

Quiz Database

Introduction

Databases are really useful for holding lots of information that we want to *analyse*.

We're going to learn how to create a simple database to hold the results of a quiz.

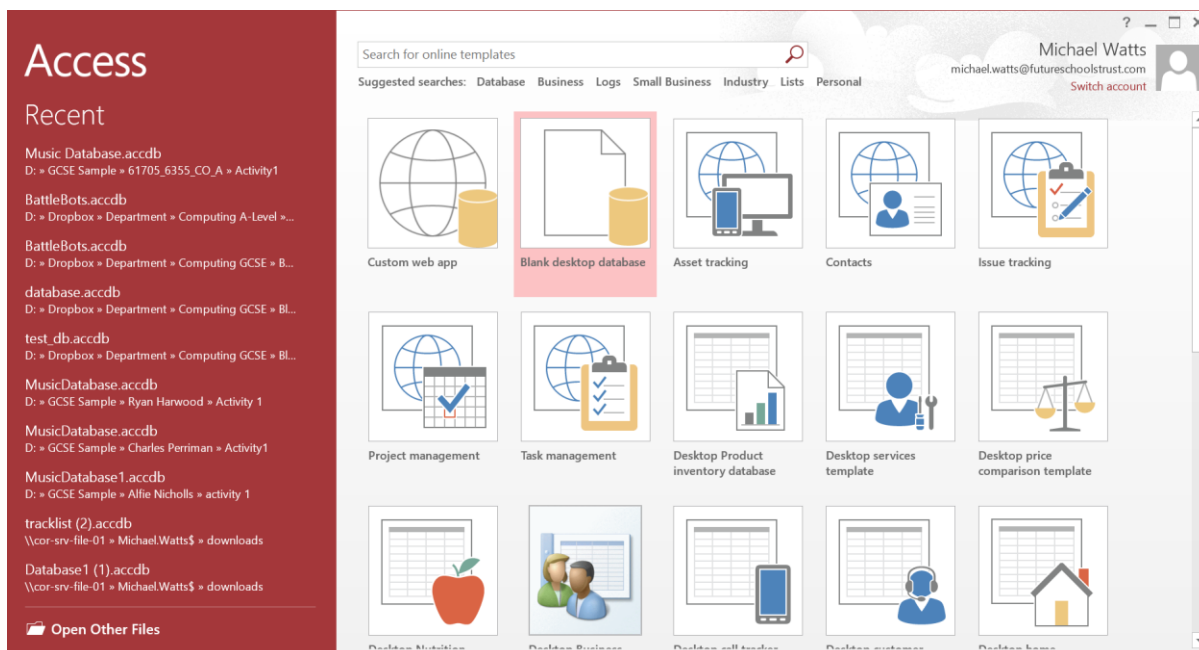
Let's start out defining our questions:

1. What is your first name?
2. What is the capital city of France?
3. Can any mammals lay eggs? (Yes/No)
4. To the nearest thousand, what is the population of Maidstone?
5. If you have £5 and you buy the following items, how much change do you have?
 - a. A loaf of bread (£1.20)
 - b. A pint of milk (£0.80)
 - c. 80 tea bags (£0.80)
 - d. 1 large chocolate bar (£1.00)

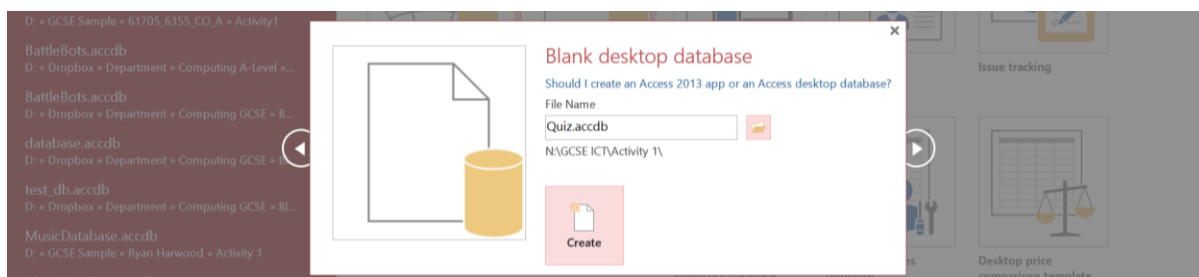
How do you think we might collect the results of this quiz?

Creating a database

We're going to create a database to hold the results from our quiz. Start by opening Access:

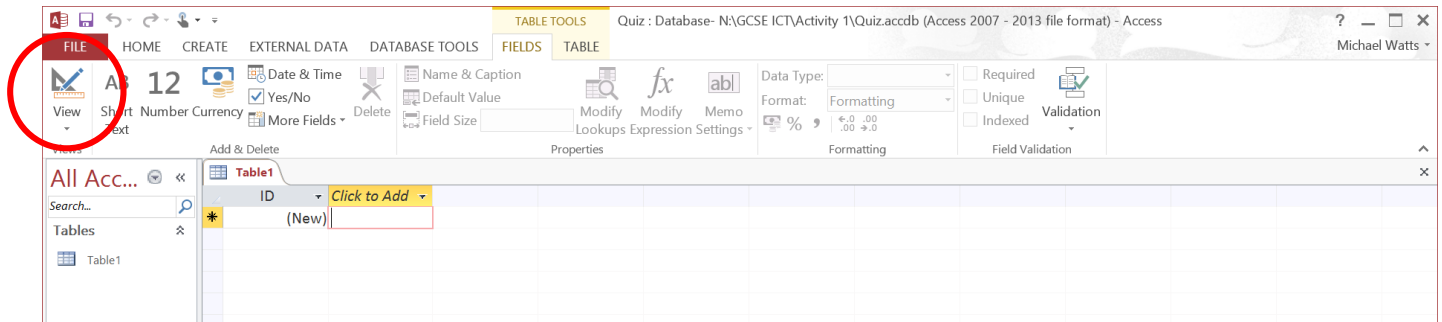


We need to create a new “Blank desktop database”. When you click that option, Access will ask you where you want to store the database, and what you want to call it:

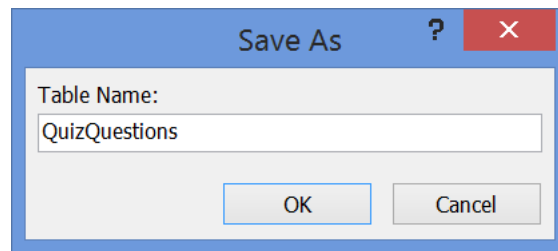


Choose a sensible place to save it and give it the name “Quiz.accdb”.

