

Faculty of Information Technology

Computer Science Department

***Computer Science***

Project Title

Graduation Project **1** Report

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**BSc in Computer Science**

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Middle East University

Declaration

We hereby acknowledge that the work presented in this document report and the ideas based upon are the group members own unless stated otherwise and properly cited in text and referenced at the end of the document.

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| **Supervisor Approval موافقة المشرف** |
| **APPROVAL FOR SUBMISSION**  I certify that this project report entitled **Geta3kom** was prepared by **Yazeed Mwafi, Laith Jaber and Alaa Al-Hmoud** has met the required standard for submission in partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science at MEU.  Approved by  Signature: ……...……..………………………..................  Supervisor: Dr…..…….…………………………………  Date: ……………..……………………………………… |
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| **Abstract (English) المستخلص (إنجليزى)** |
| **Geta3kom**  This project proposes the development of an online marketplace specifically designed for buying and selling vehicle parts in Jordan. Addressing the inefficiencies of the current market, which include limited accessibility, lack of transparency, and inefficiencies in the distribution of vehicle parts, this platform aims to provide a user-friendly, efficient, and secure environment for transactions. Key features will include an advanced search mechanism and a user verification system to ensure the authenticity of parts and transactions. By leveraging web development technologies such as React for the frontend and Node.js for the backend, along with MongoDB for database management, this marketplace is positioned to significantly enhance the vehicle parts trade in Jordan. The project aligns with global trends towards digitalization of niche markets and aims to offer both consumers and sellers a reliable, accessible, and streamlined platform to conduct their transactions. |
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| **Abstract (Arabic) المستخلص (عربى)** |
| **قطعكم**  يقترح هذا الشروع تطوير سوق إلكتروني مصمم خصيصا لشراء وبيع قطع غيار السيارات في الأردن. بهدف معالجة عدم كفاءة السوق الحالية، التي تشمل الوصول المحدود، ونقص الشفافية، وعدم كفاءة توزيع قطع غيار السيارات، تهدف هذه المنصة إلى توفير بيئة سهلة الستخدام وفعالة وآمنة للمعاملات. من الميزات الرئيسية التي ستشملها النظام آلية بحث متقدمة، خيارات دفع آمنة، ونظام تحقق من المستخدمين لضمان أصالة القطع والعاملات.  من خلال الاستفادة من تقنيات تطوير الويب مثل (React) لواجهة المستخدم و (Node.js) للخادم الخلفي و (MongoDB) لادارة قاعدة البيانات. يتم وضع هذا السوق لتعزيز تجارة قطع غيار السيارات في الأردن بشكل كبير. يتماشى المشروع مع الاتجاهات العالمية نحو رقمنة الأسواق المتخصصة ويهدف إلى توفير منصة موثوقة وسهلة الوصول ومبسطة لكل من الستهلكي والبائعي لاجراء معاملتهم. |
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# Terminologies

# Chapter 1: Introduction

This chapter is about illustrating the description of the challenge of Solving the absence of a Geta3kom, related work to be done and the technology and tools that were going to use later so we can implement our website.

## Background and Context

**Current Landscape of Vehicle Parts Sales in Jordan**

The automotive market in Jordan, characterized by a substantial number of both new and old vehicles, faces a significant challenge in maintaining these vehicles due to a fragmented vehicle parts supply chain. Traditional channels for obtaining vehicle parts include brick-and-mortar stores, repair shops, and informal markets. These channels often fail to meet customer needs due to limited stock, the rarity of parts for older or less common models, and regional availability discrepancies. Challenges Faced by Consumers and Sellers Consumers often struggle with locating specific parts required for their vehicles. The challenges include high costs, variable pricing, and significant time investments in searching for the right part. Sellers, on the other hand, are hindered by limited market reach, difficulties in inventory management, and intense competition, which may lead to unsustainable pricing strategies and business operations.

**Challenges Faced by Consumers and Sellers**

Consumers often struggle with locating specific parts required for their vehicles. The challenges include high costs, variable pricing, and significant time investments in searching for the right part. Sellers, on the other hand, are hindered by limited market reach, difficulties in inventory management, and intense competition, which may lead to unsustainable pricing strategies and business operations.

