**The Chinese University of Hong Kong**

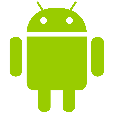
**Department of Computer Science and Engineering**

**CSCI 4140 Project Proposal**

Group 22

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Project Title: Tempus E Spatium

# Overview

In this project, I will build a two-player Android quiz game app on one single device. A multitouch-enabled device is required for this app to run correctly. At the first week of the course, I thought of a Python game called “Rampant Sphinges”. I downsized (but not scraping) it because I wished to work on my own, and I thought the workload is too high for a single person. Still, the new idea retains the concept of scraping Wikipedia to generate quiz questions, and remains to be a board game.

The project is named Tempus E Spatium (Latin for Time and Space, which is often prefixed by “lost in”) as the questions focus on history and geography. Quiz types include: Drag and drop the national flags to the right continent, listen to the national anthem and choose the correct flag, and complete the word. Despite the name of the app, the last type can be of any question type.

The questions are timed 5 seconds to 1 minute each, depending on the question type and difficulty settings. A game consists of 5 rounds. Each round has its own chessboard. A player advances a variable number of tiles on answering a question correctly, and retreats on answering it incorrectly or failing to answer it on time. The player who reaches the destination first wins the round. The player who wins the most rounds wins the game.

Programming languages used in this project includes Java and JavaScript. Markup languages used includes XPath, XML and HTML.

# Development schedule

This mid-scale project is designed to for one person’s workload. Owing to the scarcity of time, the rapid prototyping software development model is adopted. What’s special of this model is that implementation starts right at the beginning, simultaneous with design; instead of coding only after the design is entirely finished. As a result, the outcome will be robust and bug-free.

{insert Gantt chart here}

# Dependencies

The Android application uses support libraries, so it can backward support devices down to API 13 (Android Honeycomb 3.2).

It uses the Picasso library for image downloading and caching, the OKHttp library for fetching Wikipedia webpages (GET requests), the Google Maps API, and the W3C XPath library for web scraping. For styling, the Android-Bootstrap library, and the NumberPicker library are used.

The built-in SQLite database consists of two tables URLs of Wikipedia articles (and corresponding question type for generating questions) and high scores respectively, but none of them will hold any image data.

SharedPreference will be used for changing locale and difficulty.

It also uses the Natural Earth Data set, available in Google FusionTables ~~(or Google Charts)~~ for geographic data, which is used to generate country/state boundary polygons on a Google Maps fragment.

All resources used in this project are either in the public domain, or permitted for free use under the Creative Commons (CC) License.

# Creativity

* Topic diversity: Any topic, as long as it is available in Wikipedia. 1000000+ possible questions generated from articles that belongs to 700+ WikiProjects: children’s literature, archaeology, Scottish castles, free software, animal anatomy, Canada roads, military history, relativity, constructed languages, Michael Jackson... you name it, you (probably) have it.
* Most edutainment apps on the Play Store are for kids. By contrast, this game is designed to be hard enough for adults, including the intellectuals.
* The questions themselves are multilingual, as their content are taken from French/German/Spanish Wikipedia. This means you can harness the app to practise foreign languages as well.

The app is one of the few that takes advantage of multitouch, which eliminates network latency. It is a departure from the traditional ‘pass-and-play’ model, too.

The app fetches and parses Wikipedia articles and turn them into questions, which no app is doing at the moment.

# Impact of the application

The app manifests the purpose of **‘edutainment’**: learning masquerading as playing. As the saying goes, ‘all work and no play makes Jack a dull boy.’ The app focuses on the holistic development of a person instead of turning him a nerd, by raising cultural awareness and sharing knowledge that is oft-neglected.

Very few games make use of **web scraping**, I can't name any.

**I made the keyboard themselves**. Keyboard layouts include QWERTY, AZERTY (French) and QWERTZ (German), no additional downloads are needed. Note that there are two keyboards on each side, and each of them only enters text into their text fields, creating the **illusion of two cursors**.

# Features

* 1000000+ possible questions generated from articles that belongs to 700+ WikiProjects
* Multilingual: supports (at least) 7 languages: Catalan, Chinese, English, French, German, Japanese and Spanish.
* Highscores (via Google Play Games API)
* 2 difficulty modes (Hard and Insane)
* Aesthetics
  + Animations: Fling animation and spring animation

# Prototype

Since the beginnings of February, I have been building a working prototype. Here are the screenshots: