Class Overview

CSCI E-94

Fundamentals of Cloud Computing - Azure

Joseph Ficara

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Agenda

- **Class Overview**
  - First Night
  - Teaching Staff
  - What the course covers
  - Course Coverage FAQs

Agenda

- Class Overview …
  - House Rules
  - Use of AI
  - Grading
  - Development Hardware & Tools
  - Some more FAQs

First Night

- Class Overview
- Assignment 01
- Azure Overview
- App Services Part I

Class Overview- Teaching Staff

- Who
  - Instructor
    - Joseph Ficara
  - Head TA
    - Jonathan Franck
  - TAs
    - Max Eringros
    - Jessica Pratt
    - Nancy Forero
    - Gustavo Varo

Class Overview – Coverage

- **In depth coverage**
  - Key Microsoft Azure PaaS offerings
- **Essentials**
  - Microsoft Azure Serverless
  - .NET 9
    - Web API & MVC, Middleware
    - Entity Framework Core
  - VNETs
  - CICD

Class Overview – Coverage

- **The Fundamentals**
  - REST
    - Scalable REST Services
  - Security (Authentication & Authorization)
  - Multi-tenancy
  - Architectural Patterns
    - Cache-Aside
    - Pushback, Throttling
    - Retry & Circuit breaker
    - Command and Query Responsibility Segregation
    - And more…

Class Overview – Coverage

- **The Fundamentals …**
  - **Azure AI – Open AI**
    - What is offered in Azure
      - Focus on **Azure AI Foundry**
    - Semantic Kernel
      - Integrating AI into your Applications
      - AI Orchestration & Agents, Plugins, Prompts & Plans
    - LLM Overview
    - Prompt Engineering
    - Embedding
    - Fine Tuning
    - Best practices & Considerations

Class Overview - Coverage

- How?
  - Lectures
  - Sections
  - Course Work
    - Homework assignments
  - Microsoft Teams
    - Place to ask async questions
  - Reading material

Course Coverage FAQ

- Can I be successful if ?
  - I know Java, C++
    - Some other OO language
- **Yes,** if you are a quick study
  - You should be able to pickup C# easily
  - Teaching staff is well versed in C#
    - We can and **want to help you**!
  - In Section we will cover fundamentals of C#

Course Coverage FAQ

- Will this class teach me …
  - Azure (**IaaS**) **I**nfrastructure **a**s **a** **S**ervice ?
    - No
  - Azure (**PaaS**) **P**latform **a**s **a** **S**ervice services ?
    - YES! *(Many but not all…)*
  - Azure Serverless
    - YES! Logic Apps and Azure Functions
  - How to
    - Build cloud native applications that run in Azure's cloud ?
      - YES!

Course Coverage

Class Overview – House Rules

- **House Rules**
  - Silence all noise making devices:
    - Cell phones, Laptop, tablet, etc.
    - Still rocking a pager ?
      - Good for you, but please silence it
- **We are remote**
  - Turn on your camera for a better experience!
- **Ask questions!**

Class Overview – Use of AI

- **Include Attribution regarding the use of AI**
  - In development of your assignment
    - In your **project notes.txt** file
  - You may not use AI to fully implement your assignment or extra credit
    - Example: You can't use it to generate all unit tests
  - You may use AI as an aid
    - In development of the assignment.
    - Implementation of **small snippets of code**
      - Explaining how code works

Class Overview - Grading

- Students registered for Graduate Credit
  - Required to complete one extra credit option
  - Selected option
    - Must be from the **available options on the assignment**
    - Will be included in your base grade calculation
    - **Will not** raise your overall score above 100%
  - Failure to complete an extra credit option
    - Will result in a deduction
      - Equivalent to the points assigned to the lowest-value extra credit option available.
  - Can still implement **additional** extra credit options
    - From the **available options on the assignment**
    - To earn a score above 100%

Class Overview - Grading

- Assignments
  - Lowest assignment grade is dropped
  - Upload to canvas by **5:00 PM EST** date due
    - **1.5 Points deducted per day late**
    - Assignments more than **14 days late**
      - **Receive a grade of 0%**
  - **Extra points**
    - 1 Point per day early up to **5 points max**
  - *See syllabus for more details*

Class Overview - Grading

- Assignments …
    - Accepted submission – **Canvas Website**
    - **Students' responsibility**
        - Complete assignment & submit it to canvas
            - **5:00 PM EST on due date**
    - **No excuses accepted…**
        - Corrupted Zip file, Computer Crashed
        - My clock was off
        - The internet was broken
        - My mouse ate it
        - Still late!