## Description of the Challenge/Problem/Opportunity

The vehicle parts market in Jordan is plagued by inefficiencies that impact both buyers and sellers. Existing platforms for vehicle parts sales are generally nonspecialized, leading to poor user experiences.

## Key issues include:

## Inadequate search functionalities fail to offer efficient, accurate results.

## Lack of a reliable verification system for parts authenticity.

## Limited customer outreach, especially in less urban areas.

Consequences: Lost sales opportunities, customer dissatisfaction, decreased market efficiency.

## Description of the Suggested Solution

The proposed solution is to develop an online marketplace specifically designed for the sale and purchase of vehicle parts in Jordan. This platform will address the identified gaps by offering:

* User-friendly Interface: Designed to enhance the shopping experience and make navigation intuitive.
* Advanced Search and Filter Options: To allow users to find parts based on specific criteria such as make, model, year, and part condition.
* Secure Payment System: Incorporating reliable payment gateways to ensure transaction security.
* Verification Mechanism: Establishing a system to verify the authenticity and condition of parts listed on the platform.

## Literature Review (related work)

A review of existing literature and similar platforms highlights several key points:

* Global Practices: Examination of successful online marketplaces shows a trend towards specialized platforms that cater specifically to niche markets, including automotive parts.
* Technological Advances: Studies indicate that platforms incorporating advanced search algorithms and machine learning for recommendation systems significantly enhance user satisfaction and sales.

This review helps in understanding the existing solutions and their shortcomings, forming a basis for the proposed enhancements.

## Technology and tools to be used.

**Technologies**

**Web Development Frameworks**: Utilizing React.js for frontend development due to its component-based architecture, and Node.js for the backend for its robustness and simplicity.

**Database Systems**: MongoDB will be used for its reliability and support for complex queries necessary for an extensive inventory system.

**APIs**: Integration of Google Maps for location services and Stripe for payment processing to enhance functionality.

**Tools**

**Project Management**: Asana will be used for tracking progress and managing tasks.

**Communication**: Slack will serve as the primary communication channel among team members.

**Version Control:** Git, hosted on GitHub, will be used to manage and document all changes in the codebase.

## Organization of the Report

The report will be organized into subsequent chapters as follows:

* **Chapter 2**: Project Plan - Detailed project objectives, scope, methodology, schedule, and team structure.
* **Chapter 3**: Requirements and Analysis - Comprehensive analysis of functional and non-functional requirements.
* **Chapter 4**: Architecture and Design - In-depth look at system architecture and design specifics, including diagrams and system workflows.
* **Chapter 5**: Conclusion & Future Work - Evaluation of the project’s success against its objectives, discussion of encountered challenges, and suggestions for future enhancements.

# Chapter 2: Project Plan



## Project Objectives

1. **Create a User-Friendly Interface:** Design and implement an intuitive and easy-to-navigate interface that enhances user experience for buyers, sellers, and administrators. The interface should minimize the user's effort to perform tasks such as searching for parts, listing items for sale, and managing transactions.
2. **Develop Comprehensive Search and Filtering Capabilities:** Enable users to find the vehicle parts quickly and efficiently they need by implementing advanced search functionalities that include multiple filtering options (e.g., make, model, part type, price range, and location).
3. **Ensure Robust Security Measures:** Implement strong security protocols to protect user data and transaction information. This includes secure login processes, data encryption and compliance with relevant data protection regulations.
4. **Optimize Mobile Accessibility:** Ensure the marketplace is fully responsive and optimized for mobile devices, providing a seamless user experience across all platforms (desktop, tablets, and smartphones) to increase accessibility and usage.
5. **Streamline the Seller Listing Process:** Develop a streamlined process for sellers to list their vehicle parts, including easy-to-use tools for uploading product information and images, setting prices, and managing inventory.
6. **Incorporate Real-Time Data Updates:** Ensure that the platform can handle real-time updates to inventory and prices, allowing both buyers and sellers to have up-to-date information, which is crucial for maintaining the accuracy and reliability of the marketplace.
7. **Achieve High Customer Satisfaction:** Aim for high levels of customer satisfaction by providing reliable customer support, detailed product descriptions, user reviews, and a straightforward returns policy. Measure satisfaction through regular user feedback and adjust the platform functionalities based on this feedback.
8. **Launch with a Comprehensive Database of Listings:** Launch the platform with a comprehensive database of vehicle parts listings to ensure that it is immediately useful to a broad user base. Prioritize popular and commonly sought-after parts to establish a strong initial user base.

