GNU Sqltutor

a web based interactive tutorial of Structured Query Language (SQL)

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Contents

Introduction

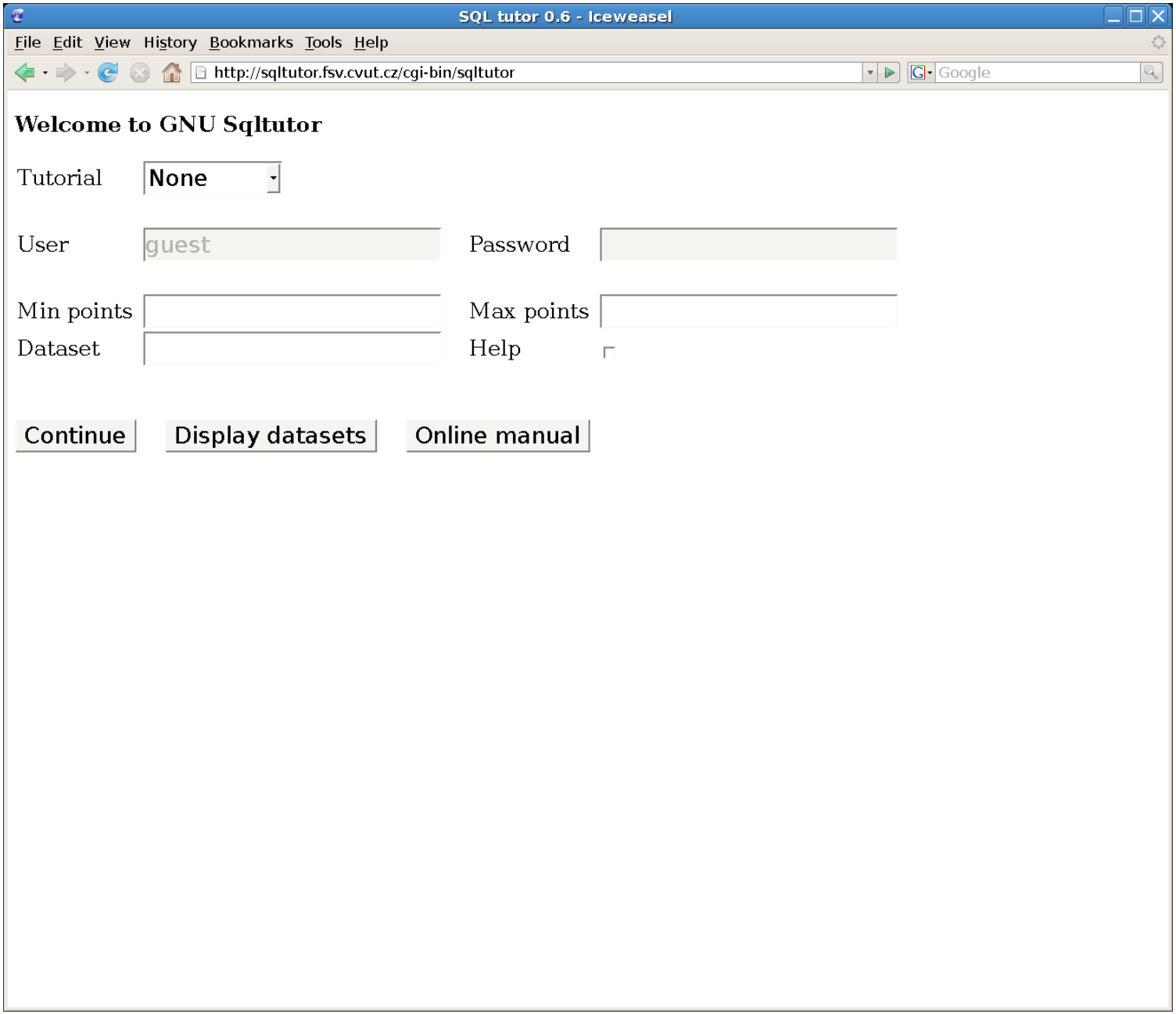
SQLtutor is an interactive online web based tool for teaching and examining students' knowledge of SQL

- introduction of new study branch geoinformatics
  - introduction to relational databases and SQL language
  - background for spatial queries in GIS and other subjects
  - PostgreSQL selected as a main RDBMS in our curricula
- Structured Query Language (SQL)
  - relatively simple language (at least on the basic level)
  - no need of previous background and knowledge of DB
  - ideal candidate for computer based learning
- SQLtutor — an web based interactive tutorial
  - project started in August 2007
  - presented on a faculty seminar
  - first experimental course with master degree. students
  - official status of GNU software in January 2009

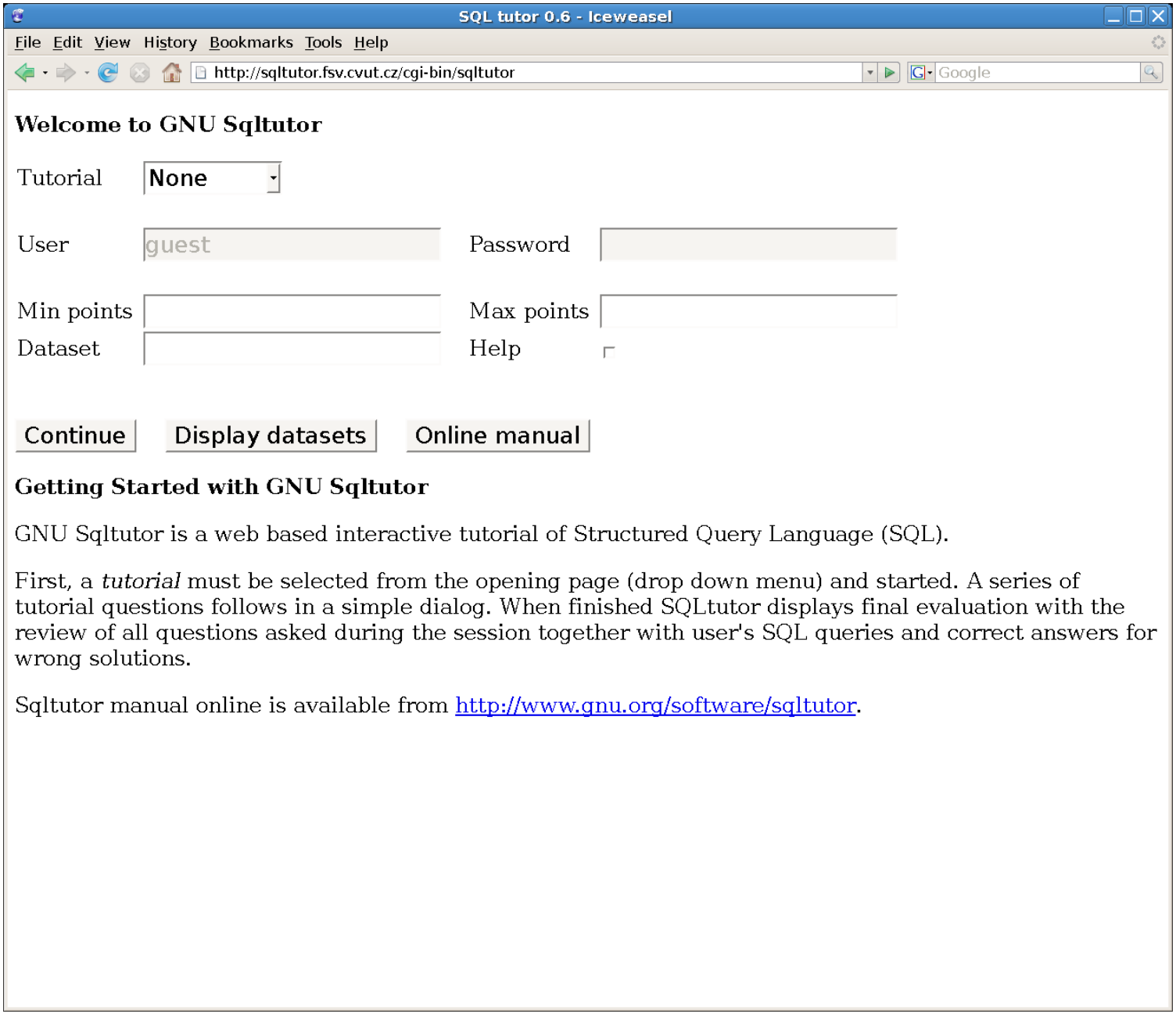
GNU Sqltutor

home page	http://www.gnu.org/software/sqltutor
CVS repository	http://savannah.gnu.org/projects/sqltutor
Sqltutor online	http://sqltutor.fsv.cvut.cz
License	GNU General Public License v3 or later
Sqltutor manual	available online in several formats (HTML, ASCII, Info, dvi, PostScript, PDF)

