DEVELOPMENT OF AN EFFICIENT PUBLIC TRANSPORT SEARCH PORTAL FOR GHANA

ENOCK SETH NYAMADOR
SUPERVISED BY DR HAMIDU ABDEL-FATAO

COMPUTER SCIENCE AND ENGINEERING DEPARTMENT
UNIVERSITY OF MINES AND TECHNOLOGY

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OVERVIEW

PROBLEM DEFINITION

- Road transport is the major means of transportation in Ghana, (Aidoo *et al.*, 2013).
- Over 95% of all passenger and freight traffic and about 97% of all passenger miles in Ghana is by road, (UNESCO Report, 2010).
- Privately owned or corporate taxis, *tro tros* (shared minivans), buses commuting between major cities, (Abane, 2011).

PROBLEM DEFINITION (CONT'D)

- The transport industry is currently dominated by the informal sector which provides about 90% of transport services but their services are unreliable and uncomfortable (Bonaventura, 2015).
- Individually or privately operated transport services are members of unions or associations. These unions and associations serve as regulatory and mouth-piece to each of their members (Fouracre *et al.*, 1994).

PROBLEM DEFINITION (CONT'D)

Challenges

- ⋆ Difficulty in finding terminals specific location and detailed information.
- ⋆ Fares and stations keep changing.

PROBLEM DEFINITION (CONT'D)

Typical Ghanaian Transport Terminal

Figure 1: Kaneshie Transport Terminal

PROJECT OBJECTIVES

- ⋆ To develop a web application that provides detailed information about public transport routes in Ghana.
- ⋆ To provide reusable geospatial data on transport terminals.

METHODOLOGY

* Review of related literature
* Conducting feasibility studies
* Requirements gathering and Analysis
* Functional and non-functional requirements
* Performing data Collection

REVIEW OF RELATED LITERATURE

- Neumann *et al*. (2015) have developed the first minibus supply model based on demand and street network only in South Africa; leading to Taximap: a public transport search web portal

CONDUCTING FEASIBILITY STUDIES

Areas considered:

- Technical feasibility.
- Resource feasibility.
- Operational feasibility.
- Schedule feasibility.

REQUIREMENTS GATHERING AND ANALYSIS

Questions that must be answered to ensure that the system can survive:

- ⋆ Where is the system going to be used?
- ⋆ Who is going to use the system?
- ⋆ What data should be input into the system?
- ⋆ What Software Development Life Cycle (SDLC) model to be used?
- ⋆ What type of output information will the system give?

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DATA COLLECTION

* Field survey.
* OpenStreetMap.
* Crowdsourcing.

