Introduction

Language Technology and Web Applications

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Department of Computational Linguistics
University of Zurich

September 18, 2024

University of Zurich[UZH]

Topics

1. Organization

2. What is a web application?

3. How to deploy a web application using GitLab

4. Developing Project Ideas

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Content of this Class

Web Development

Data Management

Data Visualization

… from the perspective of **Computational Linguistics** and **Language Technology**

Main Learning Goals

- You can create **web applications** to make your work accessible to others.
- You can use simple relational **databases**.
- You can **work in a team** on a software project over several months.
- You can **document and present** your project.

(Complete learning goals are in the course catalogue)

Prerequisites

- Required:
  Programming Techniques in Computational Linguistics 1 or comparable experience
- Strongly recommended:
  Programming Techniques in Computational Linguistics 2

Responsible People

Lecture: Jannis Vamvas <vamvas@cl.uzh.ch>

- Lecturer at the Department of Computational Linguistics
- Past: Web developer

Tutorial:

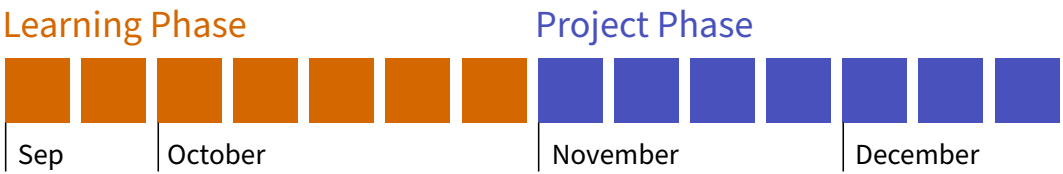
Angela Heldstab <angela.heldstab@uzh.ch>

- Student in Computational Linguistics

Elina Stüssi <elina.stuessi@uzh.ch>

- Student in Computational Linguistics

Schedule


Learning Phase
Project Phase
Sep
October
November
December

Organization

9 ECTS

Lecture:

- Wednesday, 10:15 am
- Learning phase: room AND-3-02
- Project phase: usually virtual on Microsoft Teams

Tutorial:

- Friday, 10:15 am, room AND-3-06
- Project phase: usually virtual on Microsoft Teams

Quiz platform: UZH Klicker

https://t.uzh.ch/1BW

So, what is a Language Technology Web Application?

Take two minutes to discuss with your neighbor:

- What would you consider a *Language Technology Web Application*?
- Can you name three examples?

Typical Language Technology Web Applications

- Making a dataset/corpus accessible
  - Example: `https://sprachatlas.ch/`
- A resource for second language learners
  - Example: `https://youglish.com/`
- A tool that combines several models or APIs
  - Example: `https://www.soebs.ch/`
- A platform for annotation or evaluation
  - Example: `https://lmarena.ai/`
- A game about language
  - Example: `https://lingvist.com/`

Project

- 3 team members
  (will be assigned in two weeks based on your preferred project ideas)
- Goal: Create a web application related to language technology that uses a database
- We will support you with advice and practical tips
- You can use any programming language or framework
  (but the lecture makes some good recommendations)

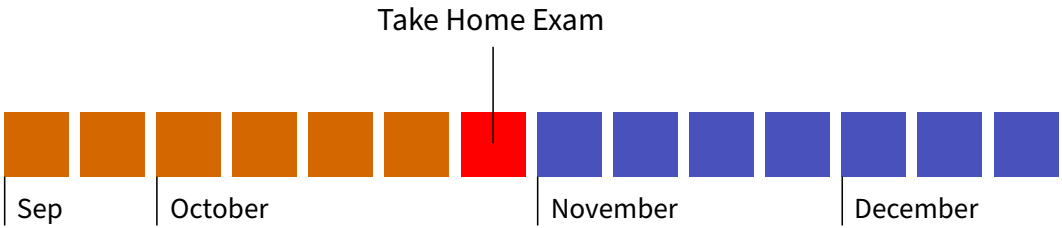
Project Milestones

16th October 2024, 10:15 am
Briefly present your concept to the class

20th November 2024, 10:15 am (and 22th November?)
Demonstrate your prototype

11th December 2024, 10:15 am (and 13th December?)
Final presentation

Learning Phase



Assessment of the Learning Phase

Take Home Exam:

- Starts **25th October, 2024, at noon**
- Ends 1st November, 2024, at noon (one week later)
- Covers everything from the lectures and exercises until that point

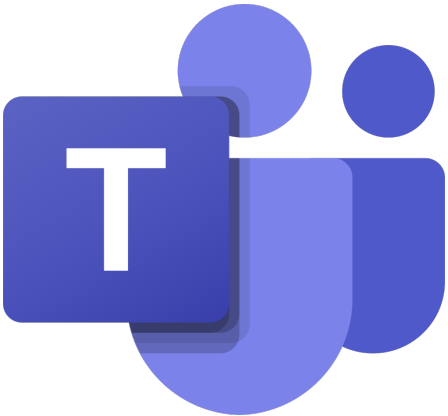
Exercises:

- Strongly recommended preparation for the Take Home Exam
- Not graded, but a reference solution is made available

Final Grade

- ⅓ Take Home Exam
- ⅓ Group Presentations
- ⅓ Individual Project Report (due 13th January, 2025)

Microsoft Teams



Join with code **hix4e40**

Learning Goals for this Week

- You can explain in simple terms what a web application is.
- You can use the Web Development Tools of your browser.
- You can deploy a web application using GitLab CI.

