

Online way to learn SQL

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Abstract

The new Hungarian National Base Curriculum (NAT 2020) makes many changes in public education, including many innovations in the field of Computer Science Education (newly known as Digital Culture). NAT 2020 makes knowledge of the Structured Query Language (SQL) mandatory for students in the advanced final examination. In the future, students must be able to independently formulate SQL statements based on the task without the help of graphical tools (query builders) in the advanced final exam. This poses new challenges for both students and their teachers.

Based on the changes of the Hungarian National Base Curriculum, we have already created an educational portal called kodosuli.hu, which is a great success among both students and teachers related to teaching and learning programming languages (Java, C++, Csharp and Python).[1] Based on the experience gained during the operation of the kodosuli.hu portal, we thought it would be advisable to design and develop a new web portal related to relational database management. Our goal with the design and development of sqlsuli.hu was to give the teenager generation the opportunity to learn the basics of relational database management and SQL in a playful and effective way. We started the development in 2021 and at the end of the year we implemented a simple web portal which can help students to learn the main concept of the structured query language and relational data model. In 2021, the demo version of the Learning Management System was published, and in 2022, after continuous development, the site became available for free.

Several researchers in teaching SQL: Al-Shuaily and Renaud proposed applying SQL patterns [5], Mitrovic developed a Knowledge-Based Teaching System for SQL [3], Quer et. al developed a software tool, LearnSQL (Learning Environment

for Automatic Rating of Notions of SQL), that allows the automatic and efficient e-learning and e-assessment of relational database skills [4]. Garner and Mariani developed a graphical user interface centred around the textual translation of a query which has the potential to improve the way in which users gain an understanding of SQL[2]. Although books and notes in Hungarian and online courses in English are available, it seems insufficient for most secondary school students. Educational games such as SQL Island or SQL Murder Mystery are also available [6]. Portals such as Udemy.com, CodeAcademy, or tutorials on W3Schools or Tutorialspoint that teach SQL in an interactive way in English might be useful. In Hungary, this type of portal is not available, apart from our sqlsuli.hu portal, which was developed for people under the age of 18.

The framework of this online learning platform has an extensive grader tool that helps students test their knowledge with some automatical way, so the portal provides flexible learning way. The test databases are based on Harry Potter and Star Wars data, which is expected to increase students' engagement and motivation for learning. The course is available in Hungarian language. The site is open for anyone but used by the authors' students currently. We count on feedback from the authors' students, that makes it possible to correct any errors that may still exist in the portal, or makes changes to lessons, wording and assignments. Then the portal will be promoted.

References

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