Introduction to SQL

Learning outcomes:

This practical outlines the following SQL command set:

- CREATE : This command is to dynamically set up any data structure.

- SELECT: The most common command, it is used to retrieve data from the database. It means list.

- INSERT: Command used to enter new rows

- WHERE: command is used to filter records

1. Create a database in your chosen system called cripsycreme refer to instructions on BB for creating database in Microsoft Access and MYSQL using Putty. The following is the crispycreme database once you have completed all the questions:
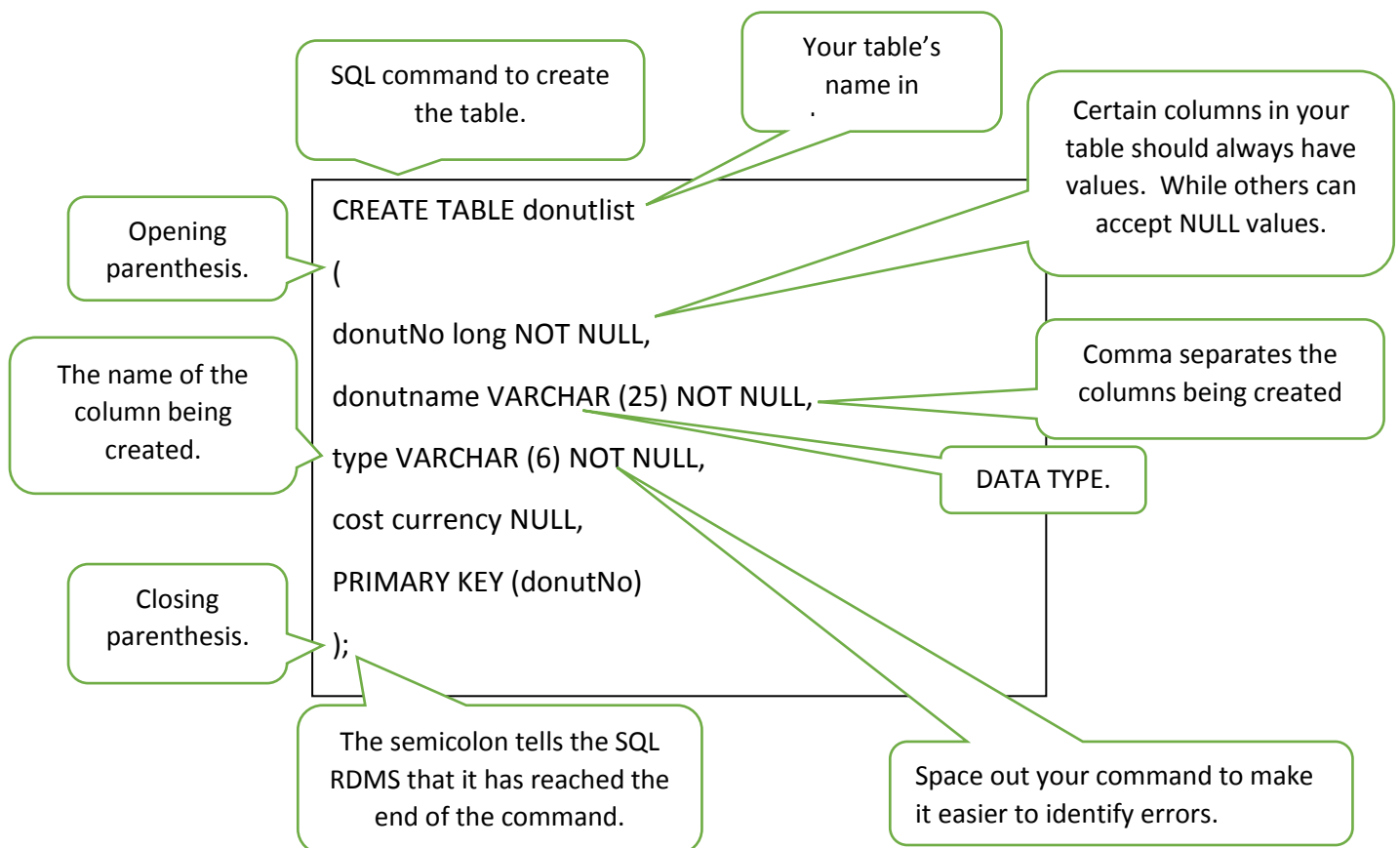
donutNo (PK)	donutname	type	cost
1	Strawberry frosted donut	ring	£2.50
2	Cinnamon sugar donut	ring	£2.50
3	Raspberry jam donut	filled	£2.95
4	Marble frosted donut	filled	£3.95
5	Sprinkle donut	ring	£2.50
6	Blueberry donut	ring	£2.50
7	Chocolate Kreme filled donut	filled	£3.95
8	Vanilla Kreme filled donut	filled	
9	Vanilla sprinkle donut	ring	£2.50
10	Boston Kreme pie donut	filled	£2.95
11	Original ring glazed	ring	£2.50
12	Lemon meringue	filled	£2.95

Select the Query Design from the Create tab – SQL view

- When you open Access, the application will open a new table for you.

