

# SQL Valley: a new competency-based, gamified educational web-app for SQL with personalized learning paths

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The number of computer science students is growing. With all these students requiring hands-on practice and personal feedback, the teaching team's scarce time is in high demand. To tackle this, the Database Group at the Eindhoven University of Technology is developing a new web-app called SQL Valley to automatically support students learning the SQL query language. This web-app has several innovative features.

- **Modularization:** Content is split up into a large number of tiny modules, either representing *Concepts* like 'What is a database?' or *Skills* like 'Filter rows'. This makes the web-app suitable for other universities teaching different subsets of SQL.
- **Personalized learning paths:** The hierarchy between Concepts/Skills is visualized in an interactive Skill Tree. Students can plot their own path through this tree.
- **Adaptive to learning styles:** Each module allows for multiple methods of acquiring knowledge: a knowledge clip (video), a theory page (text) or a summary (infographic).
- **Personalized feedback:** Each Skill has hands-on exercises where students write queries for a live SQLite database. Exercises are randomly generated and are strongly coupled to the corresponding theory. Submissions are automatically checked and given personalized feedback, with solutions becoming available after finishing an exercise.
- **Gamification:** The app has a gamification element where students uncover a storyline as they work their way through the modules. The discovered dialogues function as small 'rewards'. The storyline is fully optional and can be turned off when desired.

Although the web-app is still under construction, the beta-version is already being used to support a large database course. Early impressions from using the web-app will be discussed.