

Introduction to Databases

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

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>	Created a table with the fields firstName, lastName, favColor, shoeSize
SHOW TABLE	<pre>show tables;</pre>	lists table names
DESCRIBE TABLE	<pre>DESCRIBE People;</pre>	lists all the fields of the specified table, their type, and more characteristics
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!	<pre>DROP TABLE People;</pre>	DO NOT RUN this query unless you want to destroy a table and data. Once done it cannot be undone.

INSERT INTO Step2:	<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 ','Jacobob','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>	Inserted the listed values to the DB people.
NOT NULL	<pre> SELECT column_names FROM table_name WHERE column_name IS NOT NULL; </pre>	selects all
PRIMARY KEY	<pre> CREATE TABLE Persons (ID int NOT NULL, LastName varchar(255) NOT NULL, FirstName varchar(255), Age int, PRIMARY KEY (ID)); </pre>	creates a persons table with the primary key is ID
AUTO_INCREMENT	<pre> CREATE TABLE Persons (ID int NOT NULL AUTO_INCREMENT, LastName varchar(255), FirstName varchar(255), Age int, PRIMARY KEY (ID)); </pre>	When a new row is added, the ID will increment.

ALTER Step3:	ALTER TABLE People ADD age VARCHAR();	Adds an age column
DELETE Be careful! DO NOT RUN QUERY!	DELETE FROM <i>table_name</i> WHERE <i>condition</i> ;	Do not run query
Ernie's FREEBIE! Add Data to the newly created coinFlip field. Step4:	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);	added data to the coinFlip field
Useful SQL Syntax		
UPDATE	UPDATE People SET <i>firstName</i> = <i>lastName</i> ;	set all first names to their last name.
SELECT	SELECT <i>firstName</i> FROM People;	Returned all the firstnames
WHERE	SELECT <i>shoeSize</i> FROM People WHERE <i>shoeSize</i> >10;	Returned all the shoe sized that were greater than 10
ORDER BY	SELECT <i>shoeSize</i> FROM People ORDER BY <i>shoeSize</i> DESC;	Returned all the shoe sizes in descending order
AND, OR, Not	SELECT <i>shoeSize</i> FROM People WHERE <i>shoeSize</i> >10 AND <i>shoeSize</i> <12; SELECT <i>shoeSize</i>	Returned all shoe sizes that were between 10 and 12; Returned all shoe sizes that were equal to 10 or 12;

	<pre>FROM People WHERE shoeSize=10 OR shoeSize=12; SELECT shoeSize FROM People WHERE NOT shoeSize = 12;</pre>	Returned all shoe sizes that were not equal to 12
Count, Avg, Sum	<pre>count SELECT COUNT(id) FROM people; avg SELECT AVG(shoeSize) FROM People; sum SELECT SUM(shoeSize) FROM People;</pre>	returned the number of values in the table; returned the average of shoe sizes; returned the sum of the shoe sizes
LIKE	<pre>SELECT firstName FROM People WHERE firstName LIKE 'E';</pre>	Returned all first names that start with E
IN	<pre>SELECT * FROM People WHERE firstName IN ('Edinboro');</pre>	Returned all rows with the first name as Edinboro.
BETWEEN	<pre>SELECT * FROM People WHERE shoeSize BETWEEN 1 AND 20;</pre>	Returned all the rows with a shoe size between 1 and 20
ALIAS	<pre>SELECT id AS ID FROM People;</pre>	changed the name of the id field to ID temporarily.
SQL Operators	Best to use Arithmetic and Comparison Operators on shoeSize field	
Arithmetic Operators		

