

# Week 12 – Subject Revision

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# CSE5006 Assessment

- One 2-hour end of semester examination 50 %
- Assignment 2 25 %
- Assignment 1 25 %
  - Quiz 1 10 %
  - Quiz 2 15 %

# Course Outline

- Lecture 1
  - Introduction to version control
- Lecture 2
  - Virtual machines and docker
- Lecture 3
  - Front end: Introduction to HTML / CSS
  - Javascript programming
- Lecture 4
  - Front end: The React Javascript library for building user interfaces

# Course Outline

- Lecture 5
  - ORM and Sequelize
- Lecture 6
  - Back end: Node.js and Express.js
- Lecture 7
  - Frontend and Backend integration
- Lecture 8
  - AWS Cloud Fundamental

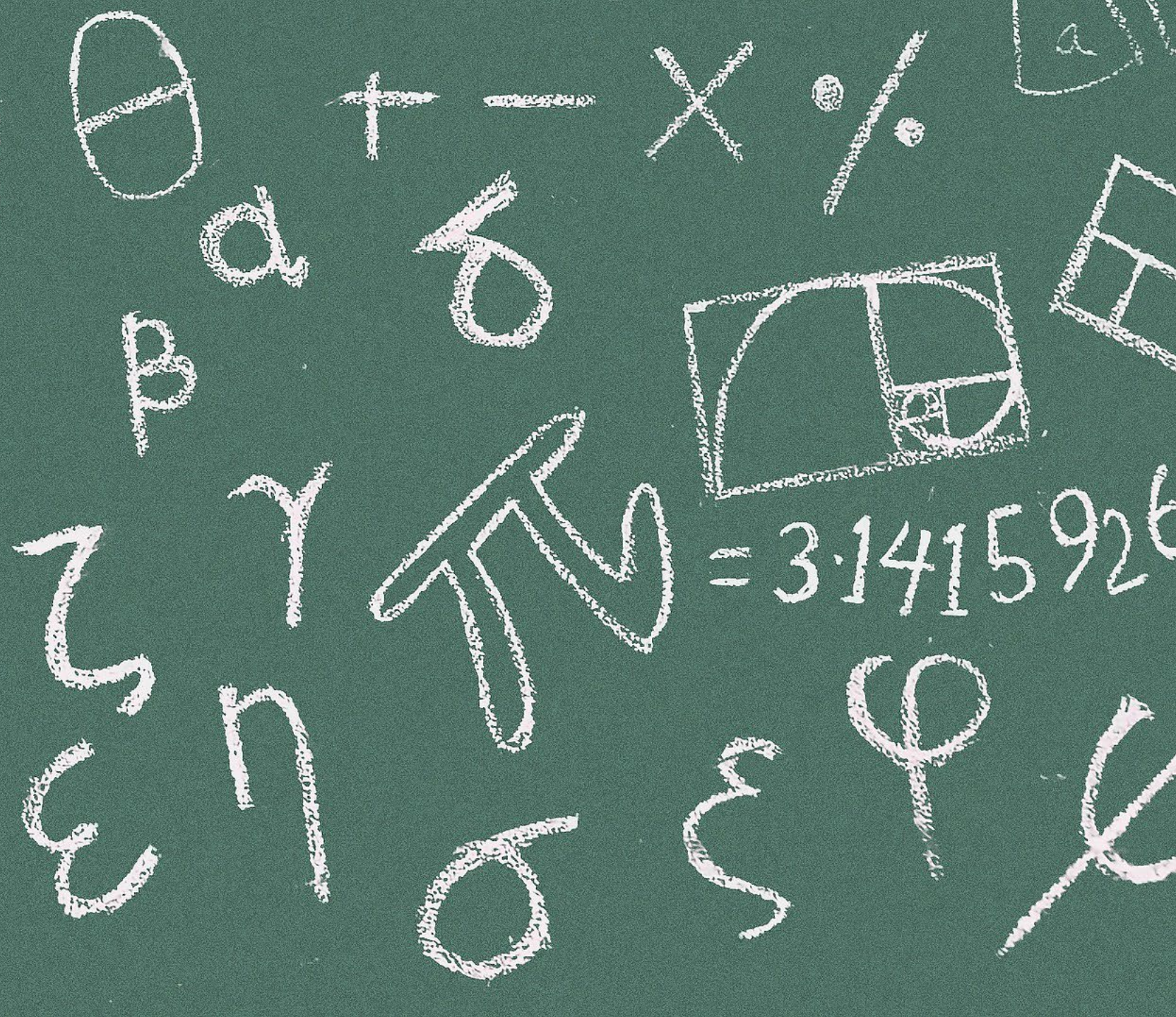
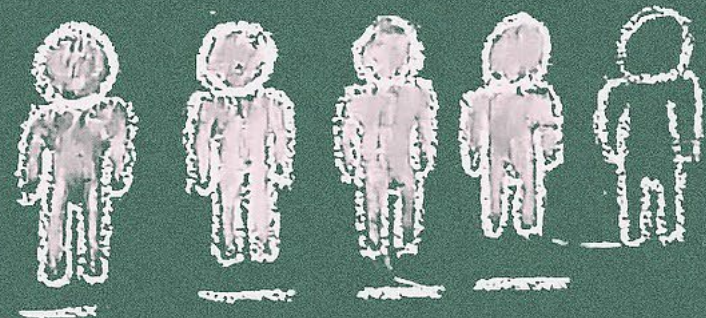
# Course Outline

- Lecture 9
  - AWS Cloud Storage
- Lecture 10
  - AWS Container
- Lecture 11
  - CI/CD in AWS
- Lecture 12
  - Subject Revision





• Exam Revision





# Exam Revision

- Main aim is to test understanding
- All questions are based on the lectures
- The following slides contain some main topics that are important for you to know.
- However, these are just a selection of topics, the exam can cover any topic in the entire set of lectures.
- Almost all of the exam questions are theory type questions.
- There are a small amount of questions asking you what does a particular code fragment do.