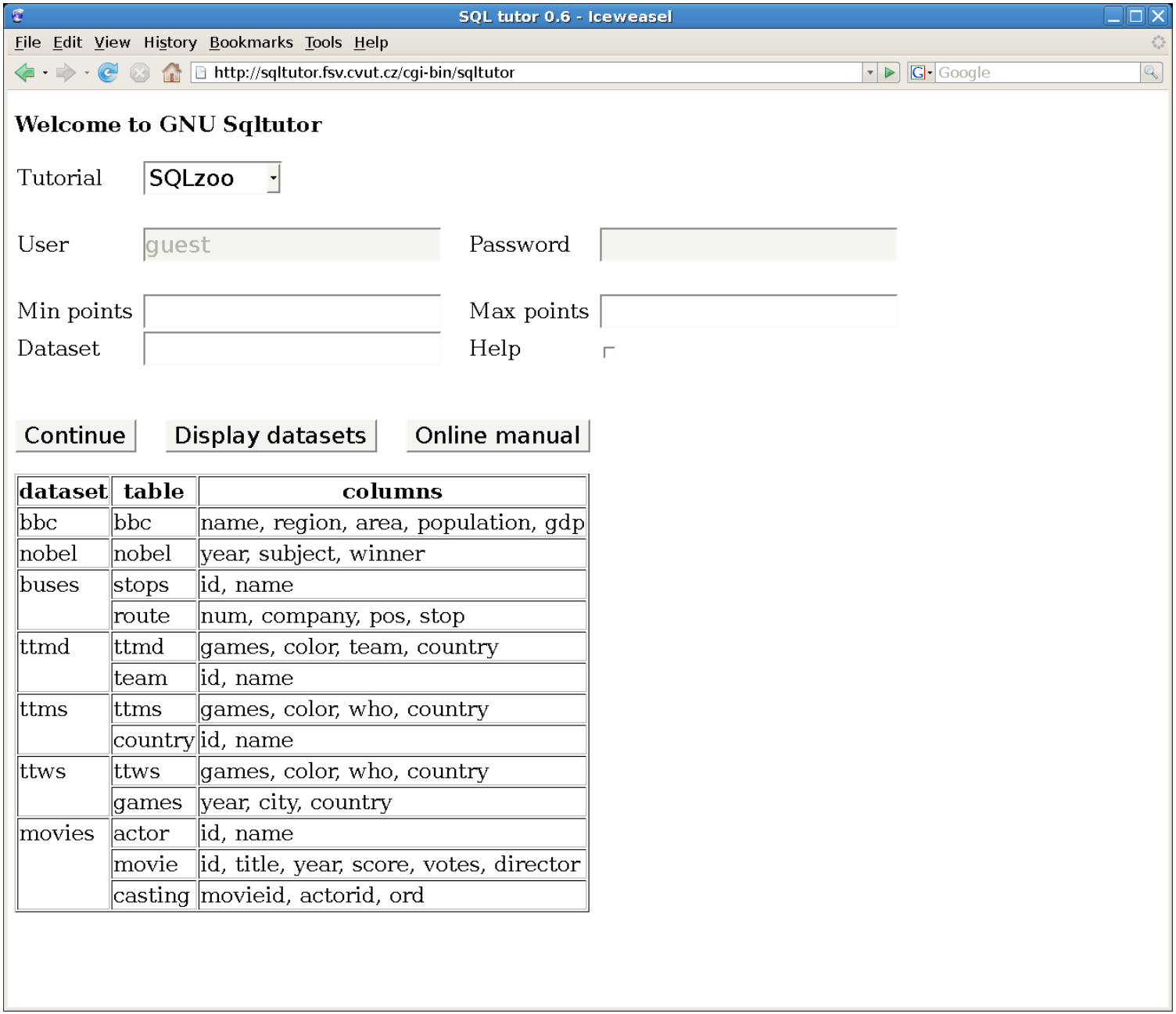
Opening Dialog Page



Online Manual



Tutorial Datasets



dataset	table	columns
bbc	bbc	name, region, area, population, gdp
nobel	nobel	year, subject, winner
buses	stops	id, name
	route	num, company, pos, stop
ttmd	ttmd	games, color, team, country
	team	id, name
ttms	ttms	games, color, who, country
	country	id, name
ttws	ttws	games, color, who, country
	games	year, city, country
movies	actor	id, name
	movie	id, title, year, score, votes, director
	casting	movieid, actorid, ord