Add	SELECT 1+1	2
Subtraction	SELECT 2-1	1
Multiplication	SELECT 2*2	4
Division	SELECT 4/2	2
Modulo	SELECT 3%2	1
Comparison Operators		
Equal to	SELECT * FROM People WHERE shoeSize = 12;	9 Michael Allen DacanyBlue 12.0 Heads 18 Ernie Edinboro Blue 12.0 Heads
Greater than >	SELECT * FROM People WHERE shoeSize > 12;	14 Joel Coldren Green 13.5 Heads 15 Rohin Shahi Red 12.5 Tails
Less than <	SELECT * FROM People WHERE shoeSize <4;	13 Erica Aiello Yellow3.0 Heads 21 Erica Aiello Purple3.5 Heads
Greater than equal to >=	SELECT * FROM People WHERE shoeSize >= 12;	9 Michael Allen DacanyBlue 12.0 Heads 14 Joel Coldren Green 13.5 Heads 15 Rohin Shahi Red 12.5 Tails 18 Ernie Edinboro Blue 12.0 Heads
Less than equal to <=	SELECT * FROM People WHERE shoeSize <= 3;	13 Erica Aiello Yellow3.0 Heads

Not equal to <>

SELECT * FROM People
WHERE shoeSize <> 5;

1	Ernie Edinboro	Orange	11.5	Tails
2	Gustavo Nunez-Vivanco	Blue	9.5	Tails
3	Chris Parker	Red	10.0	Tails
4	Huny Chung	Light Green	9.0	Heads
5	Aaron Weeden	Purple	10.0	Heads
6	No Hope	Black	4.0	Tails
7	Shawn Kang	Red	10.0	Heads
8	Divya Aikat	Purple	9.5	Tails
9	Michael Allen	Dacany	Blue 12.0	Heads
10	Naylea Jacobo	Blue	7.5	Heads
11	Mihir Khadri	Red	10.5	Tails
12	Krista Katzenmeyer	Cupcake	8.5	Heads
13	Erica Aiello	Yellow	3.0	Heads
14	Joel Coldren	Green	13.5	Heads
15	Rohin Shahi	Red	12.5	Tails
16	Ameya Rao	Blue	9.5	Heads
17	Luka Ashe-Jones	Orange	8.0	Heads
18	Ernie Edinboro	Blue	12.0	Heads
19	Ernie Edinboro	Green	11.0	Heads
20	Leanne Chan	Green	6.0	Tails
21	Erica Aiello	Purple	3.5	Heads

List 10 SQL Data Types	What types of Data do they Store?	
BOOLEAN	TRUE or FALSE	true or false
SMALLINT	NUMBER	-32,767 to 32,767
TIME	HOUR:MINUTE:SECOND	00:00:00.0000000 through 23:59:59.9999999
DATE	YEAR:MONTH:DAY	0001-01-01 through 9999-12-31
BIGINT	NUMBER	-9223372036854775808-92 23372036854775807
TINYINT	NUMBER	-128 - 127
INT	NUMBER	-2147483648-2147483647
BIT	NUMBER	0 - 1
REAL	NUMBER	-3.40E + 38 -3.40E + 38
FLOAT	NUMBER	-1.79E + 308 - 1.79E + 308
SQL MINI Challenge	Write SQL query to answer the questions	Result
What is Erica's favorite color?	SELECT favColor FROM People WHERE firstName = 'Erica';	Purple
Whose shoe size is 3? Show First and last name	SELECT firstName AND lastName FROM People WHERE shoeSize = 3;	none
Whose favorite color is Cupcake? Show First Name only	SELECT firstName FROM People WHERE favColor = 'Cupcake';	Krista
What is the average shoe size?	SELECT AVG(shoeSize) FROM People;	9.09524
Whose favorite color is Red?	SELECT firstName, lastName	Chris Parker

