Islamic University Faculty of Computer and Information Systems		الجامعة الإسلامية كلية الحاسب الآلي ونظم المعلومات

Software Engineering
Project Part 1: Lab Report
Second Semester 2021-2022
Deadline Lab Report: February 21, 2022

Project Title: **CarDNA: Gather Cars Accidents Data from Cars Workshops**

Supervisor Name: Abdullah Alsuhaibani

Section: 2421

	Student Name	ID	Chapters
1	Mohammed Raef Dhahir	392024823	1,2
2	Essam Anwar Khalil	392024443	2
3	Omar Khan	391007603	1

Chapter	Points Assigned	Points Awarded		
		#1	#2	#3
1	**6**			
2	**4**			
Total	**10**			

Note:

- Please include this lab report sheet at the beginning of your report.
- Plagiarism: a mark of **Zero** will be given.
- Submitting after the deadline is subject to a penalty as follows:
  - On the submission day, but after the submission hour: (- 5%)

The project part one must include the following chapters as well as the main points in each chapter:

Chapter 1: Introduction should include: (2-4 pages)

- Introduce the problem statement of your system.
- Aims and Objectives: The goals of the project must be clearly stated. There might be sub goals besides the main ones.

- Proposed Solution: introduce the solution of your problem and clarify the limitations if any.
- State the functional and non-functional requirements.
- Gathering Information: Description of stakeholders & how to gather information by using known technique.
- Tools and Software: that tented to be used in your project.
- Project plan: /schedule and assign deadlines along with milestones using project management tool (for example Gantt Chart).

<u>Chapter 2:</u> Related Work should include (2-3 pages)

- The previous studies and works: In this section, previous relevant studies and the applicable works should be mentioned in the form of a critical discussion, analysis, showing an awareness of different arguments, and approaches with clarification for their importance to the project.

- Overall, the purpose of related work is to define and limit the problem, avoid unnecessary duplication, select the promising methods and to relate student's findings to previous knowledge and identify areas which need further works.

Chapter 1

1.1 Problem Statement

Cars' status, like accidents, do not have resource of data -in MENA region at least- from cars workshops, all gathered data in this point is coming from Government Agencies, cars insurance companies and official cars agencies workshops which do not collect data about the majority of repaired cars, and do not go depth in mechanical details about that repair. So, there are a lot of shortage in collected data about cars which stands as an obstacle inface of car checking softwares.

1.2 Aim and Objectives

Aim: provide data source for car checking software in way of helping this kind of softwares to be used effectively used in MENA region.

Objectives:

- Design a suitable website for workshops technicians.
- Implement sign up and login system for workshops.
- Implement a form filled with car fixes by logged in workshop.
- Implement a view of done fixes for a car which available for non-logged users.
- Form a data source for Government, cars agencies, and cars insurance companies from normal cars workshops.

1.3 Proposed Solution

Implement a dynamic website suitable for workshops technicians to collect data from any workshop to be accessed anywhere anytime.

1.4 State the functional and non-functional requirements

1.4.1 Functional requirements

1.4.1.1 Create a New Account

New user must fill this information to complete creating account process

Nationally, Nation ID (must be 10 digits), user first name, middle name, last name, date of birth (day/month/year), gender (male or female), Email address, Commercial activity license number, city of commercial activity license (list of cities in Saudi Arabia), location of workshop, password and re-enter password (contain 8 characters at least and must password equals re-entered password) else it should display error massage that tell user what is the error and ask him/her to re-enter password in correct way, if all information are correct then user will be redirect to Verify new user information.

1.4.1.2 Verify new user information

Here the information provide by user will be verify
- National ID (is existed).
- Verify (name, birthday, gender) to ID holder information.
- Commercial activity license number (is existed).
- Verify (city, location) to Commercial activity license information

If verification process done, then new user activation email send to user email address to complete process and create new user.

1.4.1.3 Log in System

User can login by using National ID and enter correct password for the same account if there is any wrong error massage should display ask user to try again or click on forget my password.

