Project #1

Title:

In depth analysis of cloud oriented map related services for smart phone deployment.

Description:

With each day more and more devices are able to generate geo-sensitive data for different purposes. The use of this data is heavily dependent on the tool to process it. The use of one-station mapping software is evolved over the recent years with the rapid progress of general technology. Big corporation are now migrating to cloud oriented services, as well new businesses are created in order to offer wider variety of functionality with high grade of customization for the growing market of smart devices. The aim of this project is to analyse a part of the market of working map related services in order to present the capability of existing solution. You will have to justify your selection and present working case study.

Requirements:

Java, Ruby on Rails, JSON, REST

Project #2

Title:

Development of a ride-matching algorithm for a peer-to-peer carpooling web-service

Description:

Carpooling refers to the establishment of agreements between a driver and one or more passengers to share a ride in a single vehicle, rather than making the same trip individually, in order to mutually benefit from sharing the trip cost (e.g. fuel cost and toll fees). The present project focuses on the organised form of peer-to-peer carpooling as a web-service, where drivers (willing to share a trip with their car) post the route to follow to the provider's online platform, while potential co-passengers submit requests for a carpool from a specific origin to a destination at a given time point. In this context, the aim of this work is to develop an efficient mechanism and implement an algorithmic solution for real-time ride-matching between drivers and co-passengers, taking into account the user preferences and characteristics.

Requirements:

Web development, Ruby on Rails

Project #3

Title:

Design of energy management system for autonomous docking/charging station of e-bike sharing system

Description:

The fundamental building block of e-bike sharing systems is the docking/charging station, where users can pick-up/drop-off the e-bike, while ensuring that e-bikes are sufficiently charged for the intended use. The aim of this project is the design and simulation of an energy management system for an advanced autonomous (off-grid) docking/charging station, consisting of solar photovoltaic (PV) panels, rechargeable batteries for off-grid applications, inverters, charge controllers, charging spots, sensors and monitoring devices, in order to ensure the proper operation, control and monitoring of the e-bike sharing system.

Requirements:

Energy management systems

Electronics design

Electronic circuit simulation

Project #4

Title:

Android studio programing techniques for speed / fast application prototyping

Description:

Rapid changes in design and functionality decisions often needs to be transfer to some sort of prototype. Mobile application development very often faces multiple conflicts in early stage decision making regarding the right path to go with the prototype. Each path has its own pros and cons. In educational environment the developer, whether on this stage is a designer or a programmer, is faced usually only with time restrictions, whereas in business related environment the budget also gets into play. The aim of the project is to evaluate hard coded prototypes versus those made with concept design software only.

Requirements:

Java

Android SDK

REST

Project #5

Title:

Structural design of modern mobile applications

Description:

Modern software industry is a very competitive market where time and budget plays important role, developers are faced with decision making whether to go for one or the other architecture. Very often it is chosen to select fast initial deployment with penalties paid in the future in bug hunting and growth problems. The aim of the project is to analyse several approaches for modern smartphone applications having in mind the best possible solution for fast project deployment.

Requirements:

Java, Android SDK || Xcode, Swift / Objective-C, UML or similar

Project #6

Title:

Design and implementation of a gamification scheme for a peer-to-peer carpooling service

Description:

The concept of gamification refers to the application of game-design elements and principles (e.g. competition with others, point and reward systems) in non-game contexts, typically as an online marketing technique to encourage engagement with a product or service. The aim of this project is to incorporate gamification techniques in a peer-to-peer carpooling service, where the carpoolers (i.e., a driver with one or more co-passengers) establish an agreement to share a ride in a single vehicle via an online platform. Work in this project includes surveying of gamification techniques for web-services, design of a gamification scheme for a peer-to-peer carpooling service and its algorithmic implementation for the intended application.

Requirements:

Web development, Ruby on Rails