tails 2 1 1 Chris P 3 tails 3 1 1 Chris P 4 tails 1 2 2 Mihir K 5 heads 2 2 2 Mihir K 6 heads 1 3 3 Michael D 7 tails 2 3 3 Michael D 8 heads 3 3 3 Michael D 9 heads 1 4 4 RitvikB 10 heads 2 4 4 RitvikB 11 tails 3 4 4 RitvikB 12 heads 4 4 </pre>

		<pre> 4 RitvikB 13 heads 5 4 4 RitvikB 14 heads 1 5 5 LeanneC 15 tails 2 5 5 LeanneC 16 heads 3 5 5 LeanneC </pre>
GROUP BY	<pre> SELECT fname FROM People4 GROUP BY fname; </pre>	<pre> Chris Leanne Michael Mihir Ritvik </pre>
SQL MINI Challenge	SQL Syntax used	Result
Whose favorite color is Orange? Last Name only		
Whose shoe size is 3? First and last name		
Whose favorite color is Cupcake? First Name only		
What is the average shoe size?		
What is Erica's favorite color?		
What is the favorite color of people with shoe size 10?		