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FUNCTIONAL AND NON-FUNCTIONAL REQUIREMENTS

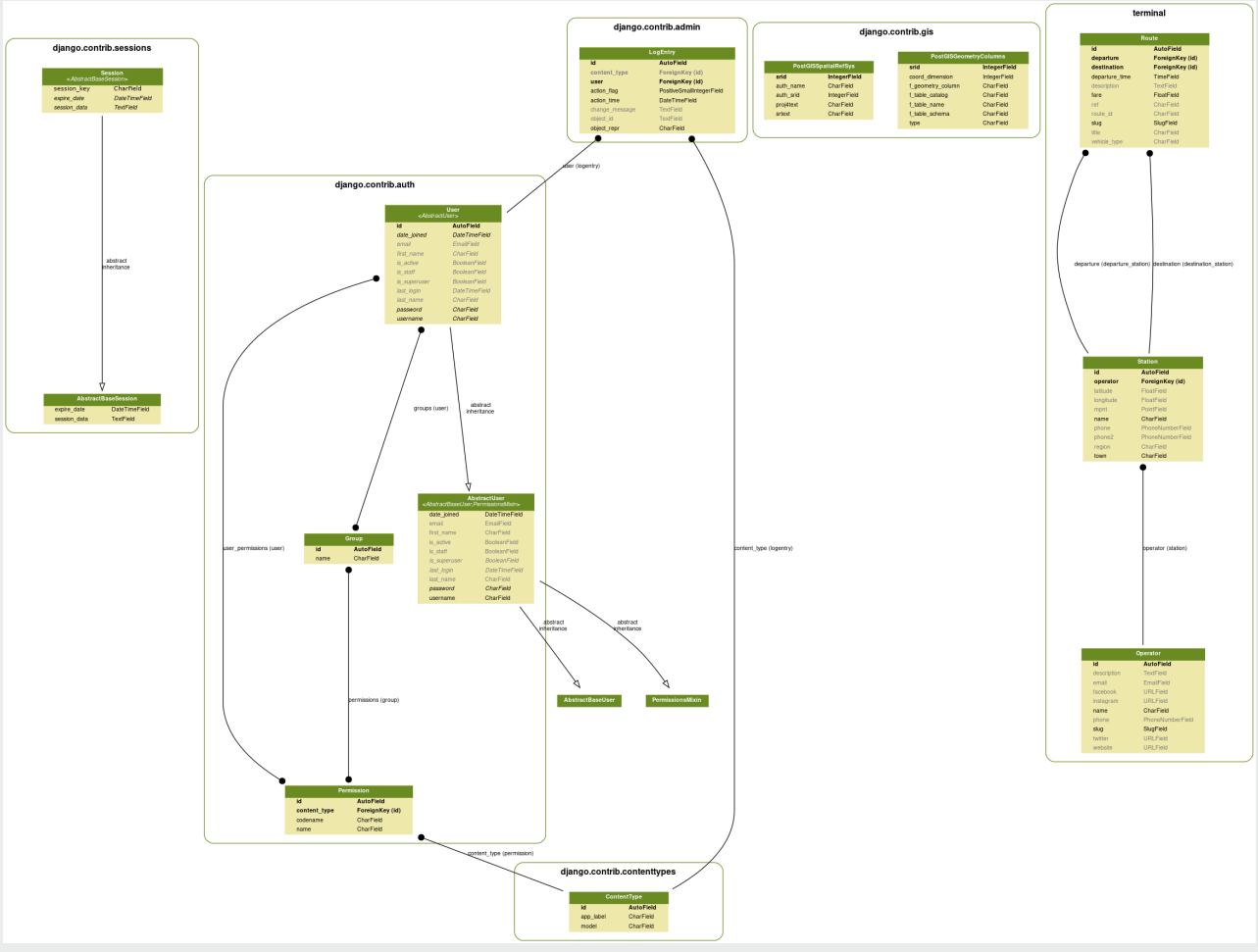

Figure 2: Class Diagram

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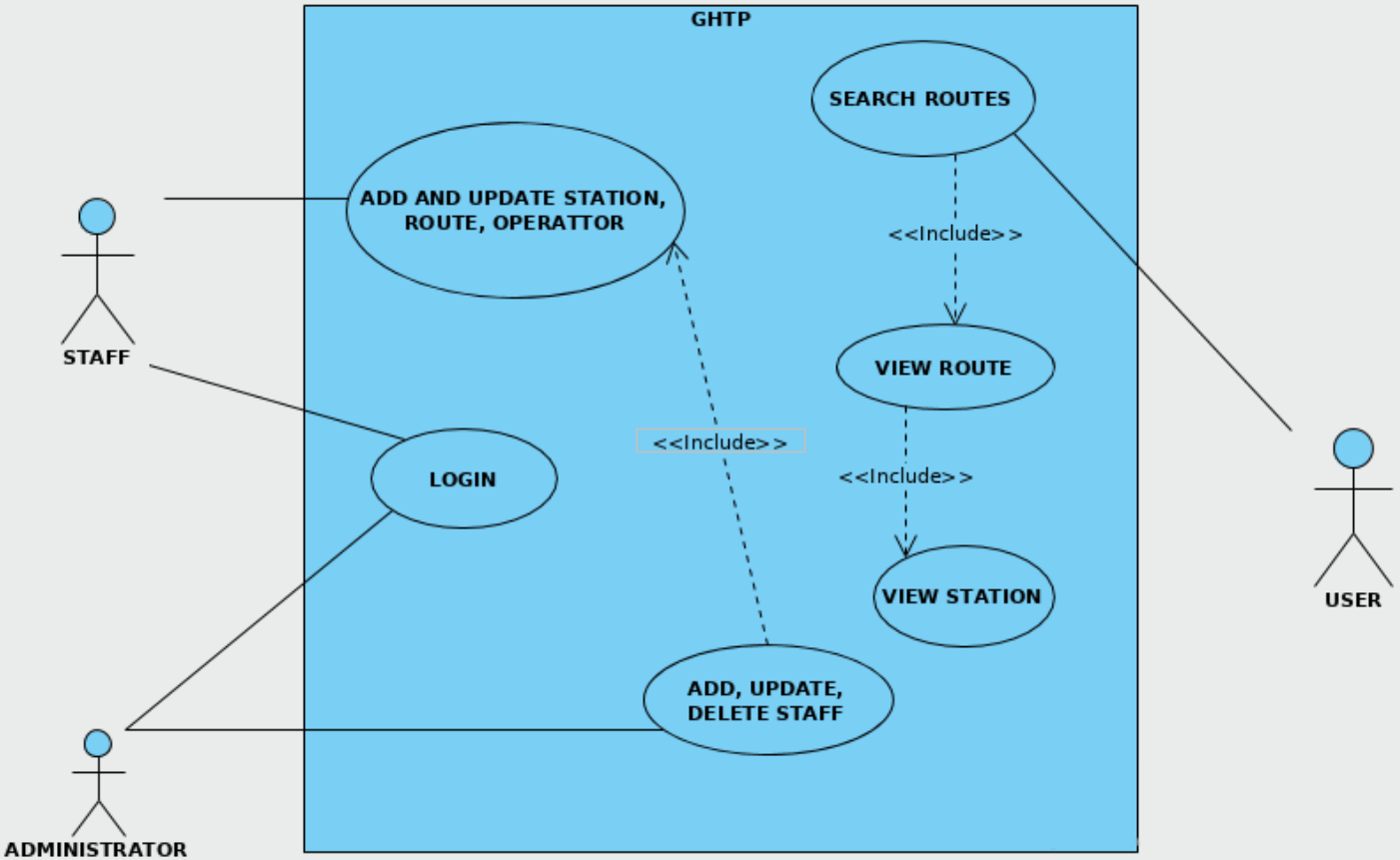