# Conclusion

- Wow! That was a challenging subject!
- Making good web site is not easy!
- React is quite weird we you just start learning it.
  - But with more practice I hope have found it easier.
- I think you will appreciate React more and more if you are asked to write really complex frontends.
- React is fast becoming the most popular frontend Javascript library.
- Docker is something else which is becoming more and more popular
  - It really makes deploying your code to different environments much easier.
- Nodejs is also gaining a lot of popularity for backends.
  - It simplicity is one of its biggest strengths.
- Cloud computing is taking over the world!
- Cloud computing skills will be essential knowledge for every IT professional very soon.
- All the best for your endeavors in making scalable web sites that run on the cloud!



# Exam Details

- Venue: TBA
- Date: TBA
- Time: TBA
- Exam Duration: 2 hours
- Type: Closed Book

# Academic Misconduct

- Any form of allegation of Academic Misconduct will be investigated seriously. Your mark/grade will be withheld until the decision is made by AIA.
- These examples of activities that are considered as academic misconduct include but not limited to:
  - Communicate with other person(s) regarding the exam questions, answers or subject materials (in-person, text, phone call, video call, etc)
  - Screen sharing, file/document sharing, media sharing, cloud-platform sharing
  - Post question(s), answer(s), hint(s), guidance(s) through online platforms such as forums, or social media
  - Discussion with online or private tutor or any educational services
- If you have any doubts, please contact your lecturer through email or Teams



# CSE5006 Exam Structure

- Part A – Multiple Choices (30%)
- Part B – Essay (70%)
- You need to answer ALL questions. There is no optional question.

# Lecture 1

- Know the motivations for version control.
- Know the difference between centralized version control versus distributed version control.
- Is Git a centralized or distributed version control system?
- When to use branching versus forking?
- Understand the Git commands (such as `git pull`) you used in Lab 1



# Lecture 2

- What are the advantages of using virtual machines in the cloud?
- What is the difference between containers and virtual machines?
- What is the motivation for using docker containers?
- How does dockers layered file systems work?
  - What are the advantages of having a layered file system?

# Lecture 3

- What is the purpose of having Javascript?
- Know what kind of web application examples that would require the use of JavaScript in the front end
- Understand what is the DOM.
- Know what new features ES6 has compared to traditional Javascript
- Know what the important lodash functions can be used to do.

# Lecture 4

- How does the traditional model view controller (MVC) approach to Javascript user interface work?
  - Use controller to modify the view
    - Complex controller code for large application
- Why React is better than MVC?
  - Just specify how you want render the data.
  - Then just need to specify how to update the data and then the view will kind of update itself with respect to the data.
  - Declarative versus Imperative programming
- Know the difference between state and props
- What is the advantage in building front ends using components?
- Understand how data is passed from a parent component to its child component in react.

# Lecture 5

- What is ORM?
- Why use Sequelize instead of using a relational database directly?
- How do you model the following associations in Sequelize?
  - 1 to many
  - Many to many



# Lecture 6

- Know how routing in express nodejs works
- What is the advantage in having a rest API?
- Understand five HTTP methods (GET, POST...)

# Lecture 7

- What is the reason for using NGINX?
- Understand the differences between Front-End Programming and Back-End Programming.
- How to connect the data retrieved from the backend to React of the front end?

# Lecture 8

- Getting started with AWS Academy
- What is AWS?
- What is Cloud technology?
- How AWS provide the cloud infrastructures?

# Lecture 9

- AWS cloud storage solution
- How to work with Amazon S3
- Working with Café case. Implement S3 for web development



# Lecture 10

- What makes AWS containers different?
- How to run AWS Containers?
- Working with Café case: Migrating existing web application to AWS Container

# Lecture 11

- CI/CD in AWS platform.
- Automatic Deployment using CI/CD platform in AWS
- Working with Café case: Prepare and launch the web application for the Café

# Thank you for your participation in this subject



We hope that you will get direct and indirect benefit from learning this subject



Best wishes for your study and career in the future

# Sample Exam

- The following questions/answers are taken from previous sample exams.
- Please note, there will be no discussion regarding the previous exam questions
- There will be no guarantee that these questions will be used in the upcoming exam.



# Sample Exam

- Please explain the advantages of using Version Control. What are the differences between centralized version control and distributed version control? Is Git a centralized or distributed version control system? (9 marks)
- When to use Branching versus Forking in Git (5 marks)
- Please describe what the following command does:
  - `git clone <url>`
  - `git status`
  - `git add <file>`
  - `git commit -m <message>`
  - `git merge my_branch`
  - (10 marks)

# Sample Exam

- Please explain the advantages of using virtual machines in the cloud? What is the difference between containers and virtual machines? And explain the advantages of using docker containers. (9 marks)
- Cloud services include which three types of services? For these three types of cloud services, please differentiate them.(9 marks)

# Sample Exam

- Please explain workflow of the figure below? (6 marks)