Running a Tutorial

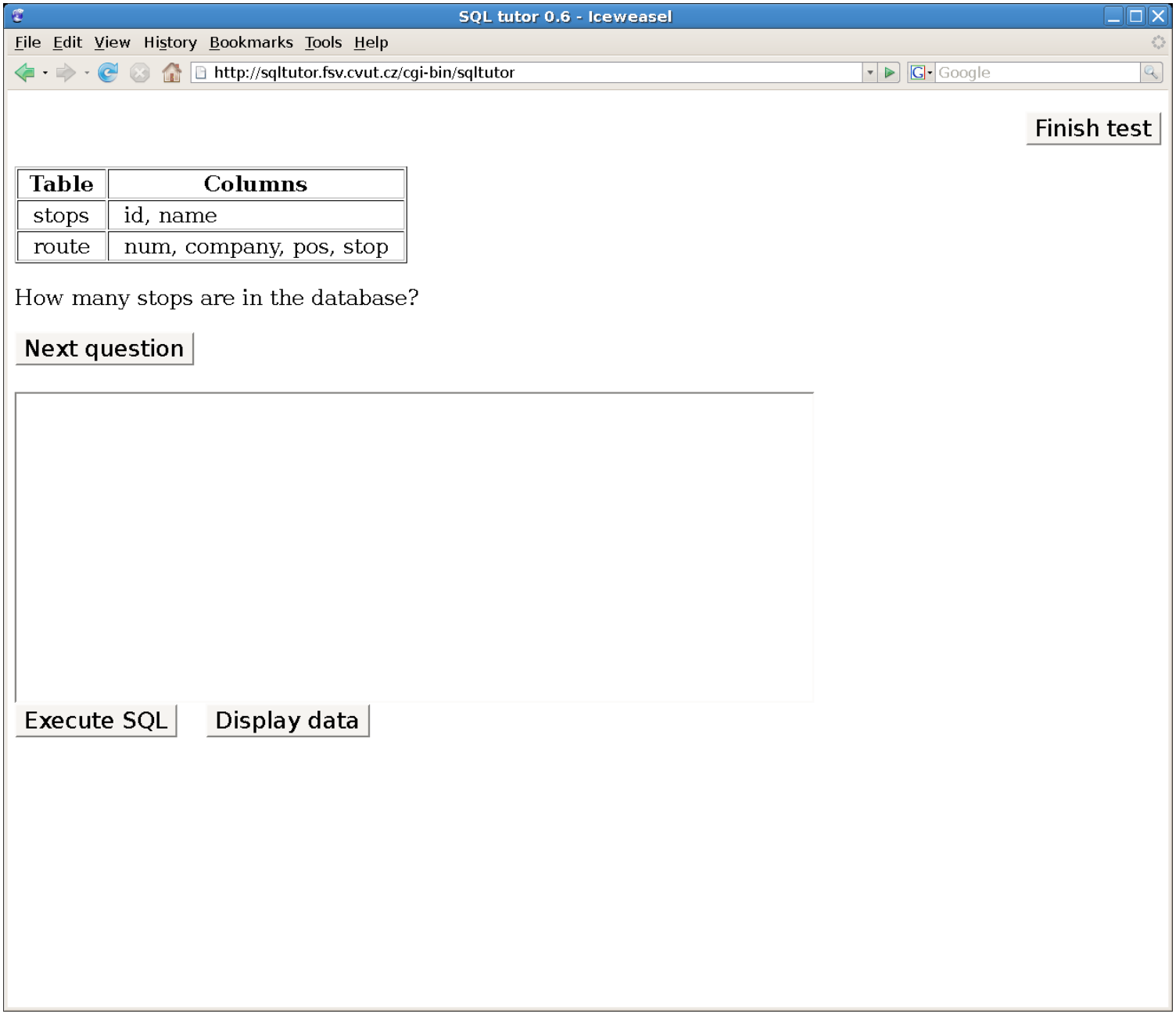


Table Data (part 1)

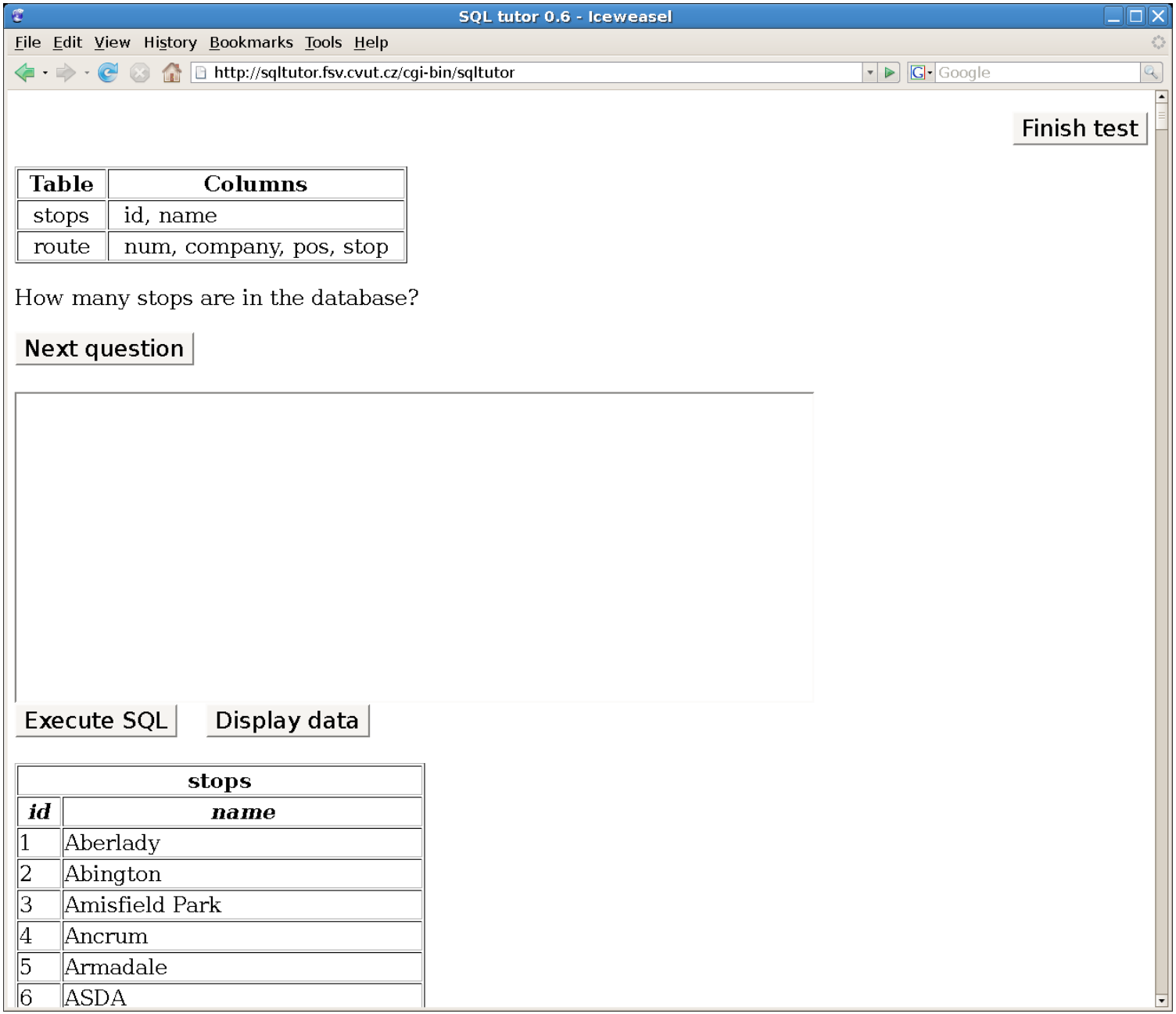


Table Data (part 2)

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File Edit View History Bookmarks Tools Help

http://sqltutor.fsv.cvut.cz/cgi-bin/sqltutor

238	Wallyford
239	Wardie
240	Waverley Bridge
241	West Linton
242	West Mains
243	Westburn
244	Wester Hailes
245	Wester Hailes Centre
246	Whitburn
247	Whitecraig
248	Wilkieston
249	Willowbrae
250	Winchburgh

route

num	*company*	*pos*	*stop*
1	LRT	1	137
1	LRT	2	99
1	LRT	3	59
1	LRT	4	66
1	LRT	5	42
1	LRT	6	48
1	LRT	7	223
1	LRT	8	92
1	LRT	9	205
1	LRT	10	80
1	LRT	11	137
2	LRT	1	173
2	LRT	2	191

A First Try

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http://sqltutor.fsv.cvut.cz/cgi-bin/sqltutor

Google

Finish test

Table	Columns
stops	id, name
route	num, company, pos, stop

How many stops are in the database?