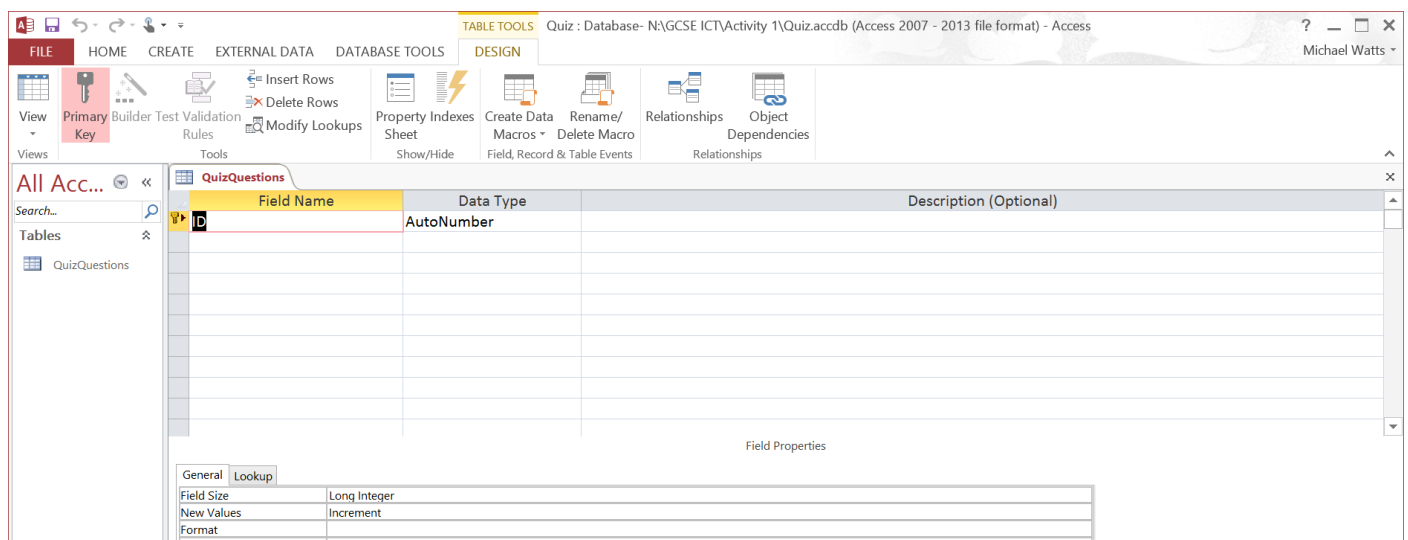
Access will create a new database and start it off with a basic *Table*. Tables are how databases store information, they have headings (or *Fields*) for each of the items we want to store. We need to switch to *Design View*:



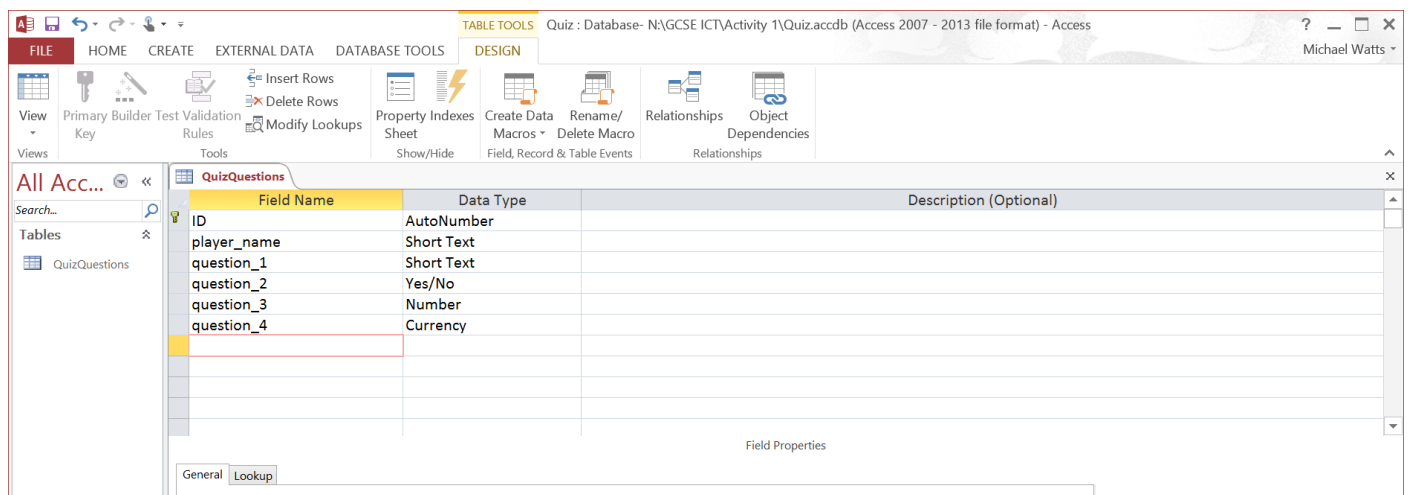
Click the Design View button at the top. Access will ask us what we want to call our table. Call it QuizQuestions:



Access will then open the table in Design View:

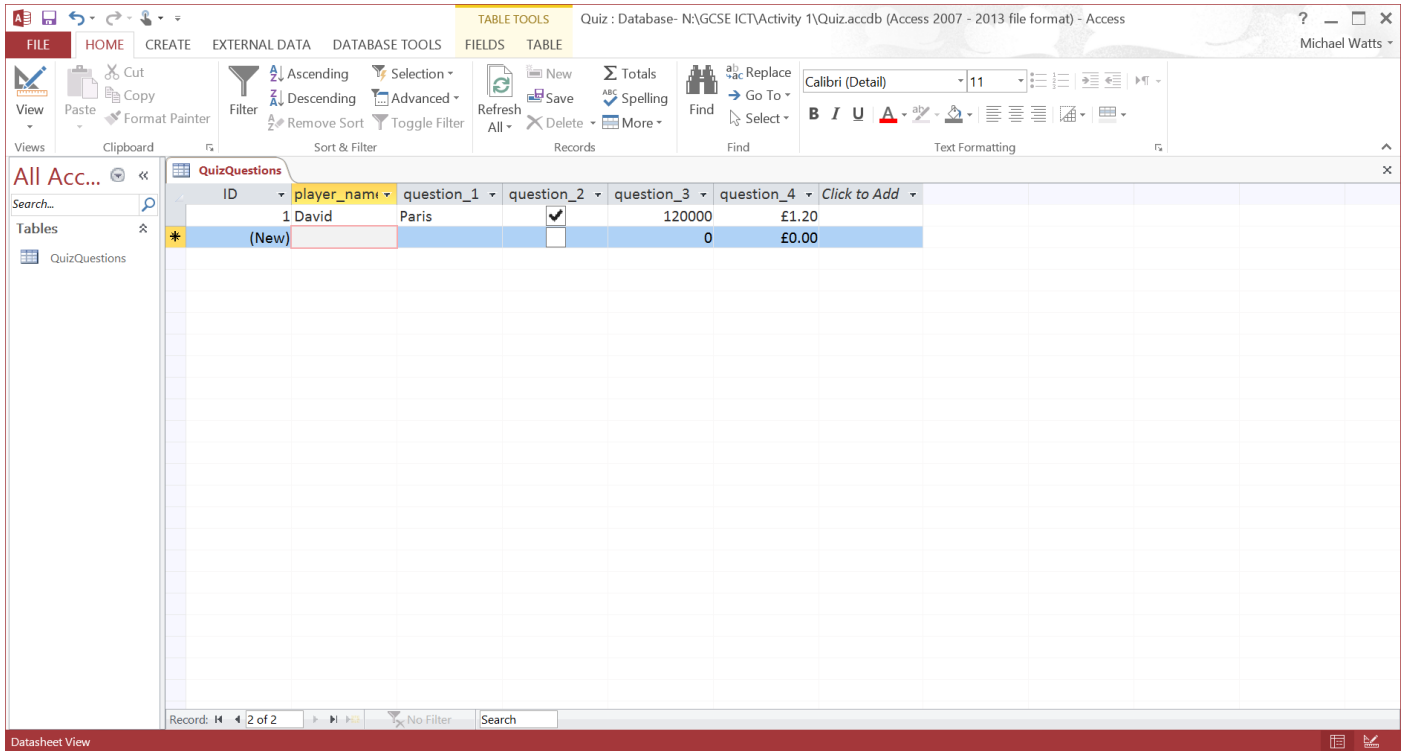
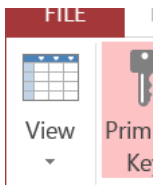


We need to create a field for each of the questions in our quiz. Enter the details below – make sure that you pick the correct *Data Type* for each field. Data types tell access what sort of information to expect for each field. We have 4 different types of data in our questions: Text, Yes/No, Numbers & Currency.





Once we're done creating the table, click the save button **FILE** at the top of the window, then switch back into datasheet view:



From Datasheet View we can start to add in some of the results from the quiz. You can see we've already added the first one. Add the rest from the table below:

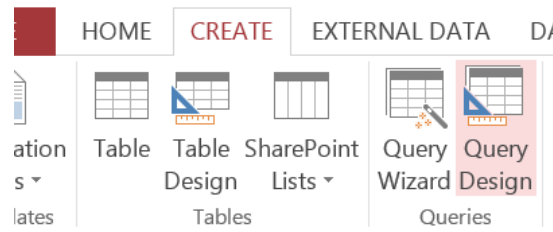
Player Name	Question 1	Question 2	Question 3	Question 4
David	Paris	Yes	120,000	£1.20
Sally	Paris	No	10,000	£1.30
Harry	London	No	100,000	£1.20
Poppy	Paris	No	150,000	£1.20
Emma	New York	No	200,000	£1.20
Peter	Paris	Yes	110,000	£1.10
Luke	Boston	Yes	115,000	£2.00
Sarah	Munich	No	80,000	£1.20
Helen	Paris	No	125,000	£0.90
Simon	Paris	Yes	115,000	£1.20

Now that we've entered all the data, we want to perform some analysis. In Databases, *Queries* are how we analyse our data. We want to know:

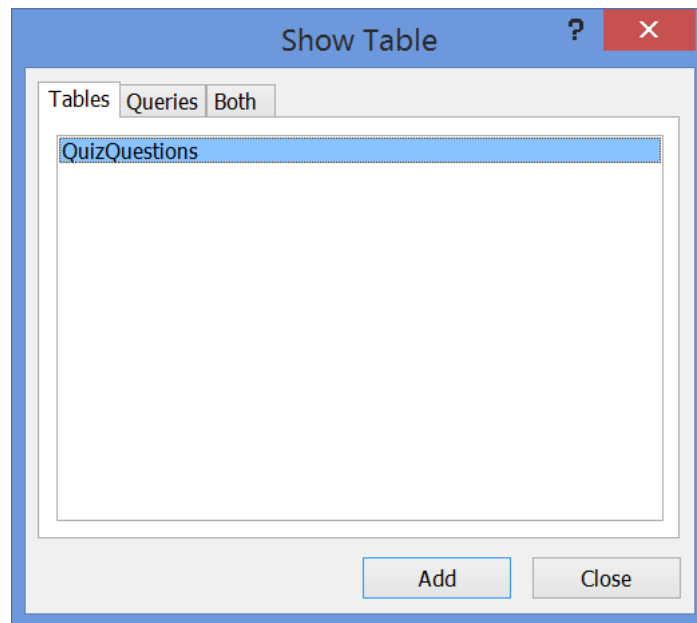
1. How many people got question 2 wrong
2. What cities people thought were the capital of France
3. What the average population people guessed
4. What the maximum and minimum amounts of change people gave.
5. The names of all the people who got all 4 questions correct

