

# 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



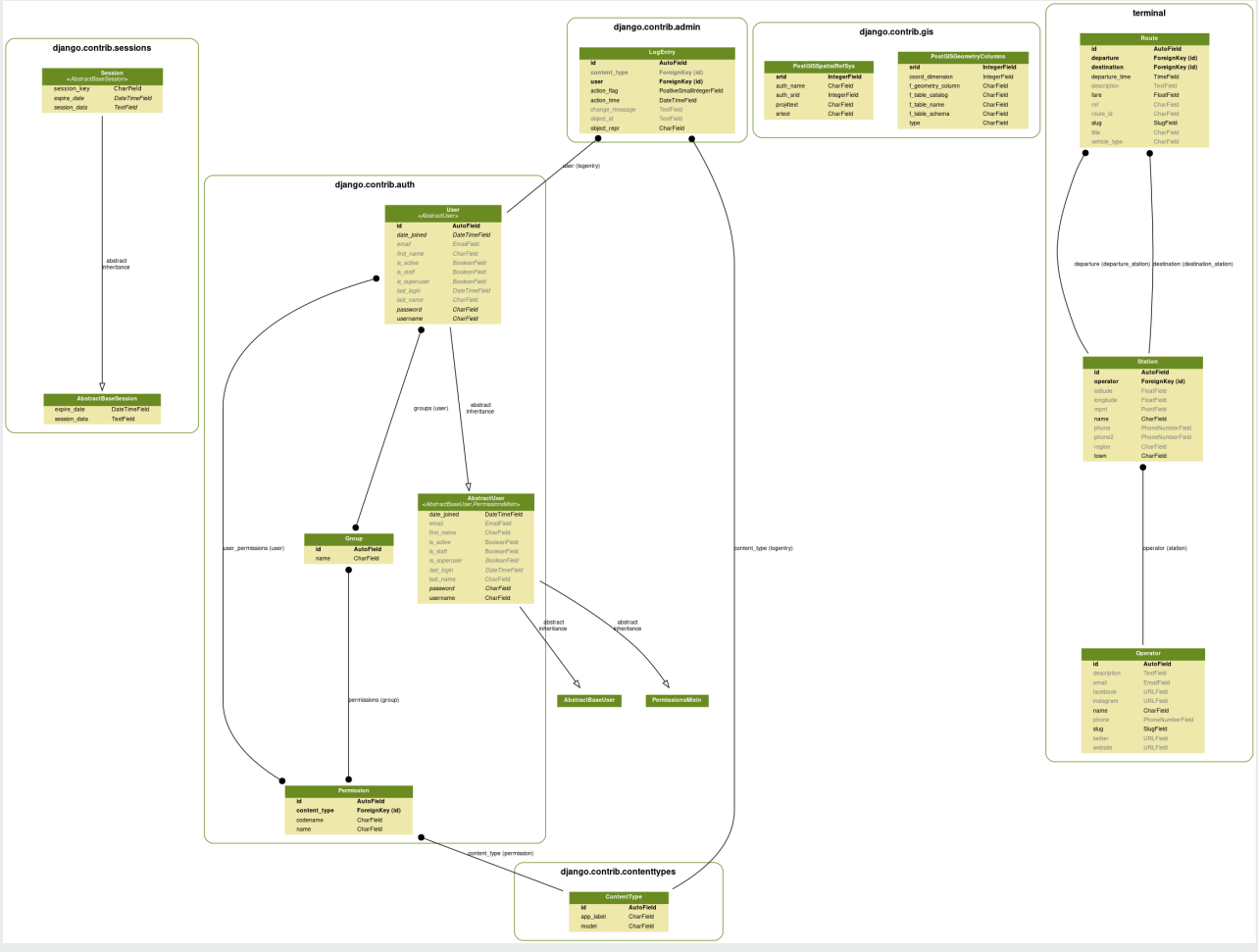


Figure 2: Class Diagram

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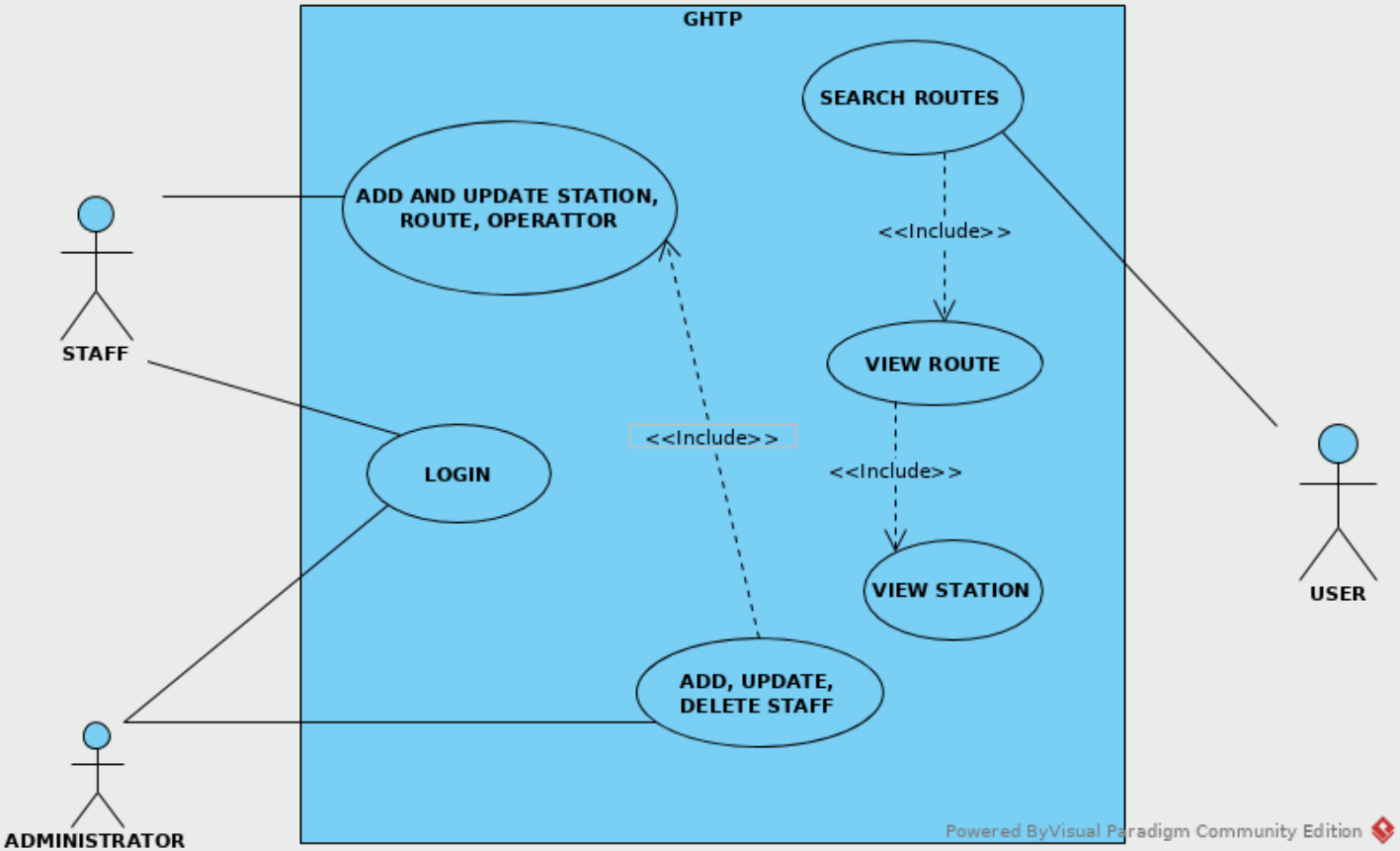