CREATE table command

2. Using the CREATE command, create the table donutlisting:

SQL command to create the table.

Your table's name in .

Certain columns in your table should always have values. While others can accept NULL values.

Opening parenthesis.

CREATE TABLE donutlist

(

The name of the column being created.

donutNo long NOT NULL,

donutname VARCHAR (25) NOT NULL,

Comma separates the columns being created

type VARCHAR (6) NOT NULL,

DATA TYPE.

cost currency NULL,

PRIMARY KEY (donutNo)

Closing parenthesis.

);

The semicolon tells the SQL RDMS that it has reached the end of the command.

Space out your command to make it easier to identify errors.

INSERT rows into the table command

3. Using the INSERT command insert the columns into the dounutlist table.

```
INSERT INTO donutlist

(donutno, donutname, type, cost)

VALUES (1,"Strawberry frosted donut",'ring',2.50);
```

4. Can you write the command to INSERT: 2, Cinnamon sugar donut, ring, £2.50?

INSERT INTO donutlist (donutno, donutname, type, cost)
VALUES (2, "Cinnamon sugar donut", 'ring', 2.50);

5. Write the command to INSERT: 3, Raspberry jam donut, filled, £2.95

INSERT INTO donutlist (donutno, donutname, type, cost)

VALUES (3, "Raspberry jam donut", 'filled', 2.95);

6. Correct the following commands and INSERT the rows into the table?

```
INSERT INTO donutlist

(donutno, donutname, cost)

VALUES (4,"Marble frosted donut",'filled',3.95);
```

```
INSERT INTO donutlist

(donutno, donutname, cost)

VALUES (5,"Sprinkle donut","ring",2.50);
```

Changing the order of the columns

- The following are variations of the INSERT command
    - You can change the order of the column names, as long at the values match and are in the same order.
    - You can omit the column names, but values must all be in the same order to be added into the columns
    - You can leave out values to have empty cells.

7. CHANGE ORDER: Run the following INSERT command insert the columns into the dounutlist table.

```
INSERT INTO donutlist

(donutname,donutno, type, cost)

VALUES ("Blueberry donut",6,'ring',2.50);
```

8. OMIT COLUMN NAMES: Run the following INSERT command insert the columns into the dounutlist table.

```
INSERT INTO donutlist

VALUES

(7,"Chocolate Kreme filled donut",'filled',3.95)

;
```

9. LEAVE OUT VALUES: Run the following INSERT command to insert the columns into the dounutlist table. Leave out the price of the donut. Note: Ensure you do not have required data defined in the field. Also note the syntax omit value or NULL or " " to omit data.

4

```
INSERT INTO donutlist

VALUES (8,"Vanilla Kreme filled donut",'filled',"");
```

10. Insert the following rows into the table.

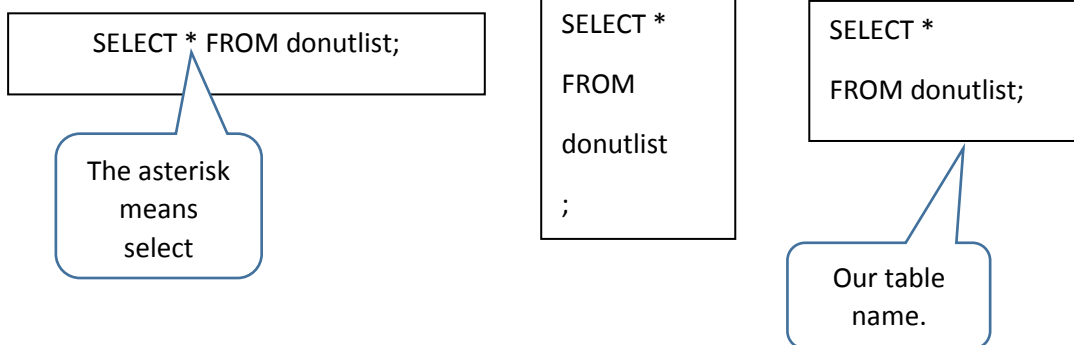| donutNo (PK)	donutname	type	cost
9	Vanilla sprinkle donut	ring	£2.50
10	Boston Kreme pie donut	filled	£2.95
11	Original ring glazed	ring	£2.50
12	Lemon meringue	filled	£2.95

If you are familiar with INSERT and using Access you can manually enter the rows!

