Software Design & Studio

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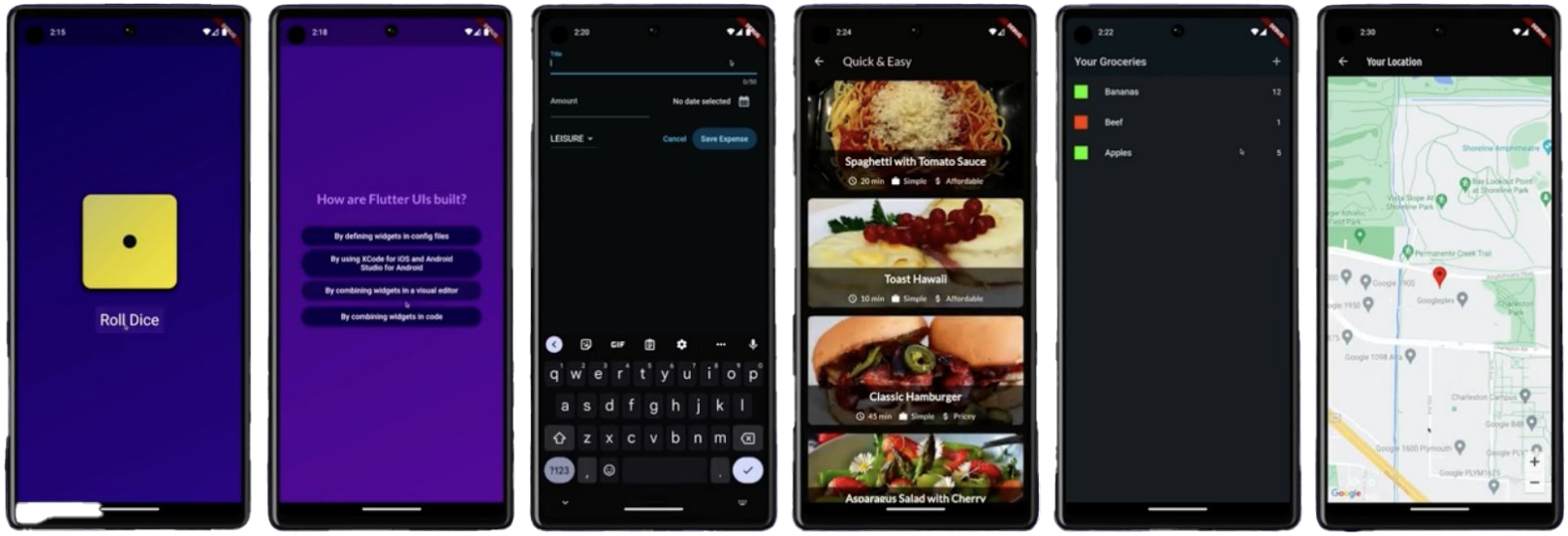
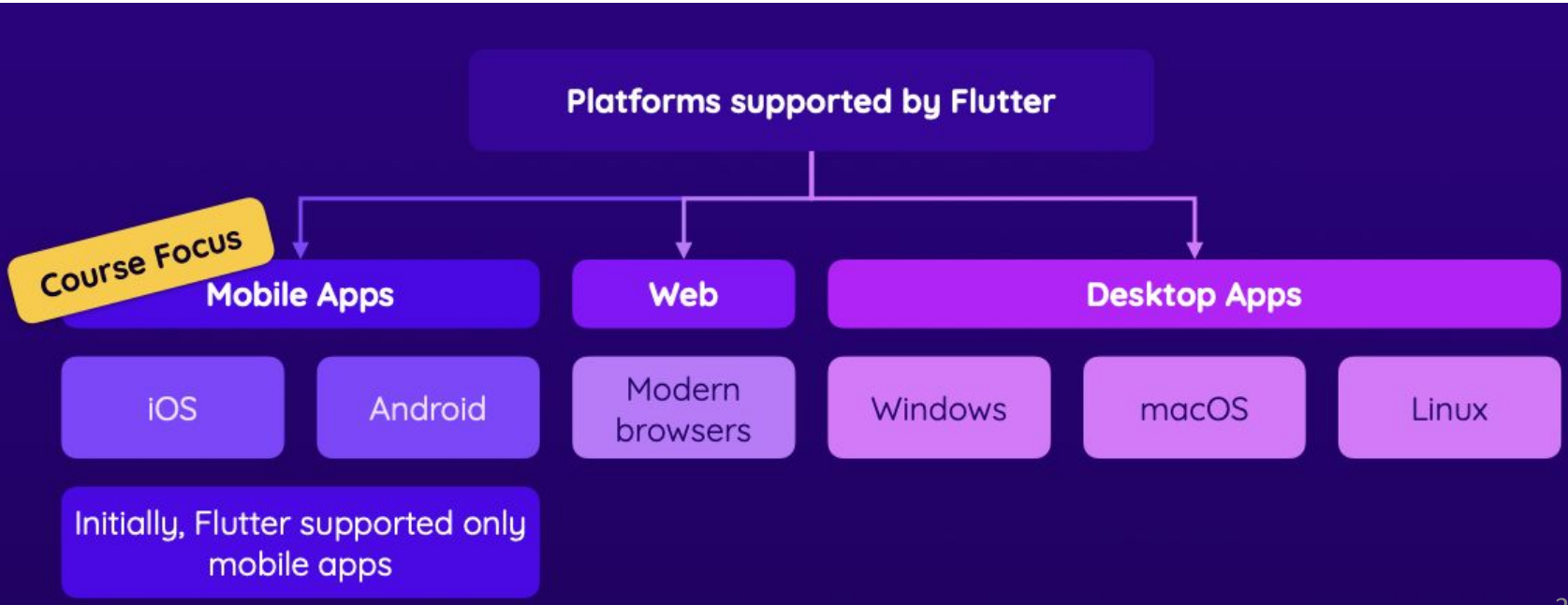
Course Objective

