Adv Web Dev and Architecture
COMP4537
Lecture 0
course structure

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高级Web开发与架构
COMP4537第0讲 课程结构

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Outline

- Assignments
- several labs
  - Lab 0,1,2 done individually
  - Rest of the labs in pairs
  - Term project in group of max 4
  - Individual Book authoring (class participation)
- Preferred IDE: visual studio Code (highly recommended)
- There will be lots of quizzes, random schedules, four review quizzes this week alone

大纲

- 作业
- 多个实验
  - 实验0、1、2单独完成
  - 其余实验两人一组完成
  - 期末项目最多四人一组
  - 个人书籍编写（课堂参与）
- 首选IDE：Visual Studio Code（强烈推荐）
- 将会有大量测验、随机安排，仅本周就有四次复习测验

In this course

- The goal is to learn and implement API-centric architectures. You should review HTML, CSS, and JavaScript on your own to prepare for the course.
- You will need to choose and maintain a hosting service for your assignments, ensuring they are always online. We will cover Ajax calls and advanced JavaScript concepts like promises and use relational databases for CRUD operations.
- We will explore existing API web services and
- create our own secure RESTful APIs. In addition to lab assignments, you will work on ~~**two**~~ **one** main projects focused on various web application architectural patterns.

在本课程中

- 目标是学习并实现以 API 为中心的架构。你应该自行复习 HTML、CSS 和 JavaScript，为课程做好准备。
- 你需要选择并维护一个托管服务来提交作业，并确保它们始终在线。我们将讲解 Ajax 调用以及 Promise 等高级 JavaScript 概念，并使用关系型数据库进行 CRUD 操作。

- 我们将探索现有的 API 网络服务并
- 创建我们自己的安全 RESTful API。除了实验作业外，你还将完成**两个**一个主要项目，~~重点~~涵盖各种 Web 应用程序架构模式。

Also …

- Will be familiar with tools:
  - Chrome Web development tools
- API testing tools (Postman)
- Other technical terms you may be exposed to
  - Closure, promises, fetch, defer, execution stack
  - Public-key private key, content delivery network (CDN)
  - Single sing on, web push notifications, HTML5 Canvas
  - Cookies, session, local storage, web-workers, microservices, injection attack,
  - Security, encryption, hashing,
  - RDBMS, CRUD, 1:M, M:M, 1NF, 2NF,
  - The goal however is to **focus on the architecture of what you want to implement**

另外……

- 将会熟悉的工具：
  - Chrome 网页开发工具
- API 测试工具（Postman）
- 你可能会接触到的其他技术术语
  - 闭包、Promise、fetch、defer、执行栈
  - 公钥私钥，内容分发网络（CDN）
  - 单点登录，网页推送通知，HTML5 Canvas
  - Cookie、会话、本地存储、Web Worker、微服务、注入攻击，
  - 安全、加密、哈希，
  - 关系型数据库管理系统（RDBMS）, CRUD, 1:M, M:M, 1NF, 2NF,
  - 然而，目标是**专注于你想要实现的架构**

Review the course outline

- Quizzes , may be during lecture (may be the begging or the middle), during labs all in person unless announced otherwise
- No make up assignment, No make up quizzes, No make up exam
- You need to bring your laptop to exam venue
- No cheating of any sort/level will be tolerated. *Violators will be reported (no exception)*
- You need to understand every single line of your code, otherwise you will get 0
- Hosting (refer to the course home page on learning hub)
- **Talk to Me:**
- Everything I plan for this course is designed to contribute to your success.
- Email me or DM me on Discord if something is bothering you. Please ask for clarification if you think there's anything we do in class that doesn't help you as a software developer to have a better job—and, consequently, a better life.
- Assignment Update: If I notice that something important is missing, I may update the assignments to help you prepare for your career development.

查看课程大纲

- 测验可能在讲座期间进行（可能在开始或中间阶段），实验课期间也会进行，均为现场参与，除非另有通知
- 不设补交作业、不设补考测验、不设补考考试
- 你需要将笔记本电脑带到考试地点
- 任何形式或程度的作弊行为均不被允许。违规者将被上报（无例外）
- 你必须理解自己代码的每一行，否则将得0分
- 托管（请参考学习中心课程主页）
- **与我沟通：**
- 我为本课程规划的一切都是为了帮助你取得成功。
- 如果有什么事情困扰你，请通过电子邮件或 Discord 私信联系我。如果你认为课堂上的任何内容对帮助你作为软件开发者获得更好的工作——进而拥有更好的生活——没有帮助，请务必提出，我会为你解答。

- 作业更新： 如果我发现有重要内容缺失，可能会更新作业，以帮助你为职业发展做好准备。

Review the course learning hub

- **Creative vs exam taker vs instruction follower (which one the industry hires?)**
- **Check out course home page at learning hub**

查看课程学习中心

- **创意者、应试者与指令执行者** （行业雇用的是哪一种？）
- 前往学习中心查看课程主页

You need SSL to host your assignments

- You need to **host your assignments (deploy them in remote servers)**starting this week
- E.g.
  - https://johnGates.xtr/comp4537/labs/1/titleofLab/
  - https://johnGates.azurewebsites.net/comp4537/labs/1/quizCreator/
- Note! You will need SSL for term project (you may need it for your assignments depending on each assignment and choices you make)