1.4.1.4 Forget my password

Forget my password process will be trigger in two ways by user or by entering wrong password more than 5 times
The user will require to enter National ID and Email.
If Email is same as email associated with National ID, then password reset email will be sent.
The password reset email will contain URL to page where user will be able to change password by entering password and re-enter password (contain 8 characters at least and must password equal re-entered password) else it should display error massage that tell user what the error is and ask him/her to re-enter password in correct way until he/she enter it in correct way.
Then user will be redirected to login page where he/she can login using National ID and new password

1.4.1.5 Enter accident information

Car accident information form separates to two section car information and accident information

- Car information:

car owner name (same as vehicles registration), car owner ID number (must be 10 num), chassis number, plate number (English latter only), car brand name, car name, made year, car color, car registration type

- Accident information: number of vehicle fix report, date of issue , place of accident in vehicle

1.4.1.6 Enter accident information

user can view car accident information by entering car chassis number then the system will check if there is accident information for entered chassis number if there is then information chassis number, plate number nglish latter only), car brand name, car name, made year, car color, car registration type , number of vehicle fix report, date of issue , place of accident in vehicle) will display to the user

1.4.2 Non-functional requirements

1.4.2.1 Reliability

System must be available to users most of time, system down time should be less than 30 minutes per year.

1.4.2.2 Safety

Accepted passwords should be following a password policy, Email verification code should expire after 5 minutes

1.4.2.3 Useability

The system must be eased to use, all interfaces in the system must follow known design principles (Gutenberg, fitt's law, Gestalt principles). Text size and color must be in known color harmony form.

1.5 Description of stakeholders & how to gather information

1.5.1 Stakeholders

System Owners:

people who going to invest in the project and fund its cost.

System Users:

people who are interested in using system, the targeted group for this system are car workshops owners and users who are interesting in knowing information about car accidents history.

Systems Analyst:

persons who are responsible to analysis the system requirement at this project the individual who is responsible for this task is Omer Khan.

System Designers:

persons who are responsible to design an easy to implementation prototype, in this project the individual who is responsible for this task is Essam Khalil.

System developer:

persons who are responsible to do implementation process and translate design to useable form, in this project the individual who is responsible for this task is Mohammed Dhahir.

1.5.2 Information gathering techniques

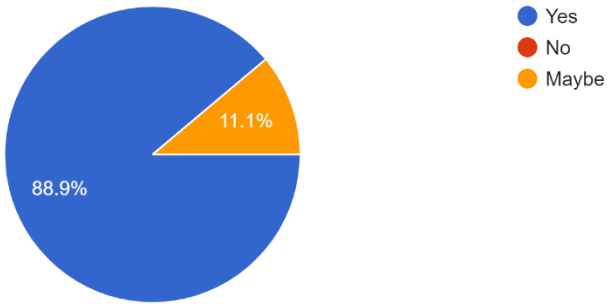
1.5.2.1 Distribute and Collect Questionnaires

we will Distribute and Collect Questionnaires to get an overview of end users' expectation from the application.

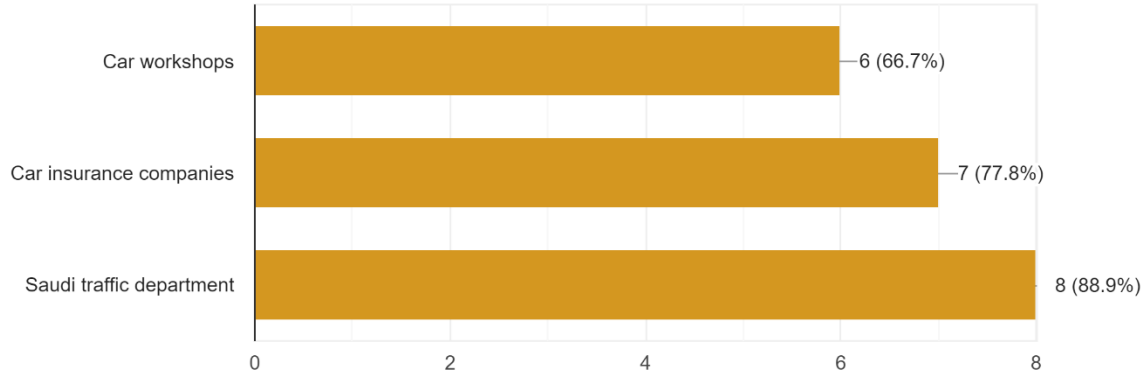
A questionnaire has been collected after being done upon a sample of people using cars and tried to repair their cars, questions were:

Do you think we need more data about cars and their accidents, repairs, and history?