Next question

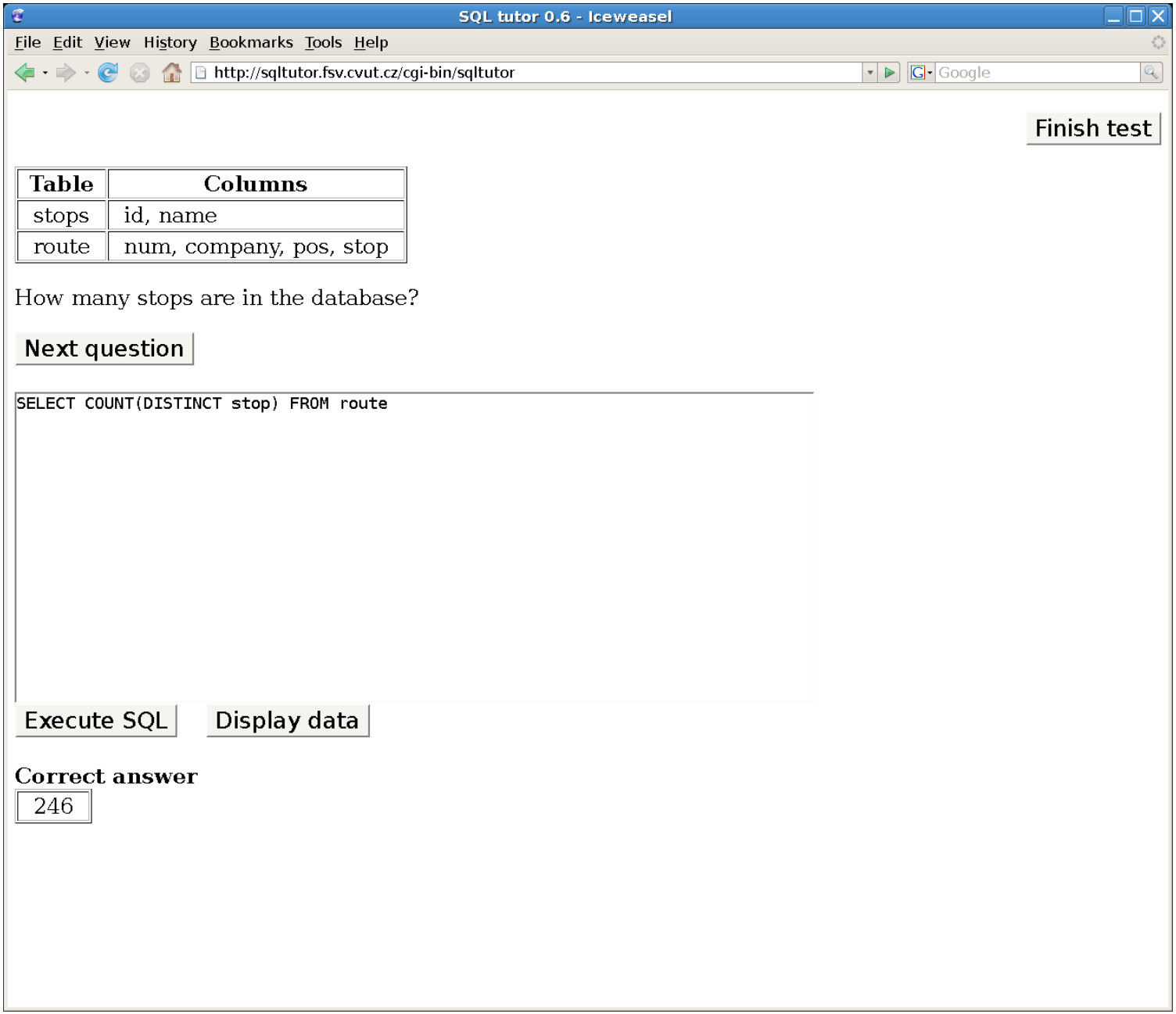
```
SELECT COUNT(stop) FROM route
```

Execute SQL Display data

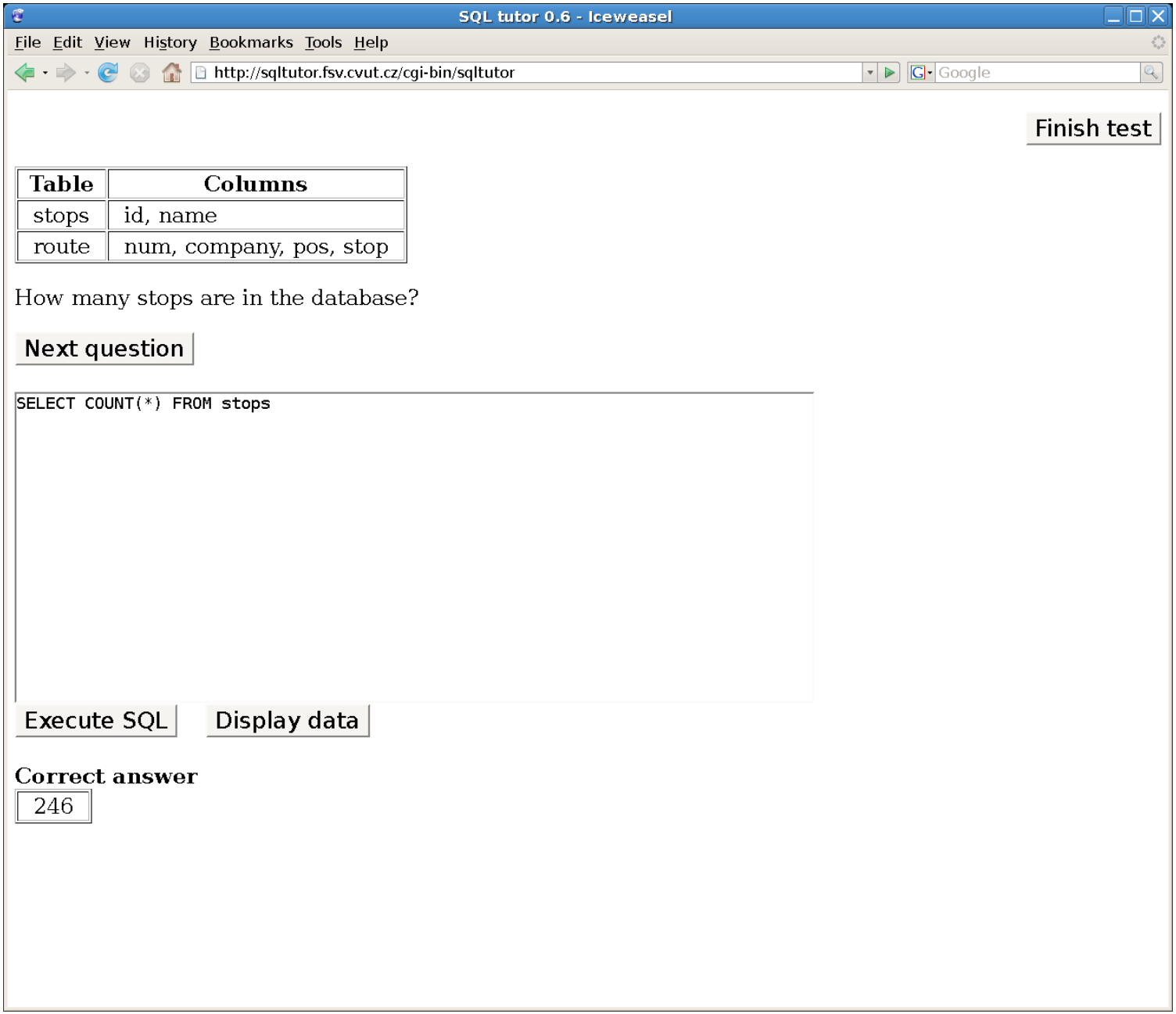
Wrong answer

1174

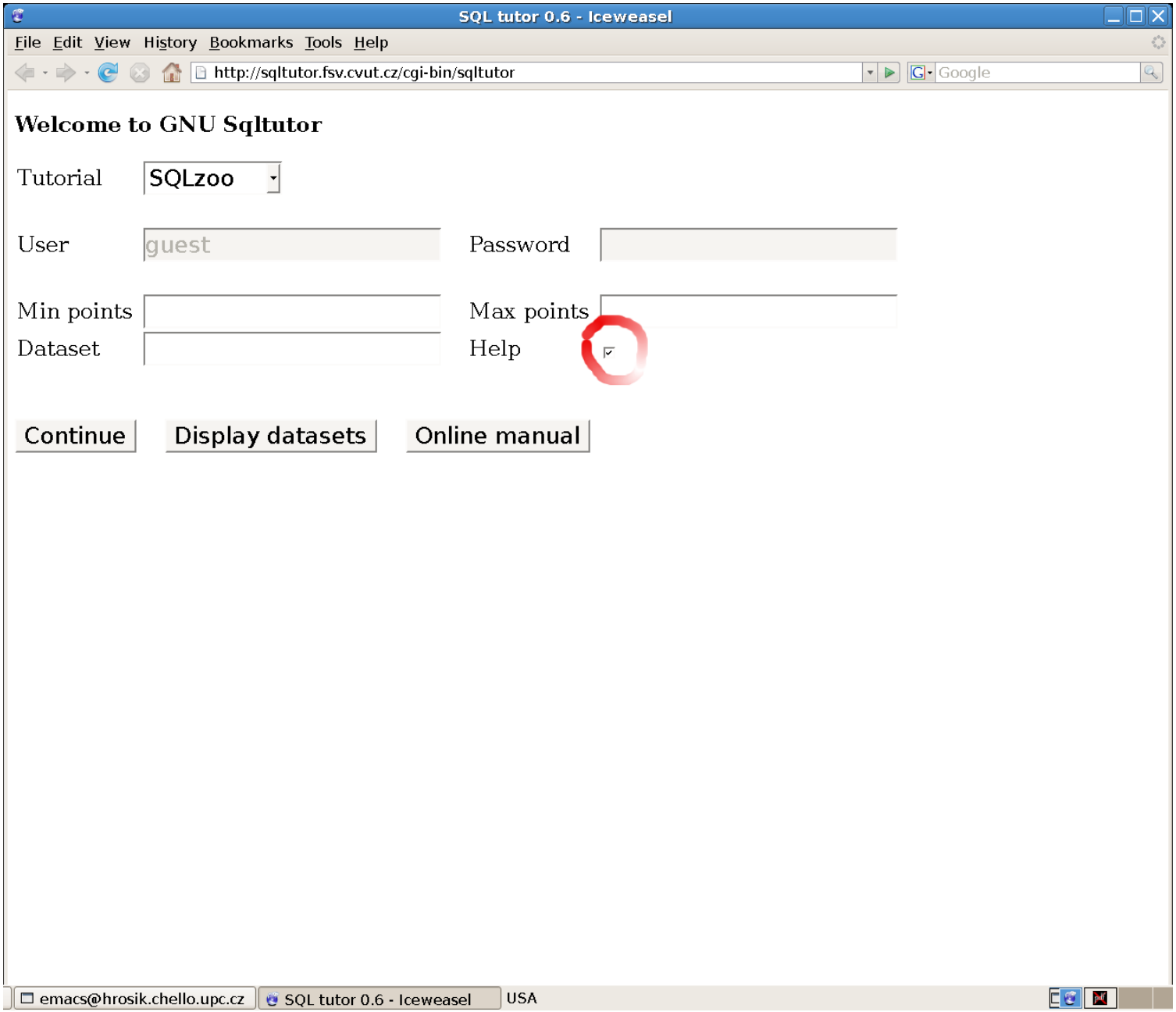
A Better Guess



