**Car Rental System**

**Project Description**

**Created by:**

**Anatolie Dunai – 269643**

**Dumitru Rares Bunea – 266983**

**Vladimir Rotaru – 266914**

**Dragos Sirbu – 266500**

**Supervisor:**

**Jakob Knop Rasmussen**

**ICT Engineering**

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# Background description

The car rental industry has been in existence for almost a century and it is continuously growing. According to Zion Market Research 2017, the future of the car rental industry is bright. In 2016, the global car rental market was estimated at approximately 58.26 billion USD and is expected to grow at a CAGR (Common Annual Growth Rate) of around 7.5% between 2018 and 2024. By 2022, the market is expected to reach approximately 124.56 billion USD. This is, mostly due to the growth of travel and tourism.

According to the World Travel & Tourism Council’s (WTTC) annual research into the economic impact and social importance of the sector, the global Travel & Tourism sector grew 3.9%, to contribute a record 8.8 trillion and 319 million jobs to the world economy, in 2018 alone. Thus, the increase in the buying power of consumers, combined with the low-cost prices in the airline industry, directly influenced the growth in the car rental market.

Despite the continuous growth and improvement in the sector, many rental companies still follow old-fashioned ways of operating. This is also the case for “Car Rental DK” A/S. The company has very little online presence, serving clients mostly in-person, at their offices. This has a negative influence on their revenue. Nowadays, clients try to avoid, as much as possible, queues and time-consuming bureaucracy at the car rental desks. Not to mention the language barrier in some cases. Instead, clients prefer to reserve a car online, from their home, in a fast, easy and secure way.

# Definition of purpose

The purpose of the project is to get rid partially/completely of the car rental desk, by providing an all-online, fast, reliable and easy-to-use system.

# Problem Statement

**What can be done to offer the customer a fast, easy and secure car renting experience?**

* What is the best way to rent a car?
* What customer information should be required in order to rent a car?
* How to make sure that all the customer’s credentials remain secure?
* How to make sure the customer will not be able to steal rented cars?
* How to make the system maintainable?
* How to make the system scalable?

# Delimitation

* There will be no direct communication between the system and the physical cars (the customer will not be able to unlock the rented car using the system)
* The system will not be able to block access to the car once the rented period has expired
* The system will not be able to track each rented car’s location.

# Choice of models and methods

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| What  (partial problem) | Why  (study this problem – related to the purpose of the project) | Which  (level of the outcome is expected; 1 to 10) | Which  (methods/models /theories will be used) | Who  (in the group is the main responsible person for this point) |
| What is the best way to rent a car? | To ensure a fast and seamless user experience. | 9 | Online search.  In-book search.  Interviews. | Everyone |
| What customer information should be required in order to rent a car? | To make renting as fast and efficient as possible. | 9 | Market study.  UML class modelling and class diagram. | Everyone |
| How to make sure that all the customer’s credentials remain secure | To avoid data breaches, theft of personal information and credit card information. | 9 | SSL (Secure Socket  Layer) | Everyone |
| How to make sure the customer will not be able to steal rented cars? | To ensure every car is returned and there is no loss for the company. | 8 | Location APIs. | Everyone |
| How to make the system maintainable? | Easy to include new cars in the system. | 5 | Use Case modelling and class diagrams.  Design patterns.  ER diagram. | Everyone |
| How to make the system scalable? | High performance.  Maintainability.  Possibility of expansion. | 5 | UML class modelling and class diagrams for a large-scale system with the ability to be used in a small scale.  Design patterns. | Everyone |

# Time schedule

# Risk assessment

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Risks** | **Description** | **Likelihood Scale** | **Severity Scale** | **Preventive & Responsive actions** | **Identifiers** | **Responsible** |
| Risk 1 | Crossing the deadline | 1 | 5 | The team will use system development tools that allow us to plan every step and track our progress | Delays, wrong estimation, not finishing sprints, unplanned work | Every team member |
| Risk 2 | Lack of time | 2 | 4 | The team will prioritize project work over other things | Absence on meetings, not finishing tasks on time | Every team member |
| Risk 3 | Lack of experience/knowledge | 3 | 2 | Additional research (Google, StackOverflow, Books). | The team does not possess the necessary skills to finish a task | Every team member |
| Risk 4 | Lack of/bad teamwork skills | 2 | 3 | The members will work together during work meetings | Miscommunication between members, no relation between tasks | Every team member |
| Risk 5 | Wrong planning | 1 | 2 | The team will create correct requirement and/or product backlog | Unplanned work appears | Every team member |
| Risk 6 | Not fulfilling project requirements | 1 | 4 | Good planning, division of tasks, daily member updates. | Some parts of the system are missing or are not possible to implement | Every team member |

# Sources of Information

*Car Rental Industry Trends in 2018*

*Available at:* <https://b2b.car-target.com/car-rental-industry-trends-2018/>

*CAR RENTAL MARKET - GROWTH, TRENDS, AND FORECAST (2019 – 2024)*

*Available at:* <https://www.mordorintelligence.com/industry-reports/car-rental-market>

*3 Facts About the Car Rental Industry*

*Available at:* <https://thenewswheel.com/3-facts-about-the-car-rental-industry/>