Concept-Cloud Navigation in Educational Web-Based System

Our aim

Each student has different interests and knowledge so they browse different parts of curriculum. Our aim is to help the navigation on the adaptive web-based educational system ALEF by displaying of personalized keyword (concept) recommendations which represent a specific topic.
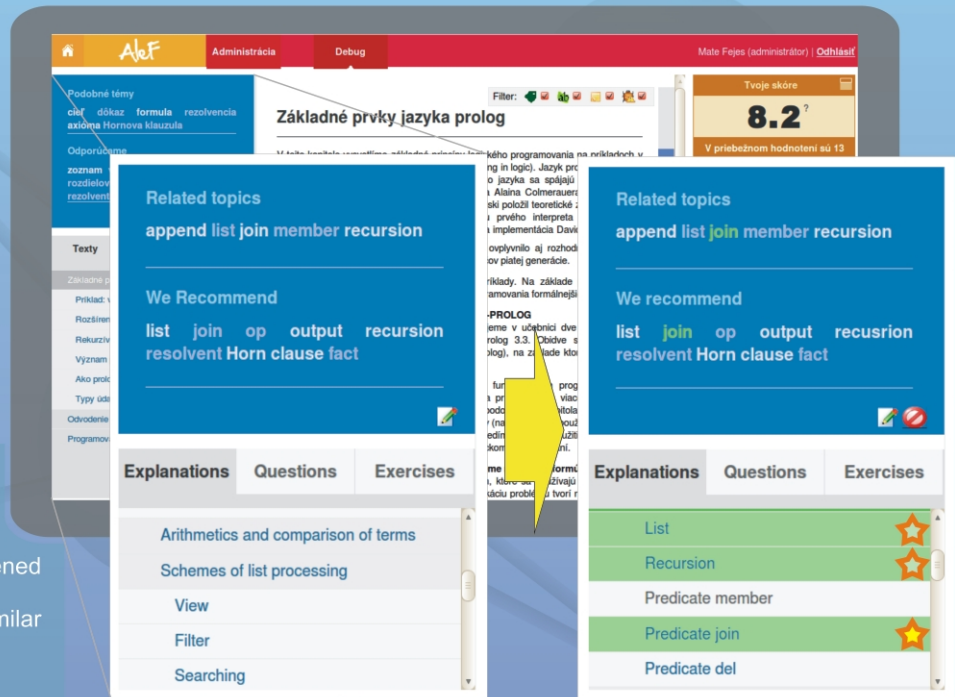
Content of the cloud

Related topics
- All the concepts linked to actually opened learning object
- They serve for quick switching among similar articles

We recommend
- A personalized set of recommended concepts
- It recommends topics the user should deal with

Recommendation methods

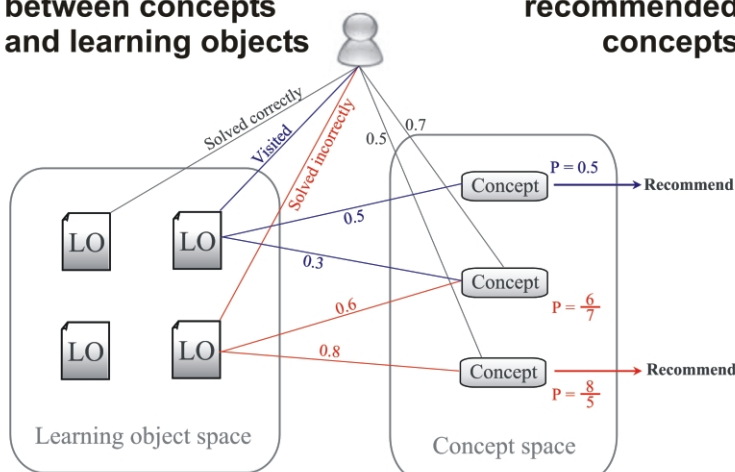### Method based on questions and examples solutions
- Input of this method is a question or example, which was incorrectly solved
- The outputs are concepts of learning objects, which should be read over to get the required topic under the control

Method based on reading of learning materials
- It is about learning materials students have already read, but have not practiced yet
- The system recommends questions and examples for the student, which are related to the read text

How does it work?

- The tag cloud does not navigate the user to the concrete learning object
- If we click on any concept in the tag cloud, the related learning objects are highlighted in the main menu
- It indicates the proper direction for the user
- The final decision to select one of the recommended objects up to the user
- Each highlighted learning object is marked by a star icon that represents the relevancy level of the given object

Relationship between concepts and learning objects

Selection of recommended concepts

Solved correctly
Visited
Solved incorrectly

0.5   0.7
0.5
0.3
0.6
0.8

Concept $P = 0.5$ Recommend
Concept $P = \frac{6}{7}$
Concept $P = \frac{8}{5}$ Recommend

LO   LO
LO   LO

Learning object space

Concept space

Benefits

- Personalized content recommendation based on users' actual needs
- It reduces the duration of getting a specified topic under the control
- Quick browsing of learning objects of selected topic
- Dynamic and clear filtering of content
- It helps the user to explore relationship between content elements
- Easy to use

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PeWe@FIIT personalized web group

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