9 responses

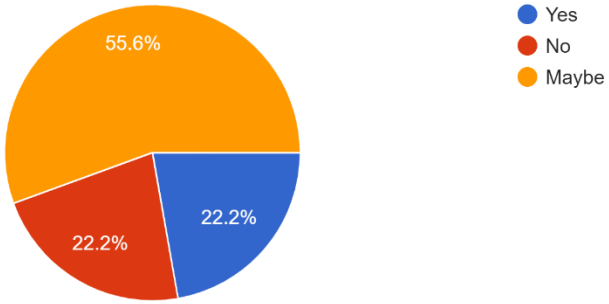


9 responses



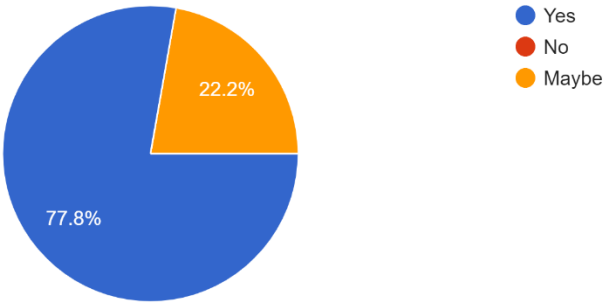
Do you see that data collected by insurance companies, which are some few malfunctions/damages are enough to know about your future car?

9 responses



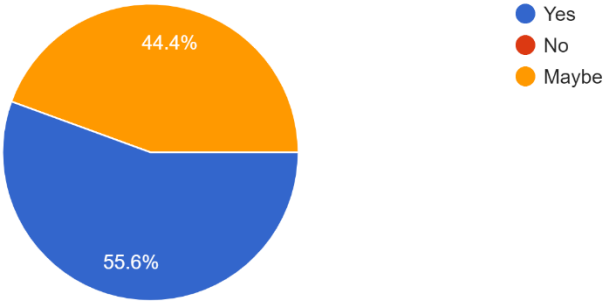
Do you think that there are a lot of repairs done to cars that only the car workshop which repaired the car is aware about it?

9 responses



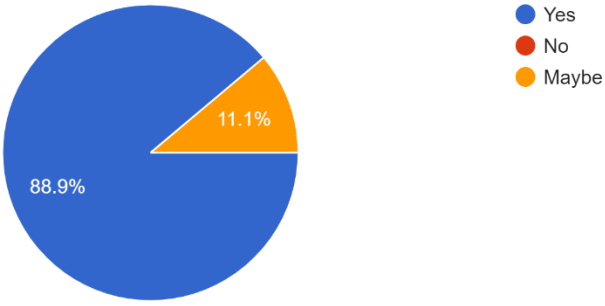
Do you think that all our traditional car workshops are abusable to forgery, especially when getting Repair Permission paper? Knowing that all workshops not digitally linked to Saudi traffic department.

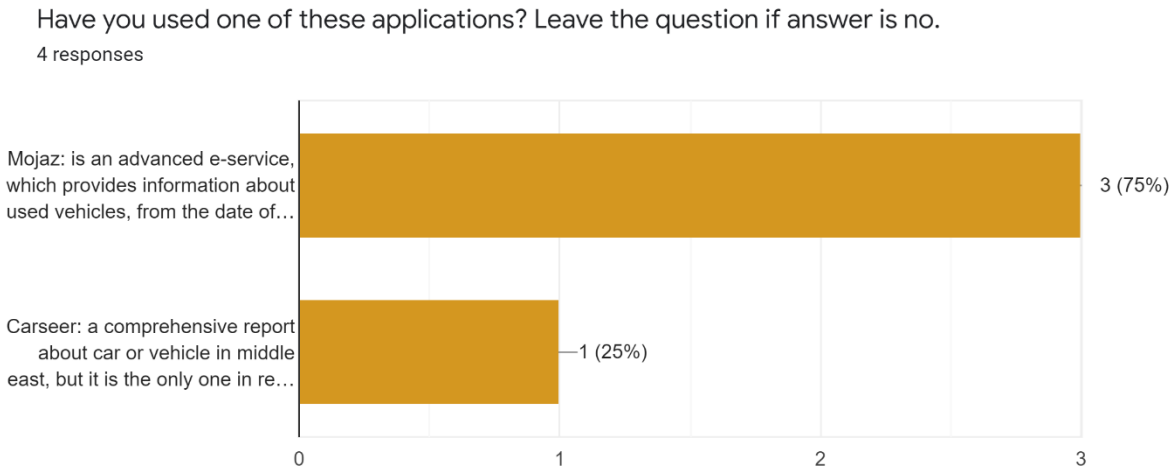
9 responses



If you want to buy a car and there was a free software available online to know all history about the car, would you use it?

9 responses





If you used one them, tell us about your experience please

1 response

Mojaz is giving all information but with a specific amount of money to see the past owners and the past accidents, but without a specific information about the accidents with the details

As we see, people were convinced that there is shortage in collecting data about cars' accidents and the concept of making cars' repairs more technical. So, sample as aware about the added value of the software/product.