SELECT command

- The SELECT command retrieves and lists information from the database or table.
- In its simplest form it must include:
  - a SELECT clause, which lists the columns to be displayed
  - a FROM clause which specifies the table involved.
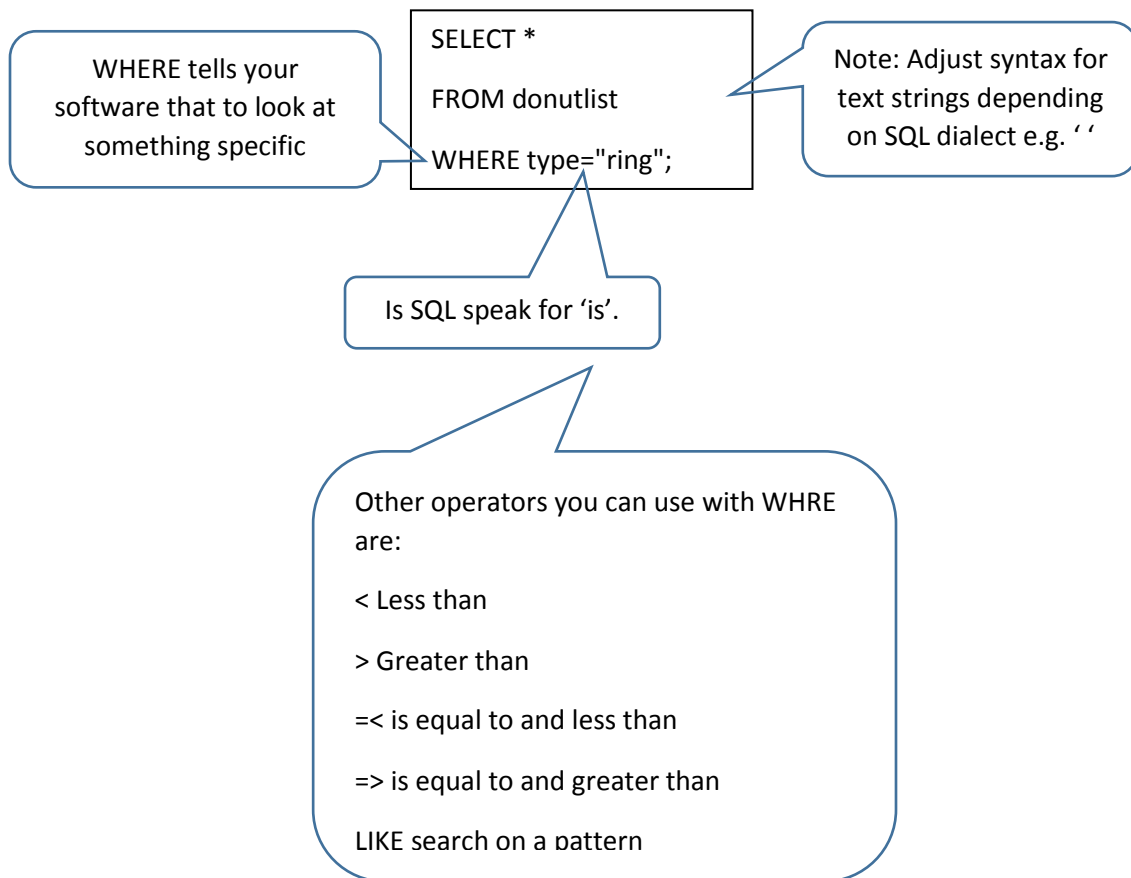
Therefore all of the following commands are all valid:

11. Run each of the commands to see the result.

```
SELECT * FROM donutlist;
```

The asterisk means select

```
SELECT *

FROM

donutlist

;
```

```
SELECT *

FROM donutlist;
```

Our table name.

WHERE command

- Gives the RDBMS something specific to search for.
- The WHERE command narrows down the search results and only returns the rows that match the condition.

12. The following command returns all the row where donut type is ring.

WHERE tells your software that to look at something specific

```
SELECT *

FROM donutlist

WHERE type="ring";
```

Note: Adjust syntax for text strings depending on SQL dialect e.g. ' '

Is SQL speak for 'is'.

