App Development

Course Overview

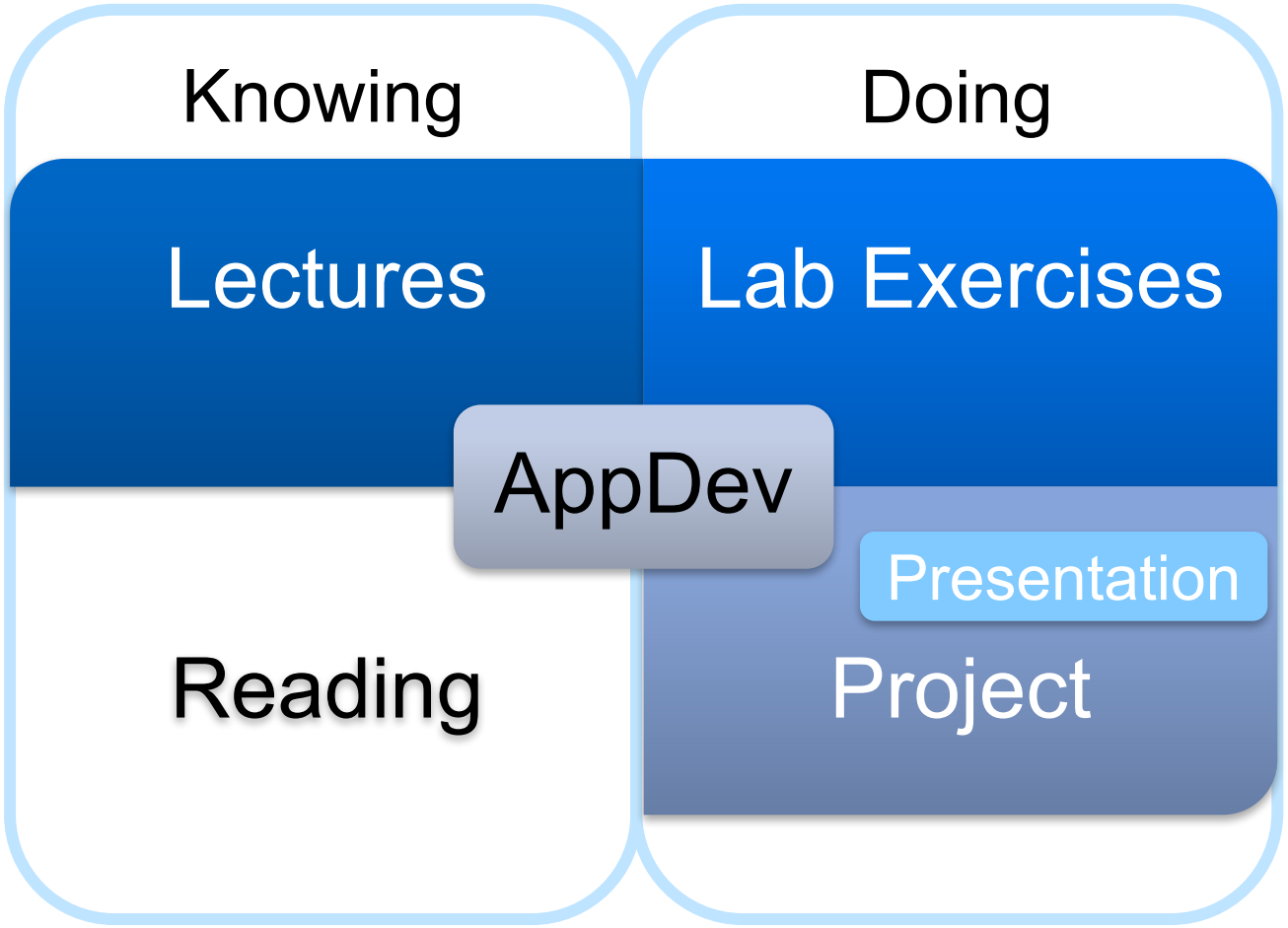
Learning Objectives

- Acquire basic and advanced knowledge in app development
- Apply this knowledge in a specific project with a team
- Know the architecture and programming of current mobile platforms
- Know principles and best and worst practices
- Able to recommend a suitable App type (Native, Web, Cross-platform, Hybrid) justified for a project context
- Able to test, debug, and optimize apps