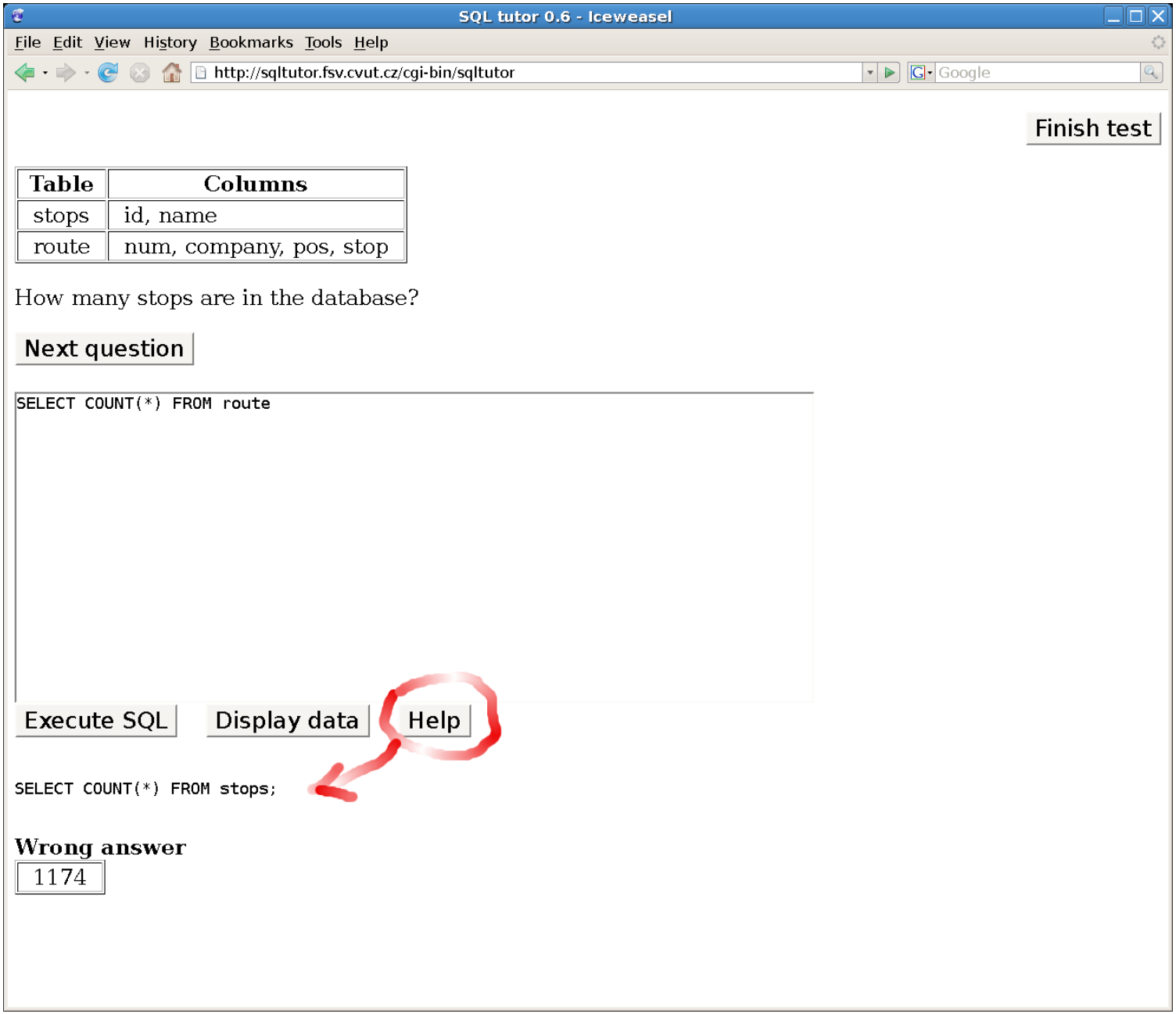
A Correct Answer



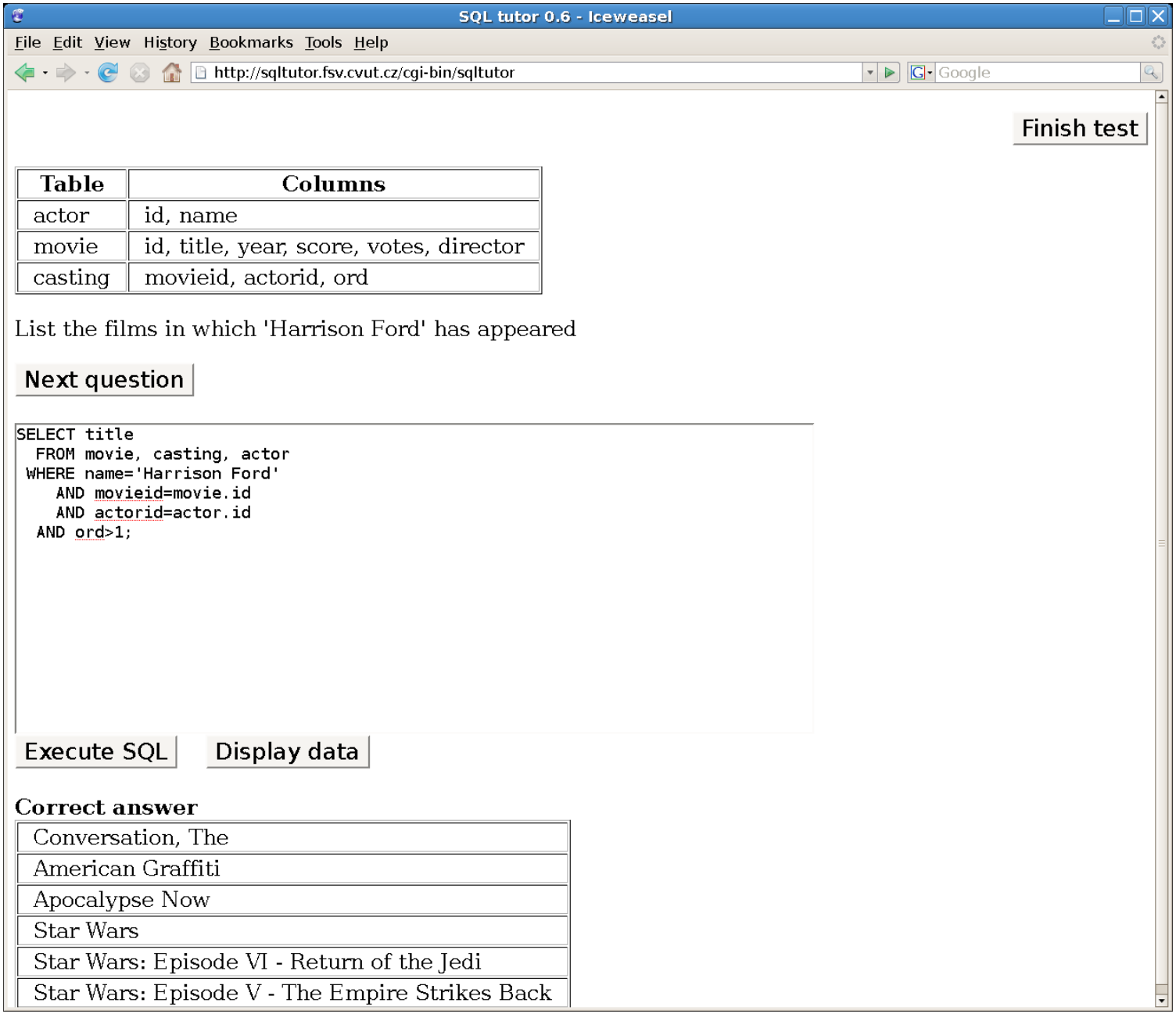
Setting Help in Opening Page



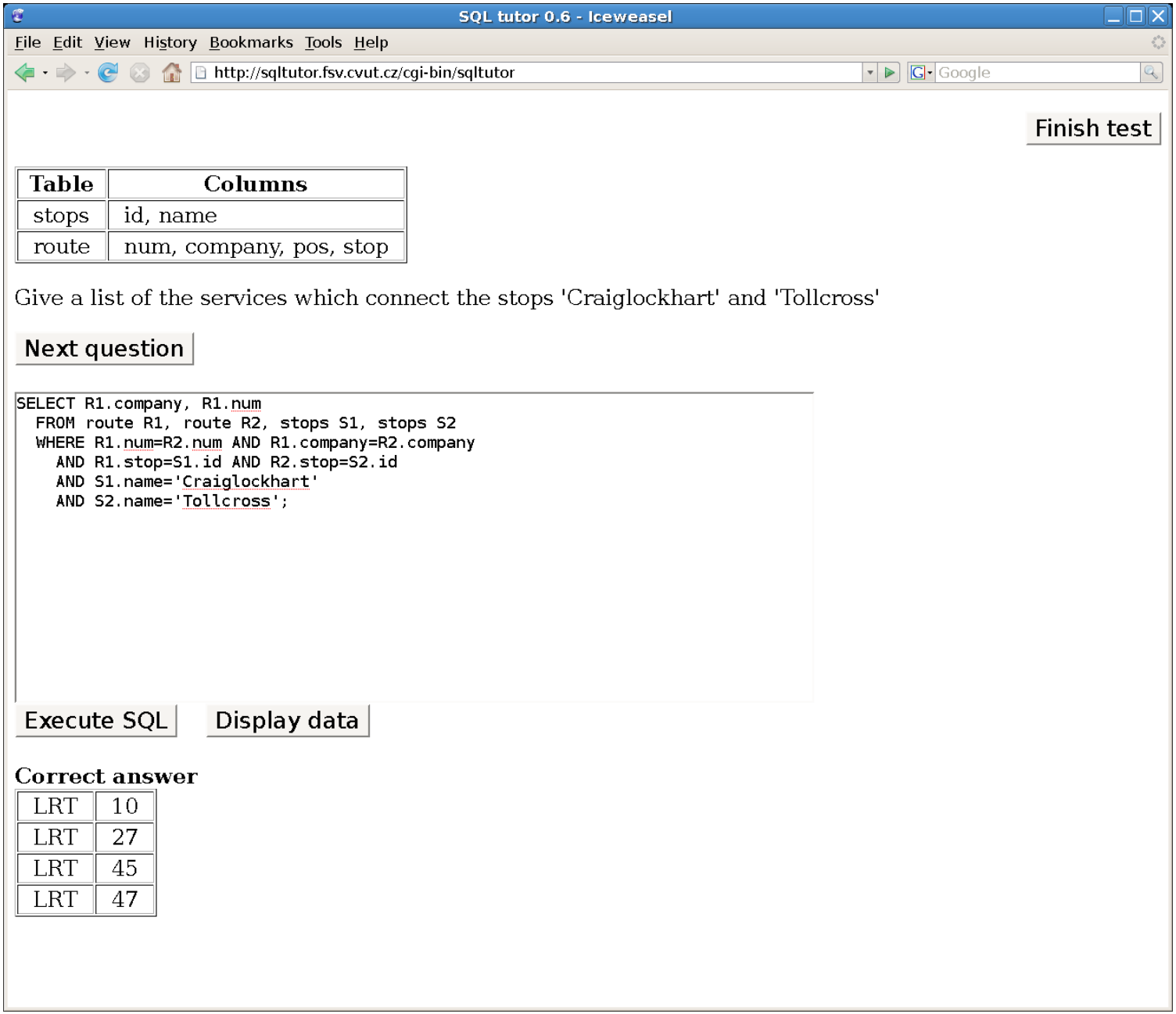
Help Button


SQL tutor 0.6 - Iceweasel
File Edit View History Bookmarks Tools Help
http://sqltutor.fsv.cvut.cz/cgi-bin/sqltutor
Google
Finish test
Table | Columns
stops | id, name
route | num, company, pos, stop
How many stops are in the database?
Next question
SELECT COUNT(*) FROM route
Execute SQL
Display data
Help
SELECT COUNT(*) FROM stops;
Wrong answer
1174