Class Overview - Grading

- Assignments …
  - You are assigned a grading TA per assignment
    - Posted in Microsoft Teams under the assignment channel
    - Grading TA changes for each assignment
  - **No resubmits!**
    - *Unless requested by your grading TA*
      - If resubmit is required by a TA?
        - All <u>early submission extra credit points</u> are forfeit

Class Overview - Grading

- Evaluation (How you are graded)
  - **Homework is 100% of your final grade**
    - There are **7** assignments
    - The **assignment with lowest grade is dropped**
    - Student can skip a single assignment
      - Skipped assignment receives a score of zero
        - Is considered lowest grade and dropped
        - **Uses up the lowest grade dropped benefit**

Grading

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Class Overview - Logistics

- **Connectivity Requirements**
  - Internet Access
  - Email
  - Your favorite internet browser

Class Overview - Logistics

- **Sections**
  - Thursday from 5:30 to 6:30 PM EST
    - Student Q&A & supplemental content
    - Recorded

- **Instructor office hours**
  - Typically Saturday or Sunday 1-1.5 Hours
    - Day & Time posted on Teams and Canvas
    - Student Q&A & supplemental content
    - Recorded

Class Overview - Logistics

- Class Website
  - https://canvas.harvard.edu/courses/150243
  - **Your Harvard Key Credentials**
    - **Login Name & Password**

Demo

Class Website

https://canvas.harvard.edu/courses/150243

Development Tools & Environment

- **Software & Hardware**
  - Windows 10 or 11 Professional
  - Visual Studio 2022
    - Community, Pro or Enterprise with latest updates
    See hardware/software requirements [here](#)
    Download Visual Studio 2022 Community [here](#)

- **Microsoft software is free**
  - For educational use only

- **Most Azure Resources are also "free"**
  - You have a budget $100.00
    - We will use several free services

Development Tools & Environment

- Visual Studio 2022 Install Selection

Development Tools & Environment

- Visual Studio 2022 Install Selection

Development Tools & Environment

Class Overview – FAQ

- How much time do students dedicate to their assignments?

  - The median student spends between 15 to 20 hours on each assignment.

- What do you submit?

  - Details in each assignment

  - Don't submit the binary

  - Include what you did in your projectnotes.txt

    - Did you get stuck

    - Did you do extra credit

    - What didn't you do

Class Overview – FAQ

- **What assistance is available for students unfamiliar with the technology stack**
  - Several sections include lectures on C# and .NET
  - Weekly instructor office hours
  - Sample is code provided
    - In every lecture pack
    - Instructor Office Hours & Section supplemental content
  - Async Q&A regarding lectures and assignments
    - Take place on Microsoft Teams

Class Overview – FAQ

What assistance is available for students unfamiliar with the technology stack ..

- Microsoft Teams Assignment Channel
  - Post your question in the assignment channel
  - Don't use email
  - Don't include your full assignment
  - Do include context
    - Challenge you are facing
    - Error messages
    - What you have tried so far
  - Other students and TAs can help you

Class Overview – FAQ

What assistance is available for students unfamiliar with the technology stack ..

- **Limited availability** for TA 1:1 sessions
  - Request to your grading TA or Jonathan Franck
    - To schedule a time that works for you both
    - **Need 2-3 days notice**
    - **½ Hour session**
  - **First come first serve**
  - **TA's schedule may be full**
    - Alternatives
      - Microsoft Teams async Q&A
      - Section
      - Instructor office hours

Class Overview – FAQ

- How long before my assignment is graded
  - It depends, typically, 2 weeks
- Make sure your service is working **in Azure**
  - TAs will try to restart it, **once**
  - If they can't get it working, they will reach out
    - **Respond in 24 hours or less**
- How do I check on the status of my assignment's grade
  - Check canvas grading, grades are posted there
  - Reach out to your grading TA via Microsoft Teams

Class Overview – FAQ

Can I use ...		Support Available	
macOS	✅ Yes	✅ Yes	
Linux	✅ Yes	🚫 No	
Windows 11, 10	✅ Yes	✅ Yes	
Windows 7, 8, 8.1	🚫 No	🚫 No	
Visual Studio for Mac	🚫 No	🚫 No	
Visual Studio Code	✅ Yes *Required for Bicep*	✅ Yes	
Visual Studio 2022	✅ Yes	✅ Yes	
JetBrains Rider	✅ Yes	🚫 No	

Class Overview – FAQ

- **Mac Tip**
  - **To run Windows on a Mac**
    - Use: Parallels or VMWare Fusion or Bootcamp
      - We recommend Parallels if using a Mac
        - Academic version available for $39.95
          - http://www.onthehub.com/parallels/

- **JetBrains Rider License**
  - **They offer a free license**
    - See Free Educational Licenses

Class Overview – FAQ

- Do I need an Azure account
  - **Yes –** See welcome letter for instructions
  - I already have an Azure account can I use it?
    - **No**
      - We need to have full admin rights to your account
  - Can I add to my existing Azure account
    - **No**, Use a new Microsoft account
      - Don't use any special characters in email address
        - Keep email address small and simple
      - See: https://account.microsoft.com/account
        - Use a Private / Incognito tab to do so

Class Overview – FAQ

- Will I be charged for my Azure account?
  - When using academic subscription
    - No
  - What happens when I exceed my limit
    - You will be **unable** to access paid resources
    - **We won't be able to grade your assignment**
    - **Use free resources whenever possible**
    - If I want to pay how much will it cost me?
      - Depends on usage
      - Billed monthly

Class Overview – FAQ

- Can I use the Azure simulator?
  - **Sometimes**
    - For available services during your development
      - Not all Azure services have simulations
  - **Must deploy finished solution to Azure cloud**
    - Grading is against **your Azure cloud deployment**
  - **Recommendation**
    - Use Azure Cloud and remote debugging

Class Overview