DEVELOPMENT OF INFORMATION SYSTEM COMPONENTS FOR MANAGEMENT OF BUS TRANSPORTATION PROCESSES

Pekaruk I. O.

Supervisor – doctor of technical sciences, professor Grebennik I. V.

Kharkiv National University of Radio Electronics,

System Engineering Department

email: illia.pekaruk@nure.ua

This article conducts an analysis of the subject area concerning the development of information system components for the management of bus transportation processes. It aims to define the primary objectives of the work, including identifying key business requirements crucial for efficient bus transportation management. Furthermore, it entails selecting appropriate technologies tailored to meet the demands of the project. Overall, this work would be will be beneficial to stakeholders involved in the development and management of bus transportation systems.

Bus transportation has historically been a favored mode of travel among passengers, particularly for short distances, offering unparalleled convenience in boarding and alighting, flexible routes, and cost-effective fares compared to rail transportation, which typically caters to long-distance journeys. Moreover, the extensive road network coverage enhances the appeal of bus transportation, reaching more cities and towns than rail services.

In the past, passengers predominantly favored bus transportation services by purchasing tickets at ticket offices. However, the landscape has since evolved with the emergence of numerous private carriers.

In the era of modern technological advancements, the imperative for automation in bus transportation processes is undeniable. Technological progress allows us to create efficient and convenient tools for ordering tickets and further processing them.

Therefore, the aim of the work is to design and develop a straightforward web application for ticket ordering, one that remains economically accessible while prioritizing user comfort and efficient post-ticket-order processing.

Designing and creating such an application requires careful analysis and selection of technologies.

The methodological approach used includes a thorough review of existing literature on information systems, complemented by the utilization of modern software development frameworks for system design and implementation. The chosen technologies must fulfill criteria encompassing efficiency, scalability, and security.

The expected outcome of this work is to contribute to the advancement of information systems by providing a solution capable of enhancing the efficiency

and effectiveness of bus ticket bookings while systematizing transportation operations.

In the field of bus transportation, numerous companies are operating both internationally and within Ukraine. Among the most popular are Autolux and FlixBus. Autolux is a Ukrainian company offering intercity and international routes. FlixBus is a German company with one of the largest bus transportation networks in Europe. FlixBus is known for its affordable prices and passenger conveniences.

After analyzing the main competitors and evaluating their solutions, best practices were identified, as well as potential improvements in existing solutions. On this basis, the following business requirements were formulated for further design of the information system components:

– provide a user-friendly interface for ordering bus tickets;

– provide authorization and registration for customers;

– provide an intuitive interface for flight and ticket administration;

– develop a user-friendly interface for ticket validation and passenger accounting by drivers during trips.

These business requirements will be further divided into specific business processes.

At the moment, according to the prescribed business requirements, the types of users who will interact with the information system have been formed: passenger (guest or registered user), system administrator, driver. Future iterations may involve subdividing system administration into distinct roles, such as route management and order management.

Before starting the development of an information system for managing bus transportation processes, it is important to carefully select the technologies that best meet the needs of the project and ensure its successful implementation.

At the stage of technology selection, it was decided to use the Intellij IDEA development environment. To implement the server side, it was decided to choose the Java programming language using the powerful and widely known Spring framework. As for the client side, it was decided to use Angular, which will provide a multifunctional and efficient user interface. In turn, the Postgres database was chosen to work with databases, which is known for its reliability and capabilities to optimize work with large amounts of data.

References:

1. FlixBus, about company. URL: https://www.flixbus.com/company/about-us.

2. Spring Guides. URL: https://spring.io/guides#topicals.

3. Angular Documentation. URL: https://angular.io/docs.

4. PostgresSQL Tutorial. URL: https://www.postgresql.org/docs/online-resources/.