1.5.2.2 Research Vendor Solutions

we will review other solutions that had be done in similar situations so we can get an overview about ideas and type of solutions that had been used also it will help us to gain abilities to avoid common mistakes and compares our solutions functionality to other solutions. These solutions are researched in Related Work section.

1.6 Tools and Software

Name	Type
flask	web framework
python	Programming Language
Bootstrap 5	HTML/CSS framework
SQLite	RDBMS
Git	Version control system
PyCharm	IDE
VS code	IDE

1.7 Project Plan

	Week 1 20-24/2	**Week 2** 27/2-3/3	**Week 3** 6-10/3	**Week 4** 13-17/3	**Week 5** 20-24/3	**Week 6** 27-31/3	**Week 7** 3-7/4	**Week 8** 10-14/4	**Week 9** 17-21/4	**Week 10** 24-28/4	**Week 11** 1-5/5
Information gathering											
Requirements engineering models											
Design system interface											
Design system components											
Design system Database											
Implement Sign up page											
Implement Login page											
Implement form uploading											
Implement car history search											
Test system											

Chapter 2

2.1 Previous studies and works

Bumper

‘Bumper’ provides vehicle history reports and ownership up to speed with modern times, vehicle records come from government agencies, insurance providers, car industry sources and more. From accidents and salvage records to vehicle specifications and market value, if a record exists, it will be reliable and up-to-date information.
running a vehicle history report was not easy. Introducing: 'Bumper' lets you set up alerts and be the first to know when something changes with a vehicle you're monitoring. Or check vehicle reports on mobile or desktop.
If you’ve ever purchased a vehicle history report, you might have experienced a shock. According to J.D. Power, car buyers spend a minimum of three months researching vehicles before purchase. At an average of $30 a report, you could spend upwards of hundreds of dollars simply researching. Bumper gives you unlimited reports for one low cost.

Carseer

‘Carseer’ is a Jordanian company established in 2015 as the first specialized company in the Middle East to provide the buyer with a comprehensive report in Arabic for the history of used vehicles. The report provides detailed information carefully collected from reliable and accurate global and local sources, including car agencies and government departments (the Traffic Department, the Licensing Department, and the Transportation Sector Regulatory Authority) in addition to insurance companies, maintenance centers, and other highly credible sources. ‘The Carseer’ Vehicle History Report contains all the information needed to assess the condition of the vehicle before purchasing it, such as accidents with damage points, vehicle photos, in addition to owner and usage information.
More than 100,000 users have benefited from ‘the Carseer’ report, and we have been able to collaborate with more than 100 global and local data sources and many maintenance records to ensure the accuracy

and quality of the local information provided in the report. ‘The Carseer’ report was approved for customs purposes in Jordan in 2017, and in the UAE in 2020. To verify the compliance of the vehicle's condition with local vehicle registration laws. Vehicles that are severely damaged are prohibited from registering in these countries.

Traditional workshops

In traditional workshops in our region, there are not any sense of technology in collecting the data about fixed cars. The car owner takes a paper of repair from Traffic Department to his car only and require the owner to fix his car in a distinct time interval to avoid any fraudulence. Then the workshop fix the car only if Paper of Repair is existed. The government **could** data about cars' fixes, but what appears is the Paper of Repair just informs the workshops to start fixing the car without any mention of damage location or technical failure. Then car is repaired with an agreement between the owner and the workshop. Despite what happens in Cars Agencies Companies where a report generated with all the fixes have been done to the car, but that report **could** be sent to Government/Traffic Department and could not in some cases.

So, our problem constitutes a previous step before the mentioned works in the subject area, which include getting data about cars and their fixes, accidents, and much more.

2.2 Overall view

In the current state of MENA region car workshops, no vehicle records are coming from them to know all repairs done on automobiles; instead, all vehicle records are coming from government agencies or insurance companies, therefore the car repair history is not fully known in these circumstances, because most of the repairs are done in car workshops disorganized and not formed or collected. In CarDNA we are going to create a website to collect vehicle records from the car workshops, using a specific format, that will make the workers and technicians in car workshops record all repairs they have done in the car and all these records are going to be collected and saved in our database so that anyone can know the vehicle repair record in an organized and secure manner. So, we are constituting a third-party between Traffic

Department and workshops, to build a bridge between car checking softwares and who queries info about cars and their conditions for many purposes, buying and selling is one of them.

Table of Contents