Making a Query

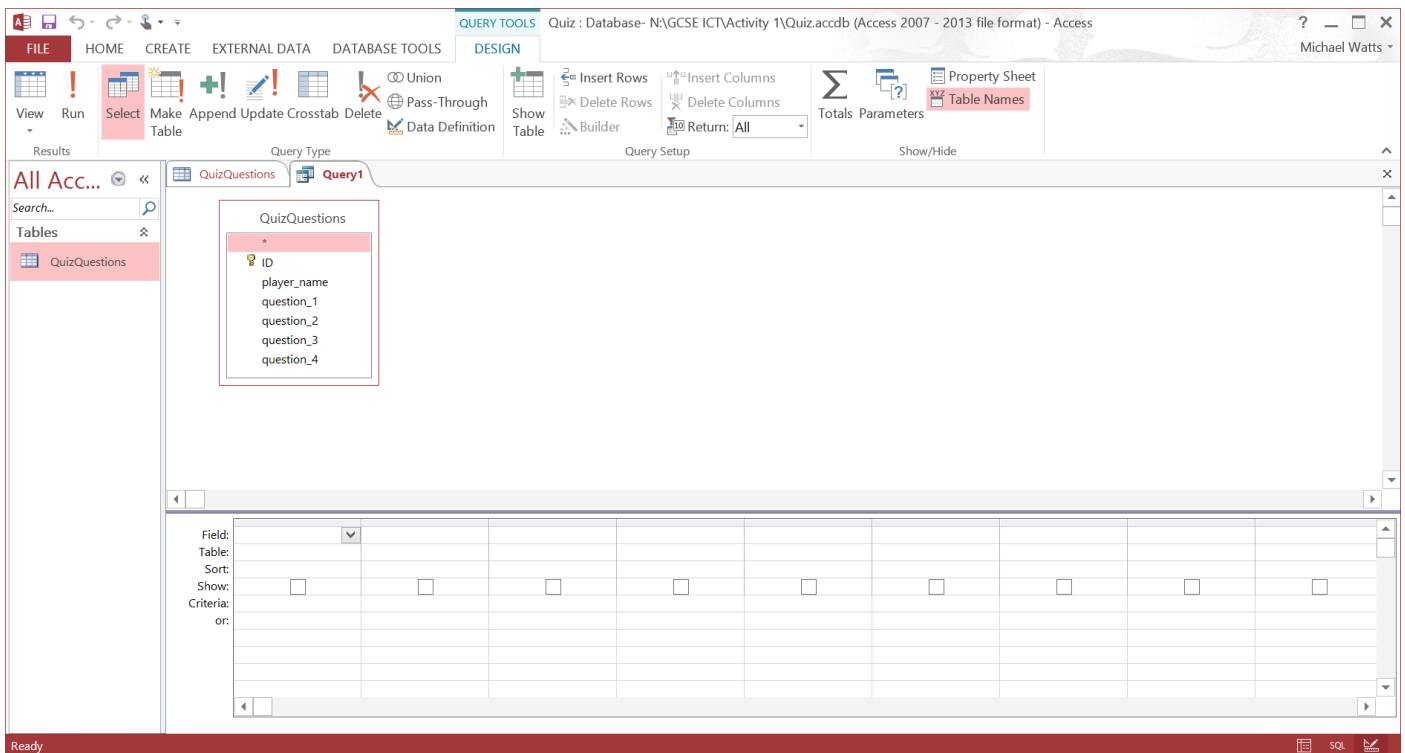
From the 'Create' tab, click on 'Query Design':




Access will ask which tables we want to use in our query:



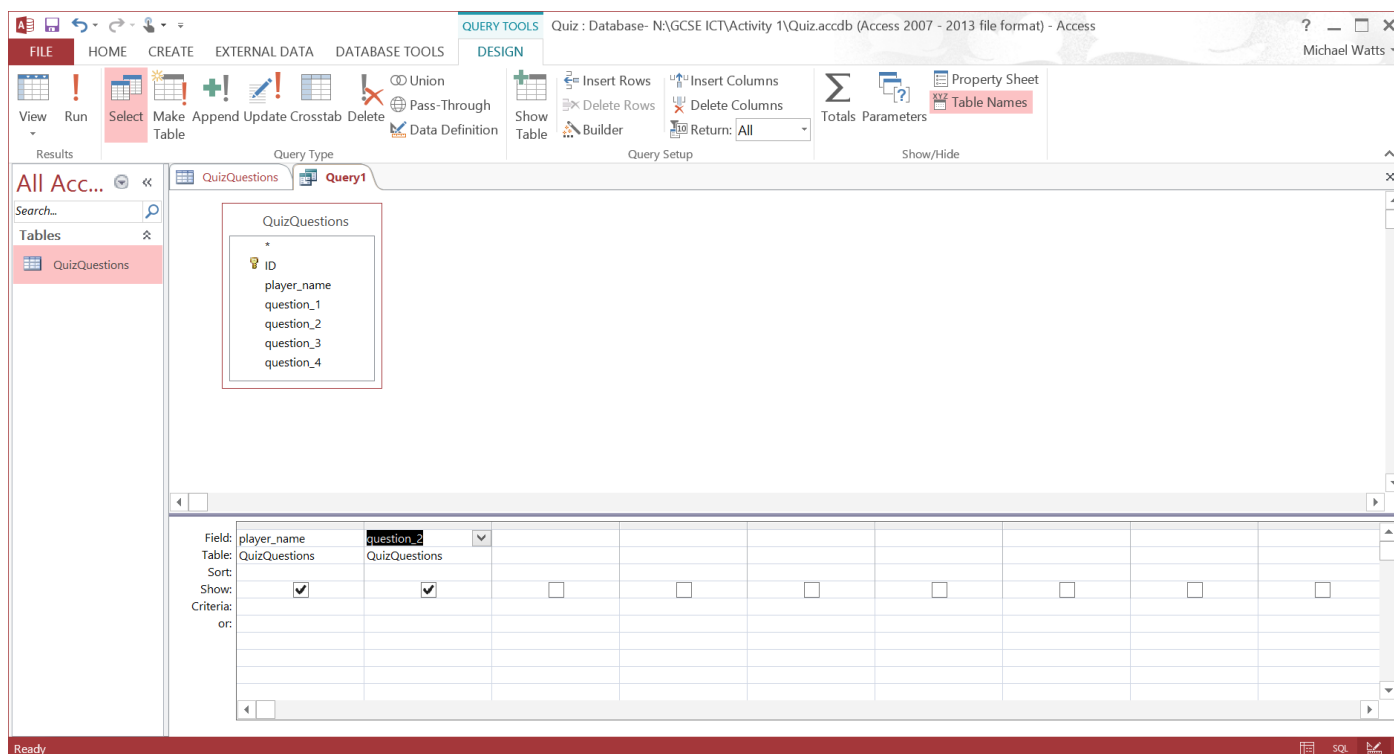
we only have one, so double click it to add it to the query, then click the 'Close' button:




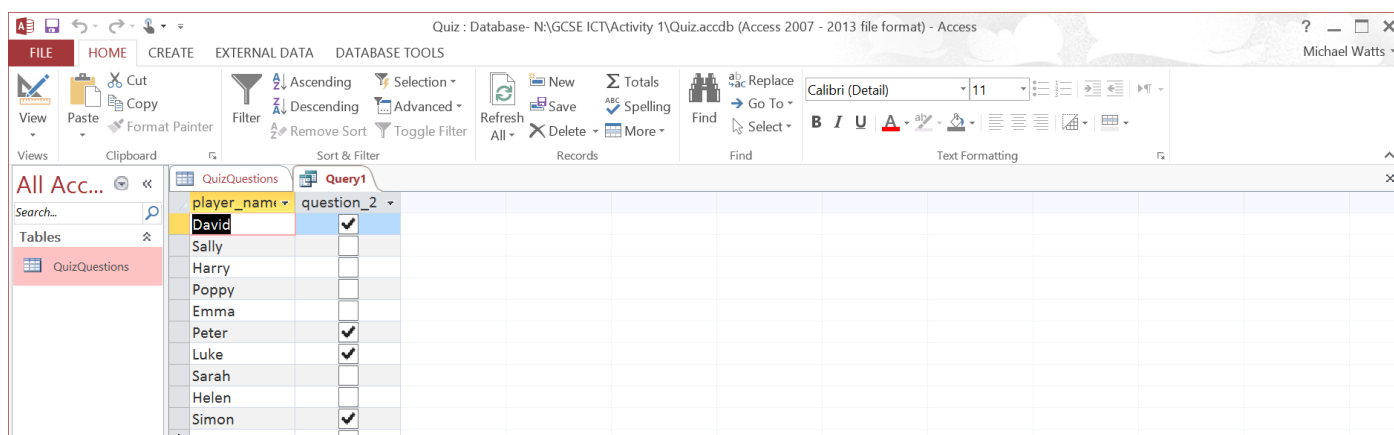
You can resize the little "QuizQuestions" window in the top so you can better see all of the fields listed.

Next we'll build the query a little bit at a time, using the big  at the top to check at each stage.


First, click on the fields you want from the “QuizQuestions” window in the top part and drag them down into the sheet in the bottom part. We need the *player_name* and *question_2* fields:

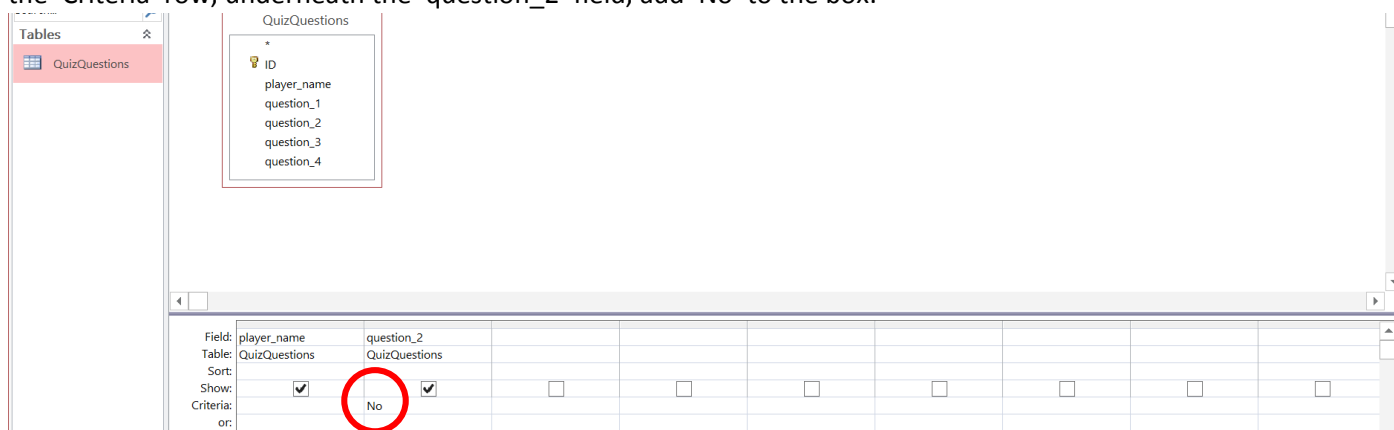


This is already a query! It's not quite the query we want, but press the  to see what it looks like at this stage:



When we run the query in its current form, it displays all of the people along with what their answer is for question 2. Let's first edit the query to just display the results where the question was answered 'No' (The Duck Billed

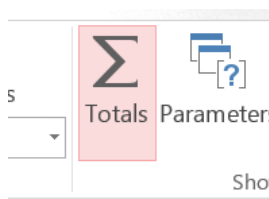
Platypus is an Australian mammal that lays eggs!). First, switch back into 'Design View' with the  button, now in the 'Criteria' row, underneath the 'question_2' field, add 'No' to the box:



Now run the query again and you will only see the people that got it wrong:

player_name	question_2
Sally	
Harry	
Poppy	
Emma	
Sarah	
Helen	

Still not quite what we want though, we want just the *count* of these results – how many are there? Switch back into Design View, and find the ‘Totals’ button at the top:



When you click this button, a new row is added to the query sheet at the bottom called ‘Total’. This gives us options to perform some simple calculations on the results:

Field:	player_name	question_2
Table:	QuizQuestions	QuizQuestions
Total:	Count	
Sort:		
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:		No
or:		

Choose the ‘Count’ option from the Total dropdown underneath the *player_name* field. Run the query again and it will simply show you how many people answered this question wrong:

CountOfPlay	question_2
6	



Click the save button **FILE** now to save the query. Access will ask you to name it. Call it something descriptive:

Save As

Query Name:

count_of_question_2_wrong

OK Cancel

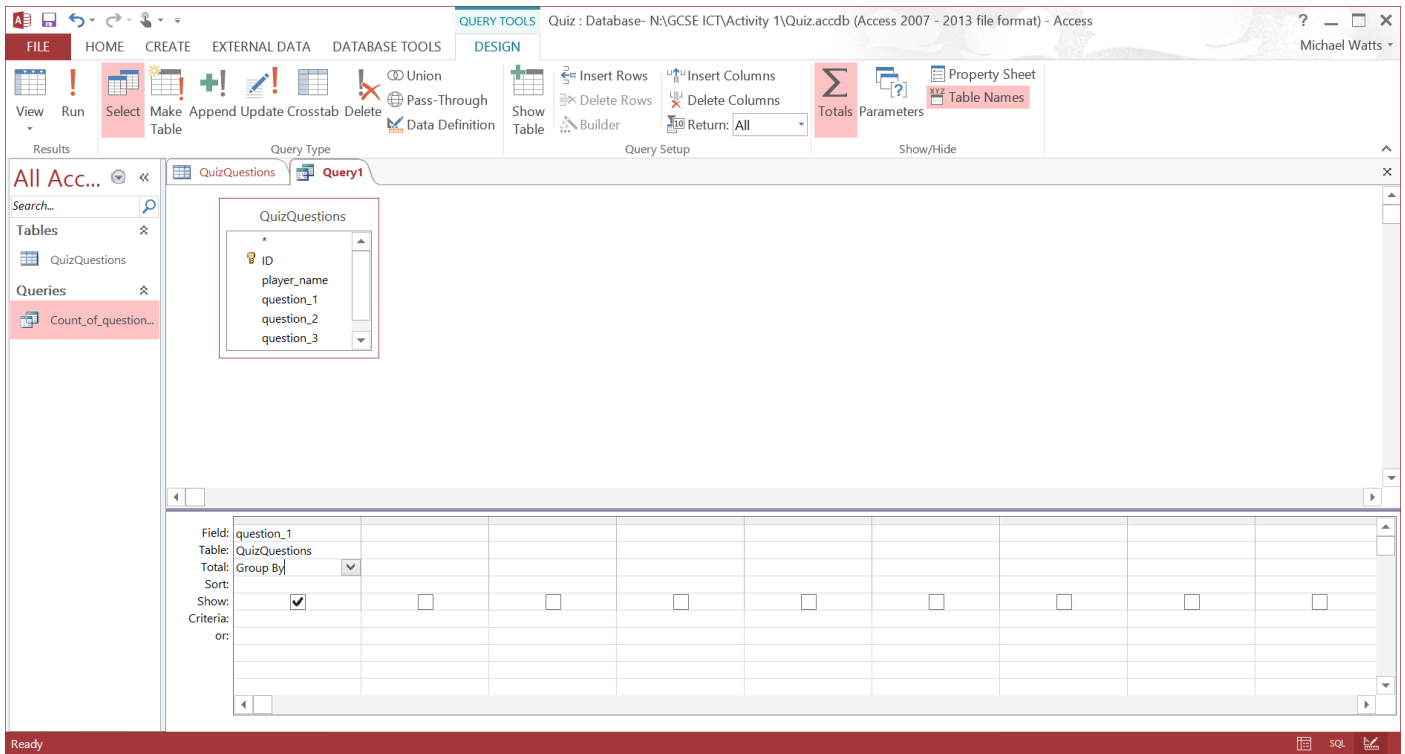
It's useful to name things like this, as it makes it much easier to find the queries we need later. After you save it, it will appear in the list on the left of the window, double clicking it will open it again when we need it:

Query Name	Fields
Count_of_question_2_wrong	ID, player_name, question_1, question_2, question_3, question_4

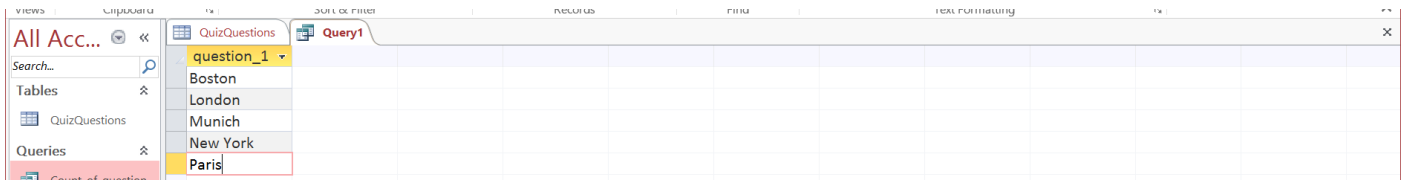
Summarising Answers with a Query

Next we want to know which cities were given as possible Capitals of France.