Figure 3: Use Case Diagram

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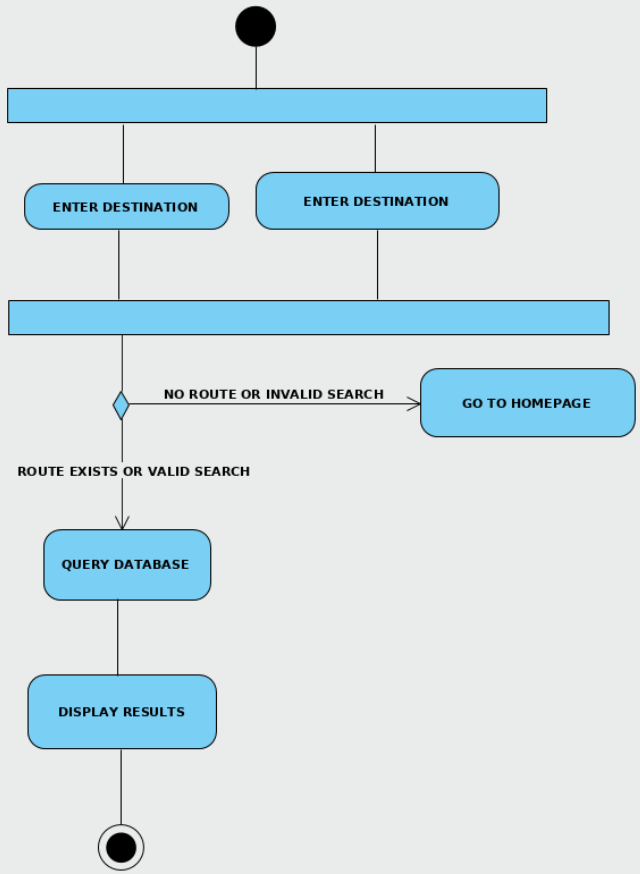

Figure 4: Activity Diagram

TOOLS USED

- ⋆ Python.
- ⋆ Django.
- ⋆ Material Kit.
- ⋆ PostgreSQL.
- ⋆ QGIS.
- ⋆ Leaflet and OpenStreetMap.
- ⋆ Open Source Routing Machine (OSRM).
- ⋆ GPS receiver and Smartphone.

RESULTS AND DISCUSSIONS

The results and discussions:

- ⋆ User gets routes based on destination and departure searched.
- ⋆ A user can access all available operators and view detailed information on each station.
- ⋆ User can compare fares visually.
- ⋆ A user is able to access station location in external platform.
- ⋆ Groups for managing staff privileges.
- ⋆ Detailed history of changes available in administration dashboard.
- ⋆ A geospatial database.

DEMONSTRATION

GHTP

CONCLUSIONS AND RECOMMENDATIONS

It can be concluded that this system:

- ⋆ Will improve trip planning and easy access to information only available within terminals to travellers hence saving time.
- ⋆ Should be adopted by Ghana Tourism Authority to help tourists find their way around Ghana transport network.

I would recommend that:

- ⋆ Users should be able to book seats from the platform and also support voice input for the visually impaired.
- ⋆ The system could get users current location and find nearest departure stations for their routes.

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THANK YOU