## Project Scope

**Inclusions**

1. **Website Development**

* Frontend and Backend Development: Build a comprehensive platform with distinct front-end user interfaces and backend services.
* Responsive Design: Ensure the website is fully responsive and optimized for various devices, including desktops, tablets, and smartphones.

1. **User Account Management**

* Multiple User Roles: Implement differentiated access and functionalities for three primary user types: administrators, sellers, and buyers.
* Profile Management: Users can create profiles, manage settings, and view their activity history.

1. **Search and Filtering Systems**

* Advanced Search Capabilities: Develop a robust search engine within the site that allows users to search for vehicle parts based on multiple criteria like make, model, year, condition, and price.
* Filtering and Sorting: Include filtering options to refine search results further, enhancing user experience and search efficiency.

1. **Transaction Management**

* Secure Payment Processing: Integrate secure payment gateways that handle transactions safely and efficiently.
* Order Tracking: Provide functionality for buyers and sellers to track the status of orders and transactions within their account dashboard.

1. **Security Features**

* Data Encryption: Implement encryption for sensitive data transmission and storage.
* Secure Authentication: Utilize secure authentication methods, including options for two-factor authentication.

1. **Administrative Dashboard**

* Moderation Tools: Tools for admins to manage listings, users, and site content.
* Analytics and Reporting: Features for tracking site usage statistics, sales data, and user activity.

**Exclusions**

1. **Mobile Application**

* The initial phase of the project will not include a dedicated mobile application. The website will be mobile-responsive, providing a similar user experience on smartphones through the browser.

1. **Internationalization**

* The marketplace will initially focus on the Jordanian market and will not include multi-language support or handle international transactions in its first release.

1. **Third-Party Integrations**

* Initial launch will limit third-party integrations; for instance, integrations with external logistics or inventory management systems will not be included.

1. **Real-Time Communication**

* Features such as real-time chat between buyers and sellers will not be included in the initial rollout to simplify the development and focus on core functionalities.

**Limitations**

1. Scalability : While designed to be scalable, the initial deployment might not handle extremely high traffic or data loads. Scalability will be addressed based on growth and demand.
2. Feature Expansion : Additional features such as a recommendation engine, machine learning for predictive analysis, or augmented reality views of parts are considered future enhancements and are outside the initial project scope.

## Software Process Model

## Project Schedule

## Project Schedule Chart(s) (Bar/Gantt Chart) - Including Team Structure and Roles

# Chapter 3: Requirements and Analysis



## Functional Requirements

## Non-Functional Requirements

# Chapter 4: Architecture and Design



## Architecture

## Use Case Diagram

## Use Cases Descriptions/Flow of Events

## Activity Diagram

## Class Diagram

## Entity Relationship Diagram

# Chapter 5: System Implementation



## Development Environment

## Database Implementation

## User Interface Implementation

## Functionality Implementation

## Integration of External Services/APIs

## Security Measures

## Performance Optimization

# Chapter 6: System Testing and Installation



## Introduction to Testing and Evaluation

## Testing Strategy

## Unit Testing

## Integration Testing

## System Testing

## User Acceptance Testing (UAT)

## Performance Testing

## Security Testing

## Usability Testing

## Installation Process

## Validation of Requirements

# Chapter 7: Conclusion & Future Work



## Summary of Achievements

## Evaluation of Project Goals

## Limitations and Challenges

## Recommendations for Future Work

## Concluding Remarks

# References

Cite all ideas, concepts, text, data that are not your own **in the document**

If you make a statement, back it up with your own data or a reference.

All references cited in the text must be listed **here**

Do not use footnotes.

Citation format: **Harvard [Numbers]**

# Appendices