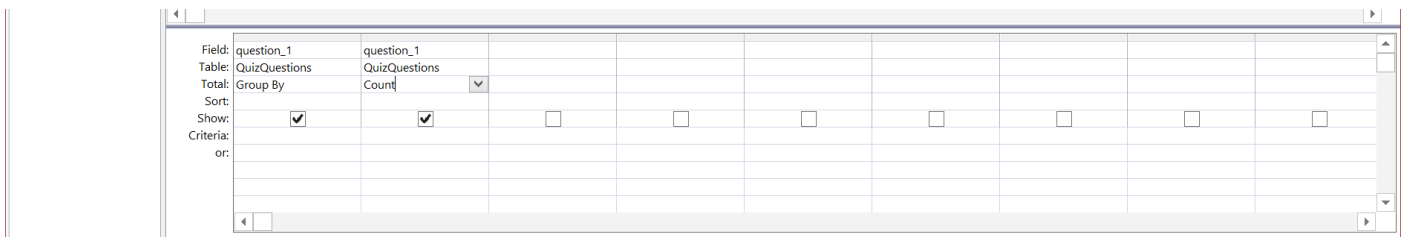
Create a new query following the same process as before, but this time, drag down the field *question_1* into the query, click the 'Totals' button at the top. Question_1 should say *Group By* in its 'Totals' row:



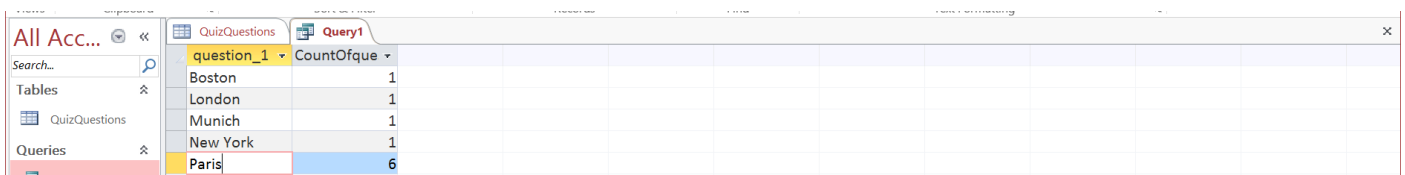
Run this with the run button and you'll see each of the cities answered:



We can make this a little bit more useful though, back in Design View for the query, drag the *question_1* field into the query for a second time and choose *Count* from the 'Totals' row dropdown:



Now when we run the query, it will tell us how many times each city was answered:



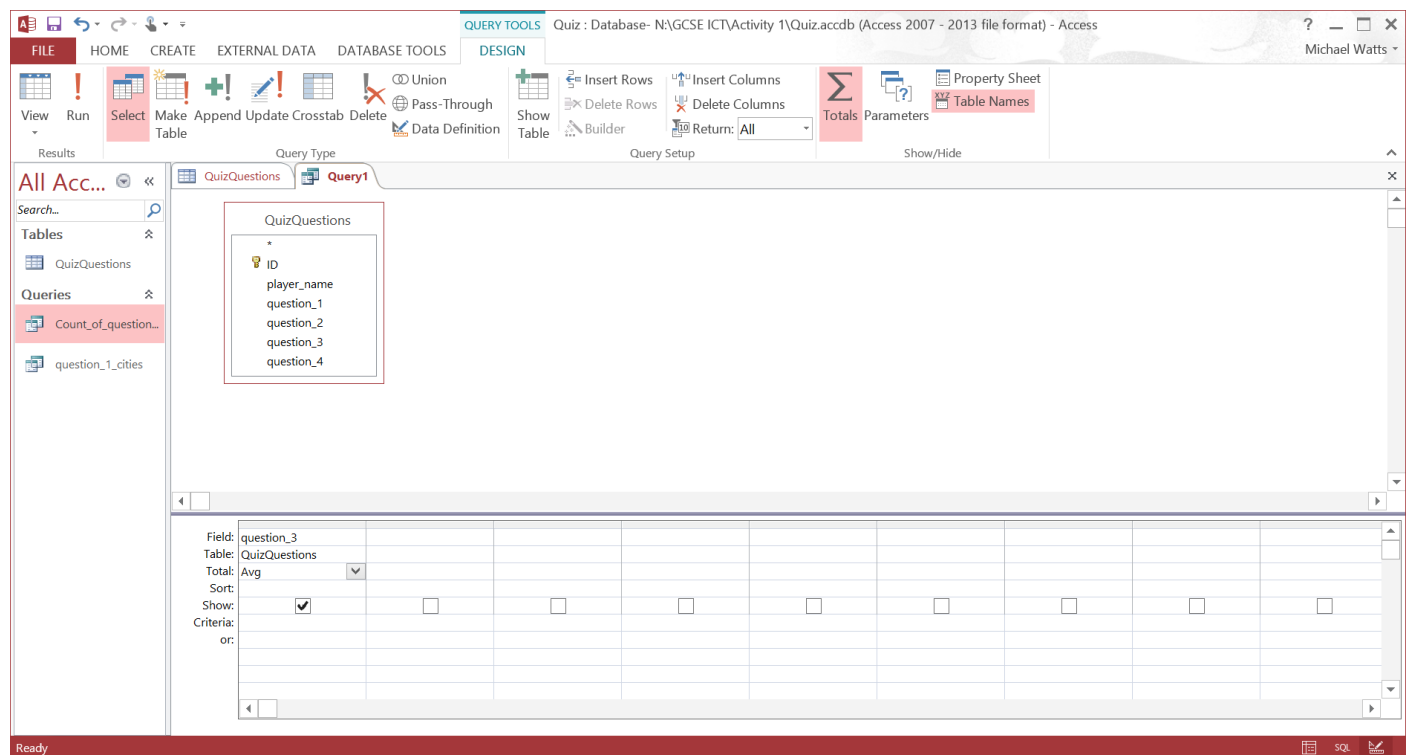
6 people answered Paris, which is of course, the correct answer!

