



Moodle Gapfill Quiz Questions for SQL Teaching and Assessment

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Challenge – “Better” Assessments

- Subject – Databases - SQL – Structured Query Language
- VLE - Moodle – Quizzes (Instant Feedback)
- GAPFILL question type (plugin)
- Created by Marcus Green – Explained in detail at:
<https://www.youtube.com/watch?v=FbmKMas5hFw>

Example

The capital of Ireland is [Dublin] and the currency is the [Euro]

- i.e. Put square braces around the missing words

Tables Provided at Start of Course

Quiz Case Study - Donegal Dental Appointments

Patient

Pat_Id	Fname	Sname	Address	Town	Income
100	Paul	Grimes	Mackish Heath	Milford	20000
101	Laura	Rushe	Ernigal Drive	Bundoran	25000
102	Sara	Long	Boyle Court	Milford	30000
103	Mary	Wamsy	Kelly Street	Milford	40000

Dentist

Dent_Id	Fname	Sname	Town	Uni_Id	Birth Date	Salary	Status
1	Martin	Begley	Milford	11	07-Sep-48	40000	Part-Time
2	James	Freaney	Bundoran	12	15-Dec-69	35000	Part-Time
3	Jack	Casry	Milford	13	18-Jan-71	30000	Contract
4	Kelly	Kearse	Glenties	14	12-Jan-83	45000	Permanent
13	Clare	Quinn	Naill	15	02-Feb-65	50000	Contract

Appointment

Pat_Id	App_Date	Details	Dent_Id	Fee	Clinic_Id
100	07-Sep-98	A X-rays	1	300	100
101	07-Sep-98	Extraction	2	400	200
102	07-Sep-98	Toothache	1	100	300
100	08-Sep-98	Wisdom Teeth	2	100	300
101	08-Sep-98	Filling	2	900	100
102	08-Sep-98	Filling	4	150	200
103	10-Sep-98	Brace Fitting	10	300	100
104	10-Sep-98	A X-rays	3	300	200
105	12-Sep-98	Root Canal	2	50	300

Employer

Emp_Id	Emp_Nam	Address	Industry
A123	Billco	Ballybofey	Medical
B123	An Post	Stenaforlar	Courier
C123	Guinness	Sligo	Drink

Employed_By

Pat_Id	Emp_Id	Hired	Left
100	A123	1965	1976
101	B123	1994	1997
102	C123	1985	NULL
109	G123	1995	NULL
110	E123	1968	NULL
111	E123	1984	NULL
100	B123	1976	1996
101	C123	1997	1999
100	C123	1996	1998

Clinic

Clinic_Id	Location	Telephone	Yr_Rent
100	Lettakenny	6474321	45000
200	Carndonagh	6443215	55000
300	Dungloe	6484721	30000

University

Uni_Id	Name	City	Yr_Est	Award
11	TCD	Dublin	1820	Phd
12	UCD	Dublin	1880	Masters
13	UCC	Cork	1870	Masters
14	Queen's	Belfast	1830	Phd

Dentist_Training

Dent_Id	Cse_Date	Title	Type	Venue	Fee	Sponsor
1	10-May-97	Implants	Practical	Dublin	300	MSB
2	18-Jan-98	Dentil Use	Practical	BeYast	500	NRB
3	12-Jul-99	Dental Health	Lecture	London	200	NRB
7	12-Jul-97	Tooth Decay	Lecture	Dublin	400	MSB

A copy of this handout is provided to students at the start of the term - students need a copy of the tables when taking the quizzes

Gapfill Question – “Design” View

Give the location, square footage, yearly rent, heating, and manager of clinics that have a yearly rent of 30000 or more, are heated by Gas or Oil, take up no more than 2400 square foot of space, and are run by a manager whose name ends with the letters 'on'.

```
Select [Location, Sq_Foot, Yr_Rent, Heating, Manager]
[From Clinic]
[Where Yr_Rent >= 30000]
[And Heating In ('Gas','Oil')]
[And Sq_Foot <= 2400]
[And Manager Like '%on'] |;
```

Each question refers to one or more of the tables in the case study

Several pairs of Square brackets added to the SQL command.....student (runtime) view on next page shows what student sees when taking the quiz

Student View (During Quiz)

Give the location, square footage, yearly rent, heating, and manager of clinics that have a yearly rent of 30000 or more, are heated by Gas or Oil, take up no more than 2400 square foot of space, and are run by a manager whose name ends with the letters 'on'.

Select

 ;

Gaps can all be set to the same size if desired.....don't consider this a problem I leave them at their default width

Submit Quiz - Feedback Generated

Give the location, square footage, yearly rent, heating, and manager of clinics that have a yearly rent of 30000 or more, are heated by Gas or Oil, take up no more than 2400 square foot of space, and are run by a manager whose name ends with the letters 'on'.