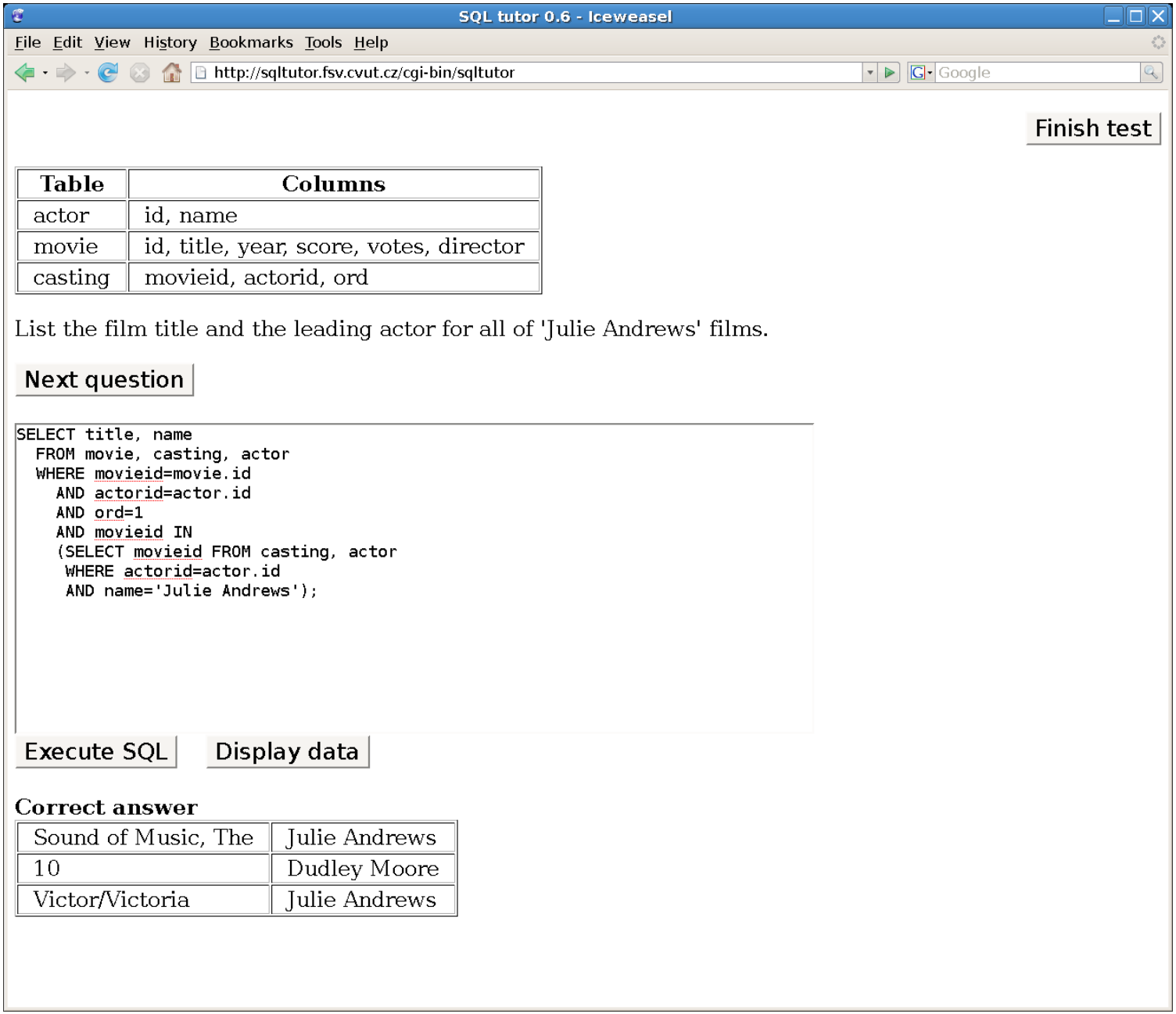
More Examples



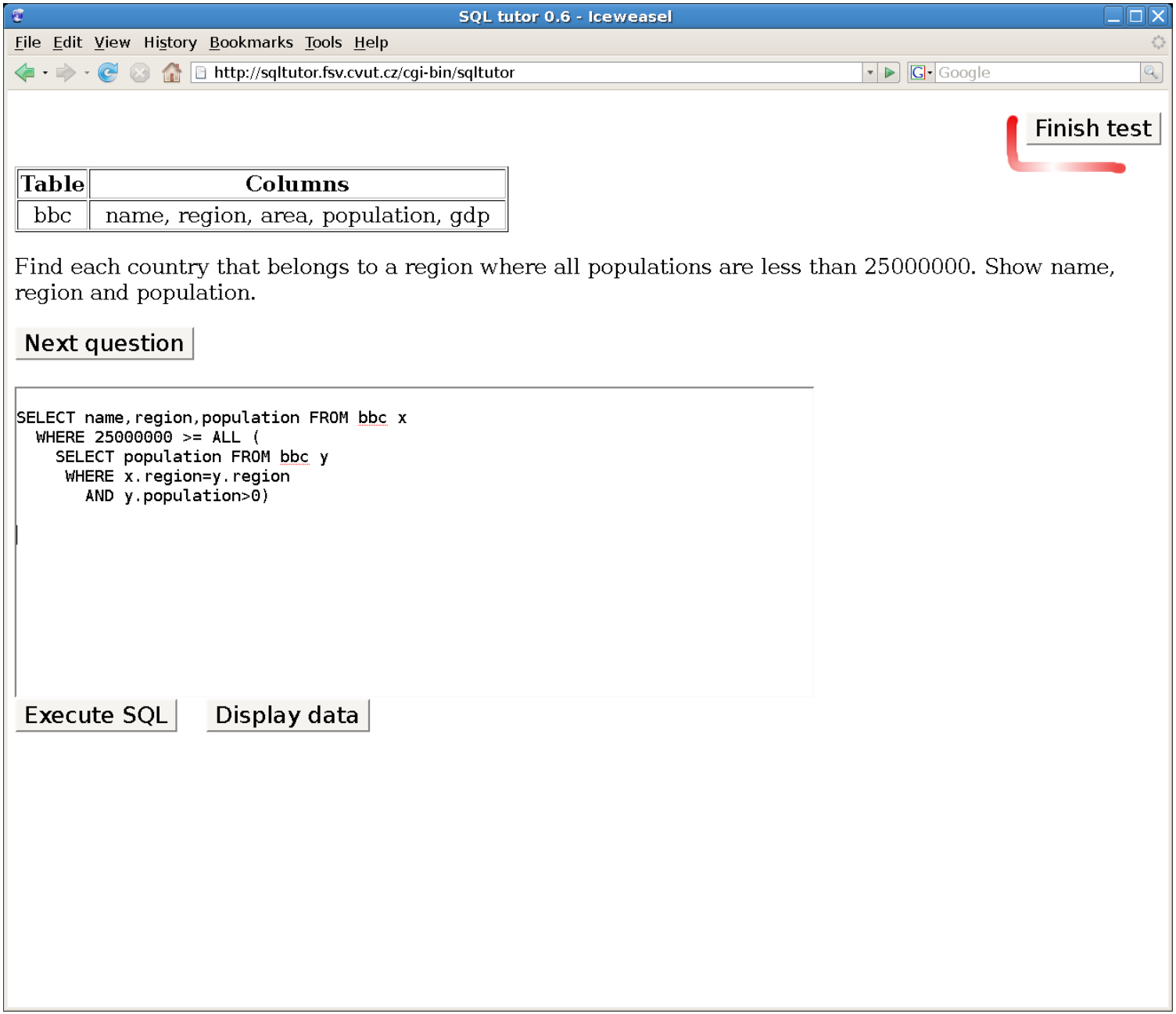
More Examples



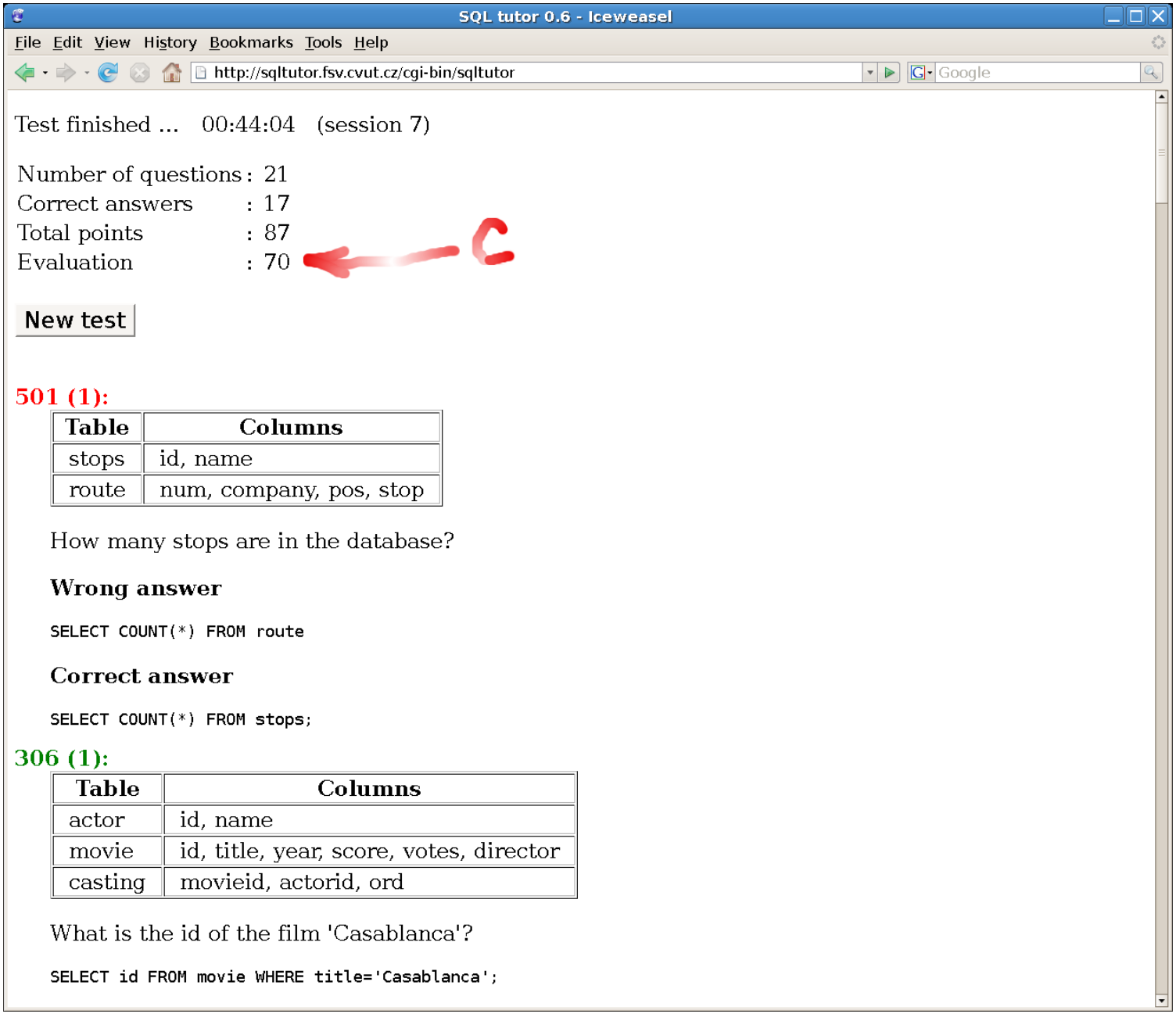
More Examples



Closing the Test



Final Score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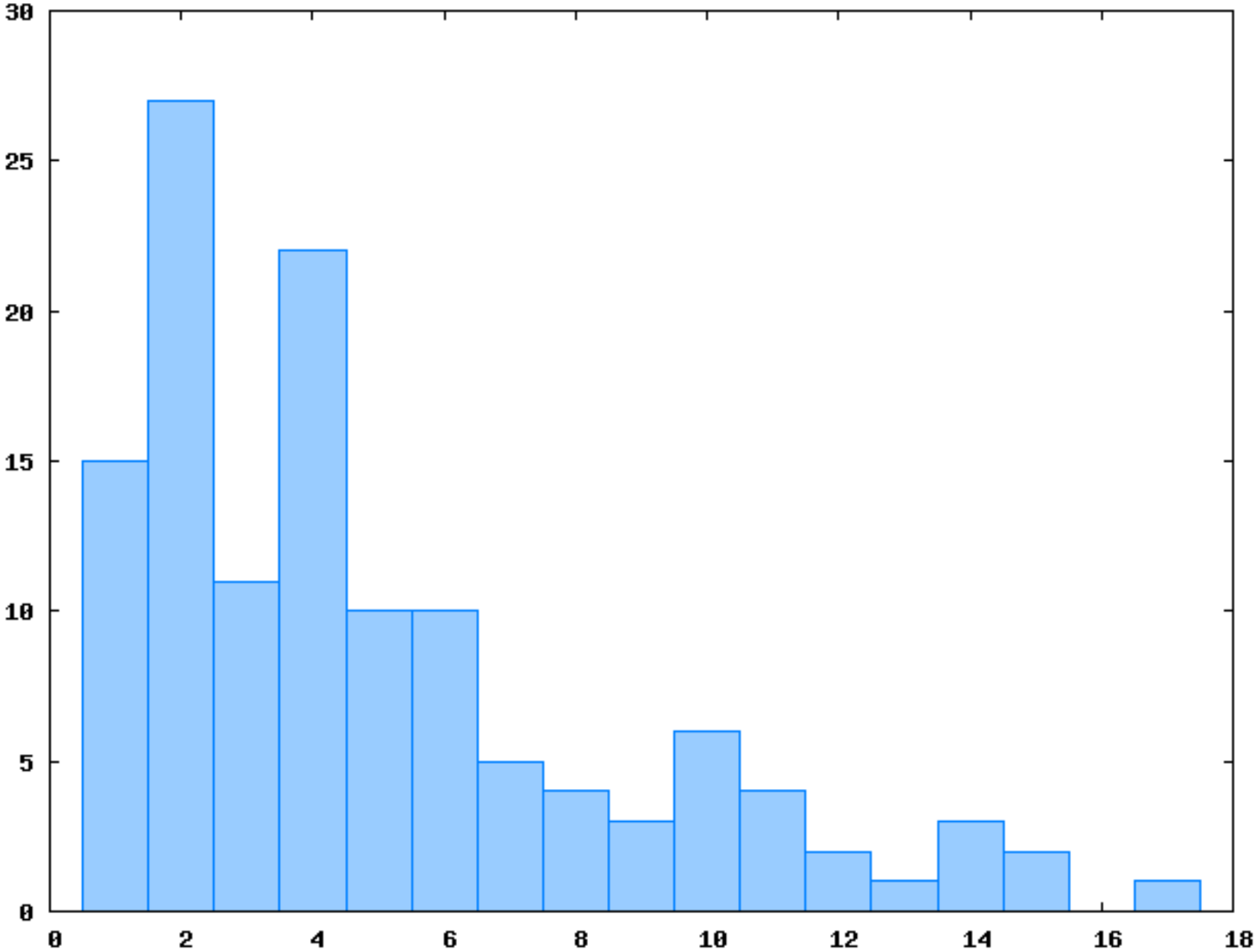
File Edit View History Bookmarks Tools Help
http://sqltutor.fsv.cvut.cz/cgi-bin/sqltutor
Google
Test finished ... 00:44:04 (session 7)
Number of questions : 21
Correct answers : 17
Total points : 87
Evaluation : 70
New test
501 (1):
Table | Columns
stops | id, name
route | num, company, pos, stop
How many stops are in the database?
Wrong answer
SELECT COUNT(*) FROM route
Correct answer
SELECT COUNT(*) FROM stops;
306 (1):
Table | Columns
actor | id, name
movie | id, title, year, score, votes, director
casting | movieid, actorid, ord
What is the id of the film 'Casablanca'?
SELECT id FROM movie WHERE title='Casablanca';

Evaluation

$$\text{evaluation} = \left\lfloor \left(\sum_{\text{correct answers}} \text{points} \right) \times \frac{\text{number of correct answers}}{\text{number of all questions asked}} \right\rfloor$$

evaluation	*grade*
90	A
75	B
60	C
45	D
30	E
less than 30	F

Distribution of Questions by Points



TO-DO list

- some formal adjustments of source codes to be fully compliant with GNU coding standards
- possible redesign of the Sqltutor database schema to have better support for multilingual tutorial
- build a large and reliable English tutorial SQL with datasets that can be generally understood even outside the English speaking countries
- analyze the new algorithm for random selection of questions, implement a better strategy if needed,
- possible new parameters for final evaluation
- a tutorial for PostGIS spatial enhancement of PostgreSQL database

Thank you for your attention