Save this query with the name *question_1_cities*.

Average Population

We can use another *Total* function to automatically calculate the average of the results.

This query is pretty simple, build it from the screenshot below:



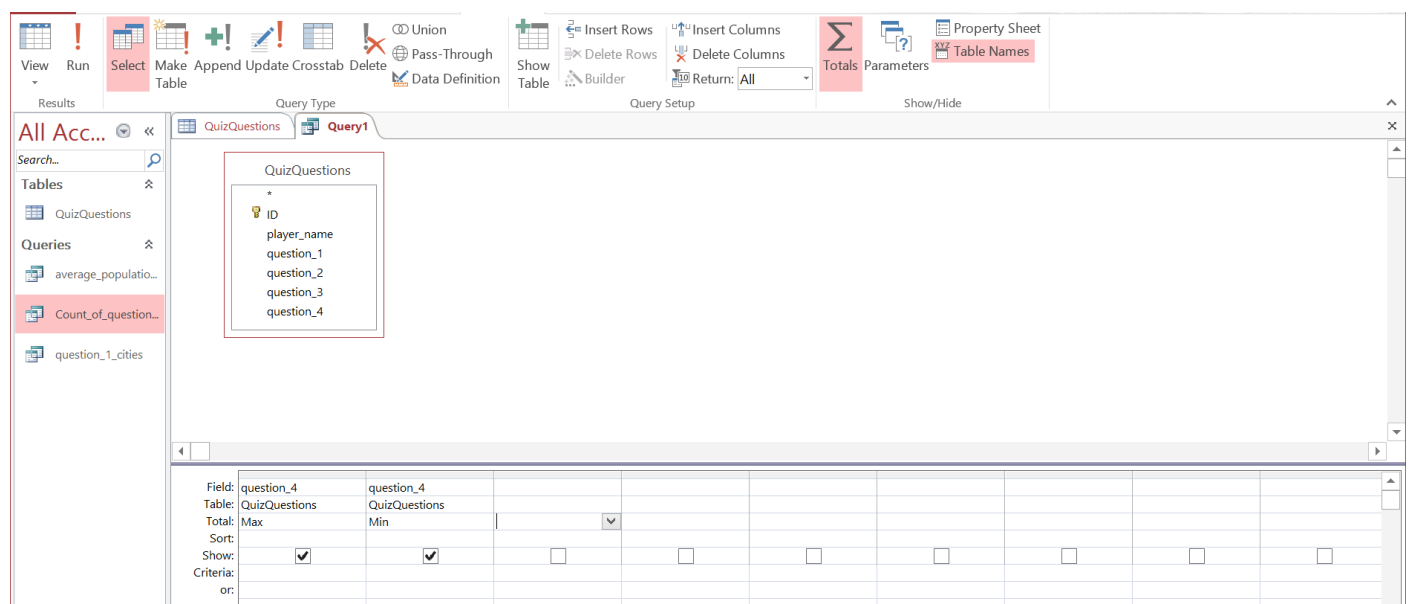
Using the *Avg* Total function will tell us the average population suggested by our quiz takers.

To the nearest thousand, the population of Maidstone is 113,000 (or was in 2011, when data was most recently available). How close is the average?

Save this query as *average_population_answers*.

Maximum and Minimum

More *Total* functions let us find the maximum and minimum values of a field. We can even put them into the same query:



What were the maximum and minimum answered for the change question? The correct answer was £1.20. Save this query as *max_min_price*.

All the answers

Finally, we have a slightly more complicated query to make – we want to know the names of the people who got all of the answers correct. To recap the answers:

1. What is the capital city of France? - **Paris**
2. Can any mammals lay eggs? (Yes/No) - **Yes**
3. To the nearest thousand, what is the population of Maidstone? – **113,000**
4. If you have £5 and you buy the following items, how much change do you have? - **£1.20**
 - A loaf of bread (£1.20)
 - A pint of milk (£0.80)
 - 80 tea bags (£0.80)
 - 1 large chocolate bar (£1.00)
 - $1.20 + 0.80 + 0.80 + 1.00 = 3.80$
 - $5.00 - 3.80 = 1.20$

We're going to do something a bit different with question 3 though – we're going to say that anyone who guessed between 110,000 and 120,000 is correct, so we'll need to do something clever with the query. Let's take a look:

Field	player_name	question_1	question_2	question_3	question_4
Table:	QuizQuestions	QuizQuestions	QuizQuestions	QuizQuestions	QuizQuestions
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:		"Paris"	Yes	>=110000 And <=120000	1.2
or:					

We've entered the correct answers into the *Criteria* row for each question and we **haven't** used the 'Total' row. For question_3 we've done something a little different.

The >= and <= symbols mean:

- >= Greater-Than or Equal
- <= Less-Than or Equal

This query will match any records where the answer to *question_3* is greater than or equal to 110,000 AND also less than or equal to 120,000.

If we run this query, we can see that 2 people answered all of the questions correctly:

player_name	question_1	question_2	question_3	question_4
David	Paris	<input checked="" type="checkbox"/>	120000	£1.20
Simon	Paris	<input checked="" type="checkbox"/>	115000	£1.20

Save this last query as *answers_all_correct*.