	<pre>FROM People WHERE favColor = 'Red';</pre>	Shawn Kang Mihir Khadri Rohin Shahi Chris Parker Shawn Kang Mihir Khadri Rohin Shahi
Show Last Name only ORDER BY ASCending order.	<pre>SELECT lastName FROM People ORDER BY lastName ASC;</pre>	Aiello Aiello Aiello Aiello Aikat Aikat Allen Dacany Allen Dacany Ashe-Jones Ashe-Jones Chan Chan Chung Chung Coldren Coldren Edinboro Edinboro Edinboro Edinboro Edinboro Edinboro Hope Hope Jacobob Jacobob Kang Kang Katzenmeyer Katzenmeyer Khadri Khadri Nunez-Vivanco Nunez-Vivanco

		Parker Parker Rao Rao Shahi Shahi Weeden Weeden
What is the favorite color of people with shoe size 10?	<pre>SELECT favColor FROM People WHERE shoeSize = 10;</pre>	Red Purple Red Red Purple Red
Select all data for user(s) id =13	<pre>SELECT * FROM People WHERE id = 13;</pre>	13 Erica Aiello Yellow3.0
Select first name for user(s) where favorite color is red	<pre>SELECT firstName FROM People WHERE favColor = 'Red';</pre>	Chris Shawn Mihir Rohin 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 Blue Green Red Blue
Select shoe size where first name = Joel	<pre>SELECT shoeSize FROM People</pre>	13.5 13.5

	WHERE firstName = 'Joel';	
Select lastname where favorite color is black	SELECT lastName FROM People WHERE favColor = 'Black';	Hope Hope
Insert into People Keith,Kelly, Black, 11, Tails	INSERT INTO People (firstName, lastName,favColor, shoeSize) VALUES ('Keith','Kelly','Black',11);	Added a row for Keith Kelly with a favorite color of black and a shoe size of 11
Update First name of id 1 to Ernest	UPDATE People SET firsName = 'Ernest' WHERE id = 1;	The first name in id 1 is now Ernest.

MySQL Syntax Guide: Day 2

Database Interaction	MySQL Syntax using People table	What where the results?
PRIMARY KEY	CREATE TABLE Persons (ID int NOT NULL AUTO_INCREMENT, LastName varchar(255), FirstName varchar(255), Age int, PRIMARY KEY (ID)	creates table with a primary key of ID.

	<code>);</code>	
FOREIGN KEY	<pre>CREATE TABLE CoinFlip (id int(11) unsigned NOT NULL auto_increment, results varchar (255)default NULL, position int (11)default NULL, peopleId int(11) unsigned NOT NULL, PRIMARY KEY (id), KEY peopleId (peopleId), CONSTRAINT CoinFlip_ibfk_1 FOREIGN KEY (peopleId) REFERENCES People4 (id) ON DELETE CASCADE ON UPDATE CASCADE) ENGINE=InnoDB DEFAULT CHARSET=utf8;</pre>	A key from another table is linked to the CoinFlip table.
JOIN	<pre>SELECT * FROM CoinFlip JOIN (FavColor) ON ()</pre>	joins tables
INNER JOIN	<pre>SELECT People4.fname, Shoe.size, FavColor.color FROM CoinFlip INNER JOIN People4 ON CoinFlip.PeopleID = People4.id INNER JOIN Shoe ON Shoe.PeopleID = People4.id INNER JOIN FavColor ON FavColor.PeopleID = People4.id</pre>	joins tables and uses ON
LEFT JOIN	<pre>SELECT * FROM CoinFlip RIGHT JOIN (FavColor) ON ()</pre>	same as join, but specifies a side
RIGHT JOIN	<pre>SELECT * FROM CoinFlip RIGHT JOIN (FavColor) ON ()</pre>	same as join, but specifies a side
GROUP BY	<pre>SELECT COUNT(id), color FROM FavColor GROUP BY color;</pre>	groups colors together
SQL Snippet for creating Relational DB	<pre>CONSTRAINT CoinFlip_ibfk_1 FOREIGN KEY (peopleId) REFERENCES People (id) ON DELETE CASCADE ON UPDATE CASCADE,</pre>	People ID is related to CoinFlip
SQL MINI Challenge	SQL Syntax used	Result

