Public Transport Portal

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1.0 Introduction

- **1.1 Project scope**
    - We will be building a public transport portal to help users search for the bus, or the combination of buses they would have to take to get from point A to point B

- **1.2 Major software functions**
    - A user will be able to input a source and a destination and the portal will provide the closest bus stop to the source, as well as any transfers he/she is supposed to make in order to reach the destination.
    - Additional feature: new routes can also be entered into the database. Users will suggest a route and the software will verify its authenticity using reviews.
    - Users will be able to provide instant reviews about their journey which may help in future routes suggestions and verifications.
    - Both map and text interface will be available to input locations to the system.

- **1.3 Performance/Behavior issues:**

- The initial database needs to be verified, since the data available online might be outdated.
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- **1.4 Management and technical constraints**
  - Need to familiarize with html/css/javascript.
  - Need to understand how to integrate database with a web based application.

2.0 Project Estimates

- **2.1 Historical data used for estimates**
  - We will be using the route data of buses of Karachi. This includes all the relevant details regarding the terminals and the exact route each bus takes.

- **2.2 Estimation techniques applied and results**
  - **2.2.1 A* algorithm**
    - We will apply this algorithm to search the shortest-path distance from point X to point Y so that best routes may be suggested.
  - **2.2.2 Map distance prediction**
    - Google maps will be used to predict the actual distance from point X to point Y.

- **2.3 Reconciled Estimate**
  - This is a university project done for the course of Software Engineering. The estimated time is 8 weeks.

- **2.4 Project Resources**
  - Since this is a Software Engineering project, there is no hardware involved. Django and Pony libraries of Python will be used for Web UI design and Database design respectively. Pygmaps will be used to get information from Google Maps. Html, CSS and JavaScript will also be used in designing the web interface of the project and connecting it with the database.

3.0 Risk Management

- **3.1 Project Risks**
  - None of us has the command over most of the skills required for the project and we are are optimistic in terms of thinking about learning a skill with respect to a particular time so we might turn short on time.
  - The different python libraries we are using may not be compatible to each other so we will need to assess whether our choice of libraries are good enough for the project.

- **3.3 Overview of Risk Mitigation, Monitoring, Management**

  - In order to mitigate the risks, we can try to follow the timeline we have set for this project.
  - It is also important that the work is divided efficiently to maximize the output.

4.0 Task Management

Requirements Analysis	● Find data set: ○ Primary dataset http://karachiroutes.blogspot.com/2012/10/karachi-bus-routes.html ○ Other datasets ○ http://www.city21.tv/guide-karachi/karachi-mini-buses-routes-k-to-x/ ○ http://www.travel-culture.com/pakistan/bus-routes-in-karachi.shtml http://www.kmc.gos.pk/Contents.aspx?id=12

	○ http://adiekhan.blogspot.com/2009/01/karachi-bus-routes_24.html ● Preprocess data and convert to csv format for ease of use ● Create Usecase/Class Diagram and ERD
Development	
UI/UX design	-wireframe design designing different screens and linking them test screens
Database Integration	Create database using ERD Integrate it with screens Test this phase
Testing	Test and debug Customer feedback obtained

Roles:

1. Project Management/Lead: An
2. Analysis & Modeling: An Am S
3. Design & Implementation : Combined
4. Testing/QA and Debugging : Combined

5. Technical and/or content writing Amb
6. UI/UX designer: Uk Amb
7. DBA : Uk Amb

Tools:

Python - specifically Django

SQL database

Visio/ Microsoft Visual Studio

HTML

Model:

We will use hybrid of traditional and agile model. We will mainly follow an incremental model with some documentation. Our approach will be to test at each phase instead of testing at the very end. Each increment will distinctly show the feature added. Features could be integration with database, working screens etc.

Milestones:

Deadline	Task	Role
Week 8 (March 27, 2017)	1- Data preprocessed 2-Software specification ● Class diagram and ERD ● Software architecture ● Prototype of Screens (non-functional) ● Functional and non-function requirements	
Week 12 (April 14, 2017)	5-Modules ready	

	6-Functional & aesthetic screens 7-Start working on test cases 8-Incorporate feedback from last iteration 9-Start working on presentation	
Week 16 (May 17, 2017)	10-Final Documentation 11-Minimal errors/tested product 12-Presentation and project demo ready	