

# Annotation Learning Texts on Programming

Vladimír Mihál [valdik5379455@gmail.com], supervisor: prof. Mária Bielíková

## Goals

- > Provide additional information necessary for understanding a learning subject
- > Provide a space for context based discussion and feedback
- > Make learning more simple

## Generic note

- Note related to certain term, concept, meaning
- Can be used in variety of documents related to annotation domain
- Used as term/function explanation

## Attached note

- Note related to one specific document or fragment of document (e.g. paragraph)
- Used as student comment or question related to context

## Annotation concept

- > Annotation is a process of document transformation; from original document into document with additional information value

### Document reading

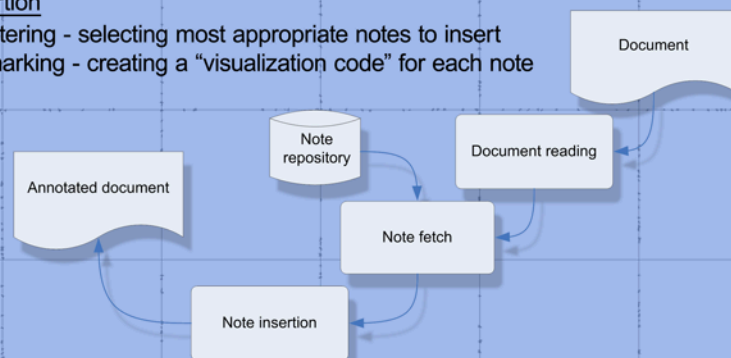
- Splitting document into annotable entities - tokens
- Processing of tokens for optimal note retrieval

### Note fetch

- Retrieving all notes for given token
- Solving language specific problems, synonyms, similar words

### Note insertion

- Note filtering - selecting most appropriate notes to insert
- Note marking - creating a "visualization code" for each note



## Implementation

- > Processing of HTML document fragments
- > Generic notes only (in current stage of development)

### Note data retrieval

- Lookup for exact word
- If no note data found, finding closest match

### Document reading and processing

- Parsing HTML document fragment, detecting element tags
- Possible defining filter behavior for various elements and content types
- Splitting input document into tokens at stop characters (space, !?{})
- Removing diacritics and character case

NO a LIST	
APPEND	APPEND2 Funkcia
Syntax: (APPEND list1 list2)	
Popis: zoznam obsahujuci prvky zoznamu list1 za ktorym su vsunute prvky zoznamu list2	
Príklady:	

### Note visualization

- Note marking using nested `<span>` tag and CSS style
- Visible (annotated word is marked with color) and invisible (word is not marked but tool tip is active) note marking
- Maintaining minimal distance between visible notes for comfortable text reading

## Note data

- > Major task in note data processing: gathering and updating (plus maintaining)

### Information sources for note data

- Annotated document itself
- Programming language reference guides
- User inserted content

### Note data already acquired

- 65 explanations of Common Lisp functions with examples (extracted with regular expressions)
- 18 explanations of terms of Lisp and functional programming in general (manually written)
- source: "Functional and Logical programming" book (by prof. Mária Bielíková and prof. Pavol Návrat)

## Deployment and testing

- > Annotation system is currently deployed as web service
- > Accessible by any system using its interface
- > Integrated into (used by) existing learning system Flip

### Test configuration

- Note data reduced to best match tested subjects
- Finding notes more strict = annotating only appropriate terms

### Testing

- Tested by students learning functional programming and Lisp programming language
- Test was aimed to Lisp language basics and expression evaluation
- User inserted content