Select ✓

✗ *[From Clinic]*

✗ *[Where Yr_Rent >= 30000]*

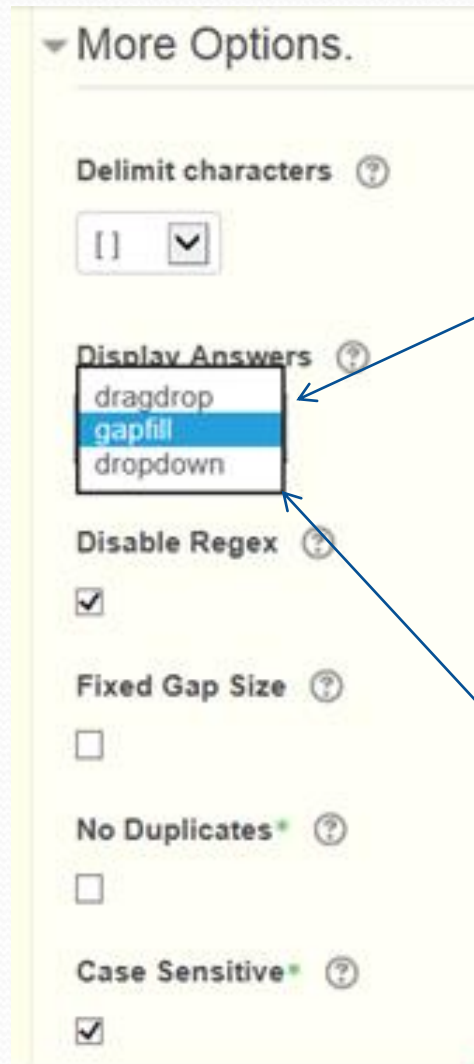
✗ *[And Heating In ('Gas','Oil')]*

✓

✗ *[And Manager Like "%on"] ;*

Each gap in a question is automatically allocated an equal proportion of the marksmay not be ideal in some circumstances

More Variations: dragdrop & dropdown



Two more versions of the Gapfill Question

1 - Dragdrop

Very useful as **DISTRACTORS** may be built into a question

Has potential if encouraging students to become familiar with material in advance of class

2 - Dropdown

Probably won't use it – instead I use a similar question type “**Select Missing Word**” for some aspects of SQL (Views)

Dragdrop Question – Design View

Question text*



A) Give the surname, hire date, salary, specialism, and town of dentists who have Crowning as their specialism, earn more than 25000, and were hired before '10-May-1990'.

Select Sname, Hire_Date, Salary, Specialism, Town
From Dentist
Where [Specialism = 'Crowning']
And [Salary > 25000]
And [Hire_Date < '10-May-1990'];

Square brackets placed around text as usual

Distractors below are separated by commas – distractors may be used only in the dragdrop version of the Gapfill question!

Distractors. ?



Hire_Date > '10-May-1990', Hire_Date Like '10-May-1990', Salary >= 25000, Salary <= 25000, Salary < 25000, Specialism <> 'Crowning', Specialism Like 'Crowning', Specialism In 'Crowning'

Dragdrop – Student View During Quiz

Specialism = 'Crowning' Salary >= 25000 Specialism Like 'Crowning' Salary < 25000
Specialism In 'Crowning' Salary > 25000 Hire_Date > '10-May-1990' Specialism <> 'Crowning'
Salary <= 25000 Hire_Date < '10-May-1990' Hire_Date Like '10-May-1990'

A) Give the surname, hire date, salary, specialism, and town of dentists who have Crowning as their specialism, earn more than 25000, and were hired before '10-May-1990'.

Select Sname, Hire_Date, Salary, Specialism, Town

From Dentist

Where

And

And

Moodle randomly places the distractors among the correct answers!

Dragdrop – Feedback after Submission

Specialism = 'Crowning' Salary >= 25000 Specialism Like 'Crowning' Salary < 25000
Specialism In 'Crowning' Salary > 25000 Hire_Date > '10-May-1990' Specialism <> 'Crowning'
Salary <= 25000 Hire_Date < '10-May-1990' Hire_Date Like '10-May-1990'

A) Give the surname, hire date, salary, specialism, and town of dentists who have Crowning as their specialism, earn more than 25000, and were hired before '10-May-1990'.

Select Sname, Hire_Date, Salary, Specialism, Town

From Dentist

Where Specialism = 'Crowning' ✓

And Salary <= 25000 ✗ [Salary > 25000]

And Hire_Date Like '10-May-1990' ✗ [Hire_Date < '10-May-1990'];

Student Guidelines for taking quizzes featuring Gapfill questions

- SQL Answer must follow the “flow” (order) of the question e.g. List the **surname**, **status** and **salary** of dentists who earn 25000 and have Permanent status.

Select [**Sname**, **Salary**, **Status**] - *columns are out of sequence*

[From Dentist]

[Where Status = 'Permanent'] - *salary condition should be on line 3*

[And Salary = 25000]; - *status condition should be on line 4*

- *Question design must be consistent in format of query syntax – e.g. spaces, commas, quotes – otherwise chaos!*

Dummy “Blank” Question is Useful

- Gapfill Question has several settings that can be tweaked depending on your needs
- “Painful” to do this tweaking if writing several questions where default settings don’t apply
- Solution - prepare a “dummy” question with the settings required (See “More Options” in earlier slide)
- Save the dummy question and make a COPY of it each time you need a question with the same settings

Dummy Question

Question name*

AAAA_Blank_CASE_Sens_ON

Question text*



[X]

Give the dummy question a meaningful name.....create several blank questions with a mix of different settings.

Dummy question must have at least one "blank"

The Story So far

- **Quizzes used for both formative and summative assessment (Approx 1 quiz per week)**
- **2 Summative Quizzes per module – around Week 4 and Week 8 of a 12 Week module.**
- **Majority of students (95% +) take the formative assessment quizzes regularly during term**
- **Many (weaker) students will keep taking the same quizuntil they get it right!**
- **Students value the instant feedback**
- **Performance in end-of-semester exams much improved**