Figure 3: Use Case Diagram

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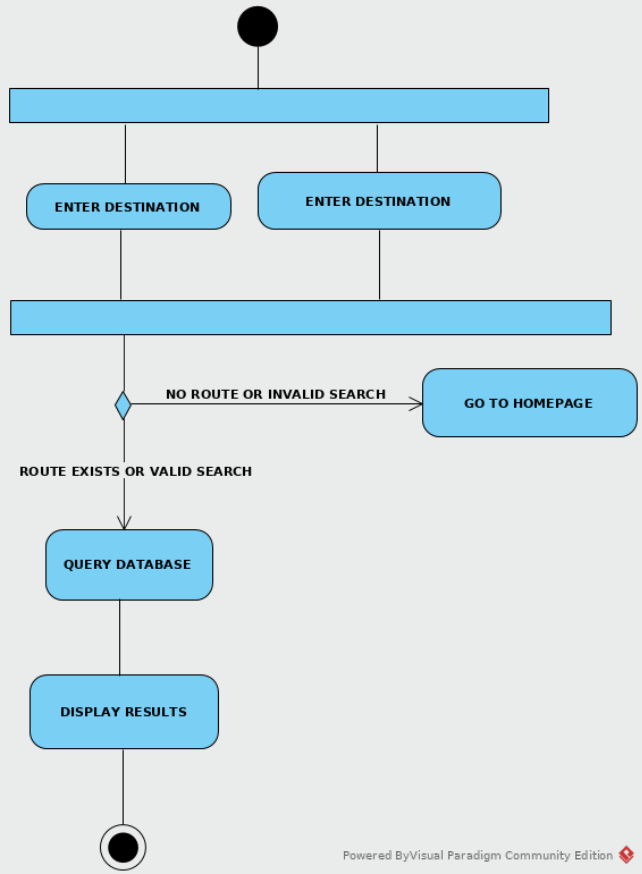


Figure 4: Activity Diagram

# 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