- To offer hand-on guidance in
  - Software ***design*** process
  - ***Project-*** and ***team-based*** software development
- Through writing intelligent apps:



Flutter for App Development

- Supports multiple platforms & screens
  - Shared codebase written in ***Dart***
- Hot reload & high performance (60+ fps)



Why Dart?

- Easy to learn for people familiar with C, C# or Java
- New language features
  - Functional programming
  - Asynchronous programming
  - Null-safety
- Similar to JavaScript, but no legacy “bad” part

Flutter vs. Dart

- Dart: a programming language
- Flutter: libraries, framework and tools

- You write code in Dart within Flutter's framework
- Then, Flutter tools compile it to native code for each of your target platforms

Software Design

- Term project: a ***useful*** app empowered by ***AI*** technologies

- Usefulness through design sprint
  - Problem identification, solution ideation, competitive analysis, prototyping and usability testing
- AI technologies
  - Machine Learning & Deep Learning concepts, generative AI and APIs

Interleaved Sections

1. Flutter and Dart
2. AI fundamentals and services
3. Software design process and user-centric development

- Syllabus (subject to change)

Classes

- Tue: lectures
  - at Delta 105
- Thu: labs
  - at EECS 326 & 328

- Course website: www.cs.nthu.edu.tw/~shwu

Grading (1/2)

- Labs: ***40%***
- Design demo (with usability testing): ***30%***
- Implementation demo: ***30%***
- Q/A bonus: up to ***5%***

Grading (2/2)

- ***Late*** lab submissions only get ***60%*** of original scores
- Demos get ***60%*** of original scores if ***all your team members rate you as "non-contributing"***
- ***Top-three popular*** demos get ***15%***, ***10%*** and ***5%*** extra credits, respectively

Questions?

FAQ (1/3)

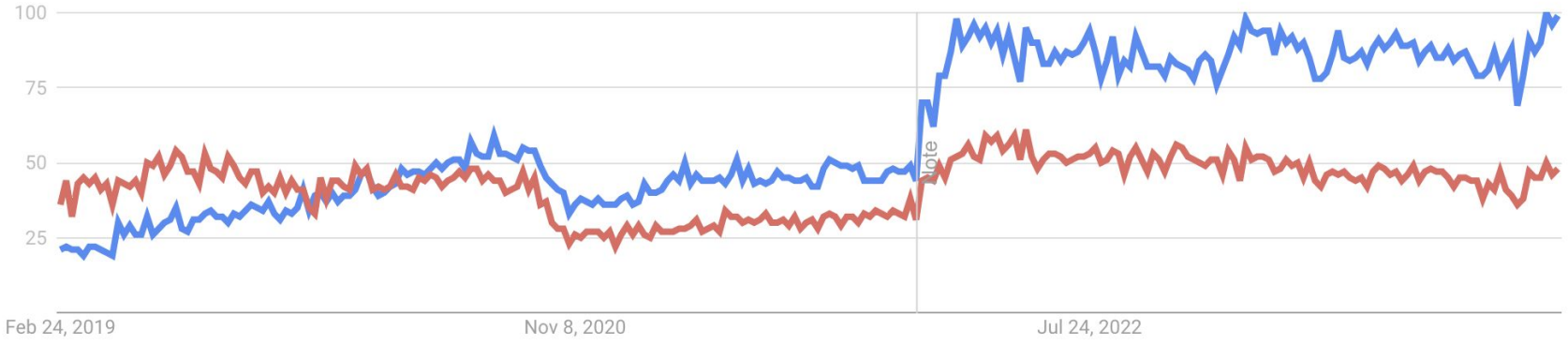
- Is this a light-loading class or heavy-loading class?
  - Should be heavy to most students
- Is this a programming language course?
  - No, we teach Dart in only 2 weeks
- Is this a software engineering (SE) course?
  - No. We don’t focus on SE theories, but you will learn some “best practices”
- Is this a entrepreneur course?
  - No. We don’t talk about things after deployment

FAQ (2/3)

- How many people a team?
  - 3 to 6 people
  - For 4+ people teams, your apps must have back-end
- What back-end will we use
  - Firebase, a Backend-as-a-Service (BaaS)
- Do we need to come to the class?
  - No, as long as you can pass
- Can I use generative AI to write code?
  - Sure, but make sure it helps you ***learn*** rather than score

FAQ (3/3)

- Are we going to interact with open source software?
  - Yes, Flutter & Dart are open source projects themselves
  - 3rd Dart/Flutter libraries through [pub.dev](pub.dev)
- Why not JavaScript + React + React Native?



TODO

- Complete these tutorials by Thu:
  - Environment setup
  - Write your first Flutter app