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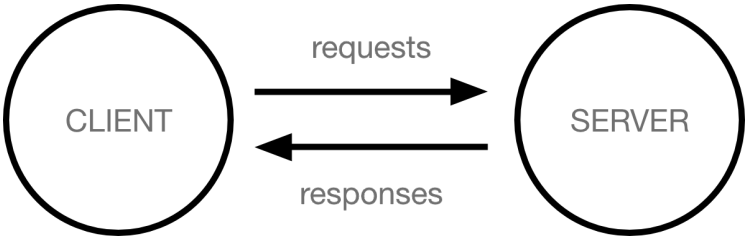
Clients and Servers



Layers of Client–Server Communication

- Internet connection
- TCP/IP (Transmission Control Protocol and Internet Protocol)
- HTTP (Hypertext Transfer Protocol)
  - GET: Requesting data from the server
  - POST: Sending data to the server

Components of a Webpage

The server sends various files to the client. For example:

- Code files: HTML, CSS, or JavaScript
- Data files: JSON or XML
- Assets: Other files such as images, audio, video, or PDFs.

Dynamic webpages: The server may generate those files using a computer program, e.g. in Python.

Synchronous and asynchronous requests

Synchronous: Initial loading of a webpage

Asynchronous: Requests performed as a reaction to user input *without re-loading the page*

Example: Loading the search bar vs. retrieving query autocompletions

Web Development Tools

Web Development Tools (DevTools): A set of inspection tools built into a browser. Used to examine, edit, and debug a web application.

- Firefox – Firefox Developer Tools
- Google Chrome – Chrome Developer Tools
- Internet Explorer and Microsoft Edge – F12 Web Developer Tools
- Safari – Safari Web Development Tools

Demo

[Demo: Inspecting a web application using DevTools]

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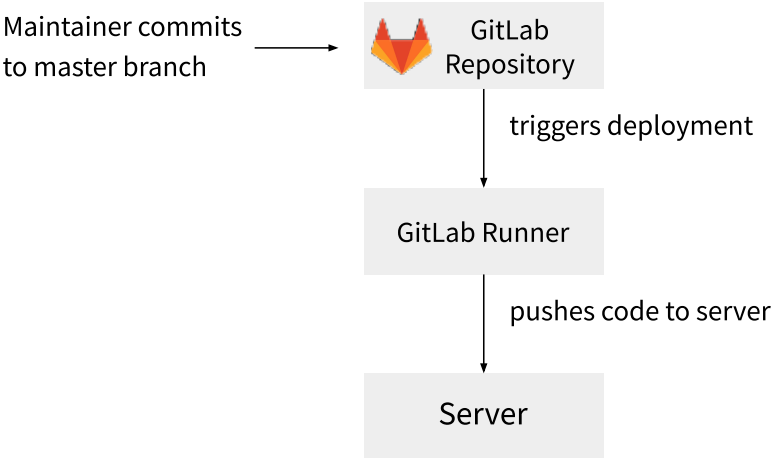
Code Repository

- The source files of a web application usually reside in a version-controlled repository.
- We will use `https://gitlab.uzh.ch/`.

Deployment via GitLab



Accessing the Web Application

- The web applications created in this class are only accessible within the UZH network (Eduroam / VPN). This is for security reasons.
- As a consequence, the application does not have a standard URL, but an IP address and a port number (e.g. `http://172.23.66.232:53402`)
  - If your website cannot be reached, always check first if you are really in the UZH network.

Demo

[Demo: Deploying a web application via GitLab]

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Presenting some example project ideas

Teams tab *Project Ideas*

TODO: Exercise 0 (Technical Setup)

- Available on OLAT by Friday
- Questions or technical difficulties? Feel free to ask in the Tutorial on Friday

TODO: Developing project ideas

- Think about your individual project preferences for the next two weeks
- Some suggestions are provided in the Teams tab *Project Ideas*, but personal ideas are preferred
- The tutors are happy to advise you

TODO: Recommended Reading for Next Week

Introduction to HTML
(https://developer.mozilla.org/en-US/docs/Learn/HTML/Introduction_to_HTML)

CSS first steps
(https://developer.mozilla.org/en-US/docs/Learn/CSS/First_steps)