(b) Definition, investigation and analysis

(i) Definition – nature of the problem

Description of the client

My client is a teacher in NIS Aktobe, who additionally works as an entrepreneur. His name is Kairat Samatovich, and he fixes cars for about ten years, but recently (2019) he decided to open a little vehicle repair centre in his garage. He fixes light vehicles for some payment. Nowadays, there is only Kairat Samatovich who fixes cars, but in the future, he wants to expand his business because there is an increasing number of people who want to fix their cars at Kairat Samatovich's vehicle repair centre.

Methods currently in use

Nowadays, there is only Kairat Samatovich, who is in charge of all business operations and work. Currently, the process of booking consists of:

- Customers call him via phone or write him to book time;
- He checks his scheduler notebook and allocates book time;
- Additionally, he writes down all the problems and issues with car to be prepared before the session;
- Customer brings car and Kairat Samatovich does investigation;
- After analysing the car, he fixes it and installs all the required parts;
- Then the car is returned to its owner.

The source of all data

The client makes a list of needed details after diagnostics of the car. Diagnostic computer tests a car and shows all the problems with it. Then based on the computer's results, Kairat Samatovich writes the details which must be brought to his workbook. Data collection is a very relevant part of the job; that is why it should be done by himself only because data about a car's information contains many attribute data which must not be missed.

Types of data

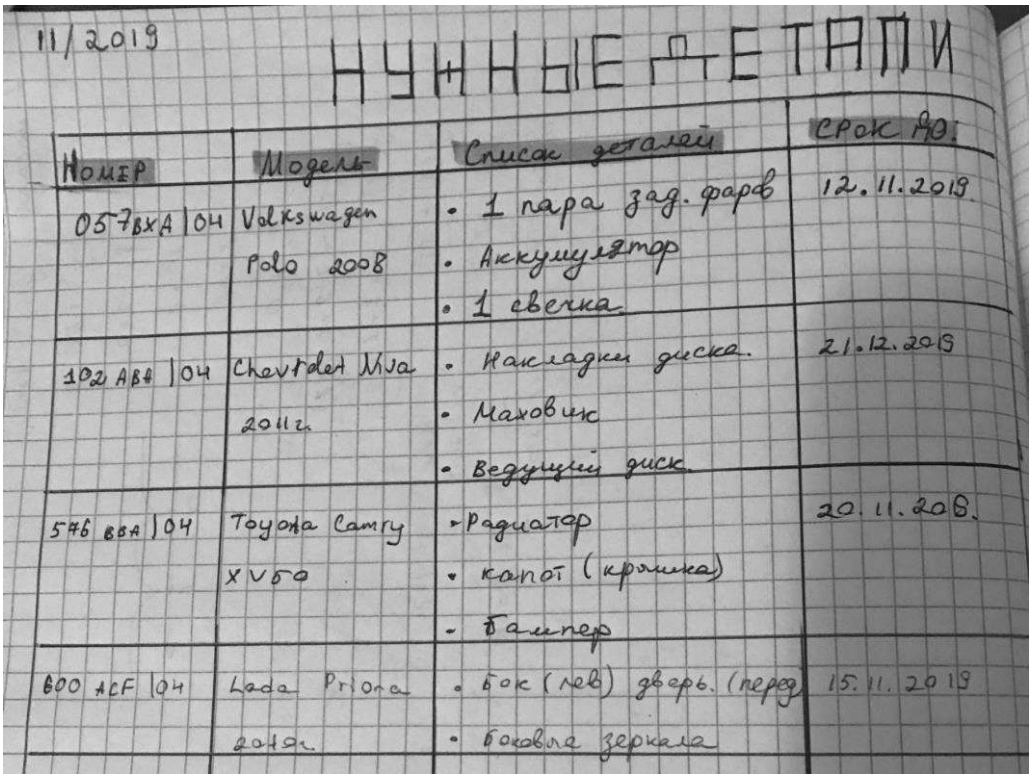
Data is stored in a workbook on a self-made table. The data is usually heard from customers or came after analysis of car diagnostics results. Then, that data is stored in a table in the workbook, because the relational model of the database is best suited for keeping input data. Afterwards, the stored data is used to buy new details.
There are tables which are used to keep data.

