INFO 6350

Smartphones-Based Application Development

(Mobile Application Design and Development for Android and iOS)

Instructor: Taral Oza

Course Syllabus

Description:

The course is designed to address the growing needs of mobile application development. Mobile Devices are being used much more frequently than desktops/laptops and are readily available at fingertips at any time. This course is focused on preparing students for various software development challenges using Google's latest Flutter cross-platform framework which is designed to allow developing Android and iOS applications through common code base. It teaches theory of mobile application development along with detail perspective of useful development techniques from years of industrial experience. This course includes set-up of development environment, overview of Dart programming language, design and architecture of mobile applications, mobile application life-cycle management techniques, Flutter framework architecture, GUI development and best practices and publishing mobile applications.

This course also includes significant coverage of local data storage techniques on mobile platform, background operations, interactions with backend cloud services using Google's Firebase platform – authentication, data storage, push notifications, etc. It offers a unique opportunity for students to learn a combo of mobile application development and cloud technologies. This course covers basic techniques of cybersecurity also.

This course is designed to provide enough hands-on exposure to students by developing a mobile application through multiple sessions of programming exercises during the class meetings. Programming exercises are designed to be building blocks of a mobile application that serves practical use case. Programming exercises uses implementation of various theoretical topics learned during the class. This course, in general, prepares students to not only face the interviews for mobile application developer positions but also to prepares them to be successful mobile application developer in the industry by doing a very high quality of mobile software development.

Course structure:

This course will be conducted using a combination of class lectures and hands-on assignments. Lectures will cover theoretical concepts and backgrounds related to Mobile application development. Extensive examples will be used to illustrate the taught principles. Hands-on exercises will offer an opportunity to put theory into practice towards materializing enterprise grade mobile application.

Course Outline:

- Development Environment Set-up
- Android Architecture
- iOS Architecture
- Flutter Framework Architecture
- Hello Mobile App
- Dart Overview
- Mobile Application life cycle
- GUI development
- Persistent Data Storage
- Background Operations
- Navigation and Notifications
- Web and Connectivity
- Maps and Location Services
- Backend Cloud Services
    - Authentication
    - NoSQL Cloud Database
    - Cloud Storage
    - Push Notifications
- Cyber Security Fundamentals
- Class Exercises
- Publishing on Google Play Store and Apple App Store

Evaluation:

- Class Exercises: 75%
- Quizzes: 20%
- Attendance: 5%

Class Policies:

- Punctuality, attendance and class participation are essential for success. If a student must miss a class for a valid reason, he/she should make arrangements ahead of time to complete the assignment and turn it in on time.
- All quizzes are open notes, open computer composed by questions requiring the student to have a good understanding of the software and concepts taught in class.
- Make-ups will only be given under extenuating and unavoidable circumstances. The student is responsible for informing the instructor prior to missing an exam.
- Students should feel free to exchange ideas with each other. However, some effort through internet research is expected to solve various technical issues during class exercises.

Text books:

None