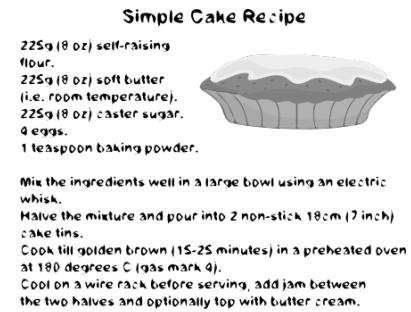
Course Topics

- Introduction, motivation, market development, history
- How to develop native, hybrid, web, and cross-platform apps
- App platform architectures (e.g., iOS, Android, Apache Cordova), frameworks, and libraries
- App programming language options (e.g., Java, Swift, JavaScript)
- App user interfaces, generic and platform-specific differences, UI patterns, design styles, user experience
- App APIs, data storage, threading, background services, app interactions
- App design principles and patterns, best practices
- App lifecycle, app distribution
- Mobile backend connectivity with cloud services
- Tooling, testing, debugging, optimization, logging, diagnostics

Course Components



Exercise/Project Spectrum (Competency)



[clipartfest.com]

Literature

- *Swift 3: Das umfassende Praxisbuch* von M. Kofler. Rheinwerk, 2017. ISBN 978-3-8362-4127-4
- *Android 5: Apps entwickeln mit Android Studio*, 3. Aufl. von T. Künneth. Rheinwerk, 2015. ISBN 978-3-8362-2665-3
- *App-Design: alles zu Gestaltung, Usability und User Experience: alles zu Gestaltung, Usability und User Experience* von Jan Semler. Rheinwerk Computing, 2016. ISBN 978-3-8362-3453-5
- *Apps mit HTML5, CSS3 und JavaScript: für Android, iPhone und iPad* von F. Franke u. J. Ippen. Rheinwerk, 3. Aufl., 2015. ISBN 978-3-8362-3485-6

Additional/Alternative:

- *Apps für iOS 10 professionell entwickeln* von T. Sillmann. Hanser, 2017. ISBN 978-3-446-45073-8.
  - [Älter] *Apps für iOS 9 professionell entwickeln (2. Aufl.)* von T. Sillmann. Hanser, 2015. Ebook ISBN 978-344-64455-3-6 (online in Bibliothek).
- *iOS-Apps programmieren mit Swift* von C. Bleske. dpunkt. 2016
- *Android 7: Apps entwickeln mit Android Studio*, 4. Aufl. von T. Künneth. Rheinwerk, 2016. ISBN 978-3-8362-4200-4
- *Android: Der schnelle und einfache Einstieg in die Programmierung und Entwicklungsumgebung (2. Aufl.)* von D. Louis und P. Müller. Hanser, 2016
- *Android 5: programmieren für Smartphones und Tablets (4. Aufl.)* von A. Becker, M. Pant. dpunkt, 2015.

Additional Literature

- Mobile Design Pattern Gallery, 2nd Edition.
- UI Patterns for Smartphone Apps by Theresa Neil. 978-1-4493-6363-5
- Android Programming: The Big Nerd Ranch Guide by Phillips & Stewart
- iOS Programming: The Big Nerd Ranch Guide by J. Conway et al.
- Mobile design pattern gallery: UI patterns for Smartphone Apps by Neil
- High Performance Android Apps by Doug Sillars
- Hands-On Mobile App Testing by Daniel Knott

Grading Policy

- Exam Prerequisite:
  - Certification of lab exercises
- Grade based 100% on Project (see moodle for details)
  - Groupwork, like startup situation
  - 15% Documentation and idea
  - 45% App functionality and quality
  - 10% Testing
  - 15% Code
  - 15% Presentation

Hochschule Aalen

Course Communication

- https://moodle2.htw-aalen.de/
  - Check regularly for course changes, exercises, updates, information.