Other operators you can use with WHRE are:

< Less than

> Greater than

=< is equal to and less than

=> is equal to and greater than

LIKE search on a pattern

13. Using the WHERE command can you list all the donuts that are filled?

```
SELECT *

FROM donutlist

WHERE type="filled";
```

14. Can you list all the donuts that cost £2.50?

```
SELECT *

FROM donutlist

WHERE cost=2.50;
```

15. Can you list all the donuts that are frosted?

```
SELECT donutname, rating

FROM donutlist

WHERE donutname LIKE '*frosted*';
```

Scenario – HEAD FIRST LOUNGE

"The Head First Lounge is adding mixed fruit drinks to its menu. Using what you have learned so far, create the database called drinks and the table below and insert the data as shown." Then answer the following questions.

easy_drinks

drink_name	main	amount1	second	amount2	directions
Blackthorn	Tonic water	1.5	Pineapple juice	1.0	Sir with ice, strain into cocktail glass with lemon twist
Blue moon	Soda	1.5	Blueberry Juice	0.75	Stir with ice, strain into cocktail glass with lemon twist
Oh my gosh	Peach nectar	1.0	Pineapple juice	1.0	Stir with ice, strain into shot glass
Lime fizz	Sprite	1.5	Lime juice	0.75	Stir with ice, strain into cocktail glass
Kiss on the lips	Cherry juice	2.0	Apricot nectar	7.0	Serve over ice with straw
Hot gold	Peach nectar	3.0	Orange juice	6.0	Pour hot orange juice into mug and add peach nectar
Lane tree	Soda	1.5	Cherry juice	0.75	Stir with ice, strain into cocktail glass
Greyhound	Soda	1.5	Grapefruit juice	5.0	Serve over ice, stir well
Indian summer	Apple juice	2.0	Hot tea	6.0	Add juice to mug and top off with hot tea
Bull frog	Iced tea	1.5	Lemonade	5.0	Serve over ice with lime slice
Soda and it	Soda	2.0	Grape juice	1.0	Shake into cocktail glass

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Note:

- To insert multiple rows if using MYSQL and Putty use **,** to separate the values.
- To insert multiple columns in MS Access copy and paste the table into MS Excel. From the external data tab import the Excel file into Access. Access not very good at multiple row INSERTS. Although, ensure you can write INSERT INTO command.

Can you answer the following questions? Note: some of the queries may have errors, which you will need to correct.

1. Which drinks are returned from the following query?

    Result:

    Query:

    ```
    SELECT *

    FROM easy_drinks

    WHERE main = 'sprite';
    ```

2. Which drinks have soda as part of the main ingredient, write the query and result below?

    Result:

    Query:
    ```
    SELECT drink_name

    FROM easy_drinks

    WHERE main = 'soda';
    ```

3. Which drinks are returned for the following query?

    Result:

    Query:

    ```
    SELECT *

    FROM easy_drinks

    WHRE amount2 = 6;
    ```

4. Can you write the query which has the following result?

Result:

ID	drink_name	main	amount1	second	amount2	directions
6	Hot gold	Peach nectar	3	Orange juice	6	Pour hot orange juice into mug and add peach nectar

Query: SELECT *

             FROM easy_drinks

             WHERE second="orange juice";

5. Can you write the query and result which displays the drinks where the amount1 is equal to or less than 1.5?

Result:

Query: SELECT *

             FROM easy_drinks

             WHERE amount1 <= 1.5;

6. Can you write the command which return the following result?

Result:

ID	drink_name	main	amount1	second	amount2	directions
2	Blue moon	Soda	1.5	Blueberry Juice	0.75	Stir with ice, strain into cocktail glass with lemon twist
4	Lime fizz	Sprite	1.5	Lime juice	0.75	Stir with ice, strain into cocktail glass
7	Lane tree	Soda	1.5	Cherry juice	0.75	Stir with ice, strain into cocktail glass

Query: SELECT *
       FROM easy_drinks
       WHERE amount2<1;

7. Can you write the query that displays drink that have ice in it?

(Note: you will need to work this one out! Search SQL syntax wild card)

Result:

Query: SELECT *

                FROM easy_drinks

                WHERE directions LIKE '*ice*';

8. Can you write the command which displays the following result?

Result:

ID	drink_name	main	amount1	second	amount2	directions
6	Hot gold	Peach nectar	3	Orange juice	6	Pour hot orange juice into mug and add peach nectar
9	Indian summer	Apple juice	2	Hot tea	6	Add juice to mug and top off with hot tea

Query: SELECT *

                FROM easy_drinks

                WHERE directions LIKE '*mug*';