- Lets review the learning hub of the course

您需要SSL来托管您的作业

- 你需要 **托管你的作业（将它们部署到远程服务器上）**从本周开始

- 例如：
  - https://johnGates.xtr/comp4537/labs/1/titleofLab/
  - https://johnGates.azurewebsites.net/comp4537/labs/1/quizCreator/
- 注意！你的期末项目需要 SSL（是否需要为作业使用 SSL 取决于每个作业的具体要求以及你的选择）

- 让我们回顾一下课程的学习中心

Plagiarism

- Claiming that a work is your own, but it is not
- Act of claiming someone else's work, ideas, or intellectual property as your own without giving proper credit or attribution. (src chatGPT 3.5*)
- You still need to know exactly what every single line of your code does (else 0)

- All students are required to refrain from acts of plagiarism or any other form of academic dishonesty. Assignments/ submissions may be submitted to third party AI tools to investigate possible plagiarism.

* I use AI tools such as chatGPT to grammar check, receive suggestions, generate contents and even asses your work

抄袭

- 声称某项作品是您自己的，但实际上并非如此
- 将他人的作品、想法或知识产权据为己有，且未给予适当的致谢或署名的行为。（来源 chatGPT 3.5*）
- 您仍需清楚了解代码每一行的具体作用（否则得分为 0）

- 所有学生均须避免抄袭或任何其他形式的学术不端行为。作业/提交内容可能会被提交至第三方人工智能工具以检测可能存在的抄袭行为。

* 我使用诸如 chatGPT 之类的 AI 工具进行语法检查、获取建议、生成内容，甚至评估您的作业

chatGPT and other AI models

- Check out course outline or learning hub homepage

chatGPT 和其他 AI 模型

- 查看课程大纲或学习中心主页

Project Ideas to have in mind from now

- For your term project, you developed an API server based on microservice architecture, with multiple endpoints powered by pre-trained AI models from Hugging Face. You will need to host LLM models on your hosting services.
- Your API server, serves API consumers (client apps that consume your APIs). As a proof of concept, you will also need to create a client app to consume those API endpoints with simple user management and authentication. This app will fulfill services by sending API requests to your API server.
- Examples of those microservices/services could include:
- AI services
- API gateway
- Authentication services
- Database services
- User management

现在需要考虑的项目创意

- 在你的课程项目中，你将基于微服务架构开发一个 API 服务器，该服务器包含多个由 Hugging Face 提供支持的预训练 AI 模型驱动的端点。你需要在自己的托管服务上部署大语言模型（LLM）。
- 你的 API 服务器为 API 消费者（即调用你 API 的客户端应用）提供服务。作为概念验证，你还需要创建一个客户端应用来调用这些 API 端点，并实现简单的用户管理和身份认证。该应用将通过向你的 API 服务器发送 API 请求来获取服务。

- 这些微服务/服务的示例可能包括：
- AI 服务
- API 网关
- 身份验证服务
- 数据库服务
- 用户管理

Term Project Ideas to Explore:

1.Using Programmable Drones:

1. Develop a web API to remotely control a drone. This c[illegible]l to either guide the drone on tours or create 3D models of objects by scanning them from various angles with the drone.

2.Interactive Classroom Tool:

1. Create an interactive tool that allows students to quickly post questions during class and privately submit their answers to the instructor. This tool would function similarly to Zoom's chat feature but without the need for the Zoom app. Additionally, the app could store a history of each student's answers to questions for later review.

3.Training an Ai model to make phone calls using the voice given as sample input and make meaningful conversations (user enters topic or purpose of the call)

4.Anything that lets an app consume your APIs to control a hardware (smart light, RC toys, etc)

可探索的期末项目创意：

1. 使用可编程无人机：

1. 开发一个用于远程控制无人机的Web API。该AP[illegible]导无人机进行导览，或通过从不同角度扫描物体来创建其3D模型。

2. 互动课堂工具：

1. 创建一个互动工具，允许学生在上课期间快速提出问题，并私下向教师提交答案。该工具的功能类似于Zoom的聊天功能，但无需使用Zoom应用程序。此外，该应用还可以保存每位学生回答问题的历史记录，以便日后查阅。

3. 训练一个AI模型，使其能够使用提供的语音样本拨打电话，并根据用户输入的通话主题或目的进行有意义的对话。

4. 任何允许应用程序通过您的 API 控制硬件的设备（如智能灯、遥控玩具等）

Class participation and book authoring

- Attending all labs and lecture are mandatory
- You will author a book based on what you have learned in Web computing and relevant contents (assignment posted

课堂参与和书籍编写

- 必须参加所有实验课和讲座
- 你将根据在Web计算课程中所学知识
  以及相关内容编写一本书（作业已发布）

References

- chatGPT used for proofreading of this lecture note.

参考文献

- chatGPT 用于本讲义的校对。