Table 1. Car data

CAR NUMBER	
CAR MODEL	
LIST OF BROKEN DETAILS	
DEADLINE DATE	

Table 2. Clients' data

NAME OF A CLIENT	
PHONE NUMBER	
CAR NUMBER(S)	


11/2019

НУЖНЫЕ ДЕТАЛИ

Номер	Модель	Список деталей	Срок до:
057 BxA 04	Volkswagen Polo 2008	• 1 пара зад. фарф • Аккумулятор • 1 свечка	12.11.2019
102 ABA 04	Chevrolet Niva 2011г.	• Накладки диска. • Маховик • Ведущий диск	21.12.2019
576 BBA 04	Toyota Camry XV50	• Радиатор • капот (крышка) • Бампер	20.11.2018.
600 ACF 04	Lada Priora 2012г.	• Бок (лев) дверь. (перед) • боковые зеркала	15.11.2019

Picture 1. (Table which stores car data)

СПИСОК КЛИЕНТОВ

ФИО	Номер тел	Номер(а) машин
Аскар Бекежов	87005450046	576 BBA 104
Амир Магруф	8776 556 01 55	455 AZA 104
		554 AZA 104
Болат Азаевич	8775 005 78 93	600 ACF 104
		102 ABA 104
Заманбек Иманов	8771 533 12 13	057 BXA 104

Picture 2. (Table with clients data)

(ii) Investigation

Investigation

In order to get more details about the project and to make a concept, I took a couple of interviews from Kairat Samatovich. The reasons why I chose this type of investigation(interview) are relatively time efficiency and ability to get a mass of additional information from clients.

Interview #1

Date 27.11.19
N: Nurdaulet Taumergenov
K: Kairat Samatovich

N: Hello, Kairat Samatovich.
K: Hi, Nurdaulet.
N: I would like to get information about your current business system and your wishes for the future system.
K: Of course.
N: Can you describe your current system of the business.
K: Hmm…. Usually, clients find my phone number with the help of friends and etc. Then they call me and discuss the relevant information. If I have available time on the schedule, I accept the client's order and the client gives his/her car for repair service. After that, I look for a car with broken mechanisms and fix them.
N: Ok… So, What is the problem you regularly face at repair service centres?

K: The problem is in the car details ordering/buying the part. A lot of car parts do not exist in our centre, so I have to buy it in the market, which is an annoying and time-consuming process.
N: Well… I guess that you need a system which will make that process much more comfortable, which will be able to replace the current system. Are there any additional requirements?
K: Yes, I am waiting for a system which will be easy and fast to use, the system that could save a lot of time which is wasted on looking for the right car part.
N: Ok, Thanks.
K: Goodbye!

Interview #2

Date 5.12.19
N: Nurdaulet Taumergenov
K: Kairat Samatovich

N: Hello!
K: Good afternoon, Nurdaulet.
N: May I ask you a couple of questions about the project?
K: Of course, mister!
N: How many people are implied to your business?
K: Currently, only me.
N: Will you expand your business?
K: Yes, that's what I am thinking about. I want to hire a couple of mechanical-engineers in order to enlarge the workforce. Furthermore, I thought that I would have to hire one additional employee who will purchase car parts. Afterwards, I came to think that the computer is able to replace such kind of work. That's why I am asking you to create that system.
N: Ok, thank you for the details. See you soon!
K: See ya!

Observation

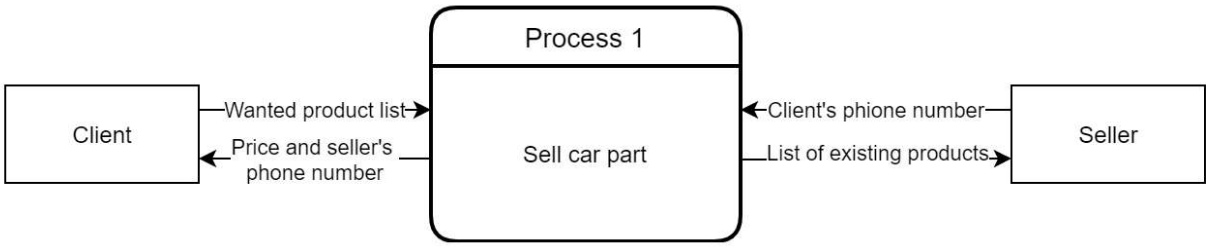
I precisely analyzed our interview and mentioned that my client is asking for an online and easy program. Consequently, the system should:

- Store user details such as username and phone number in order to address them
- Include Buyer/Seller mode
- Include search option from the car parts list.

(iii)Analysis

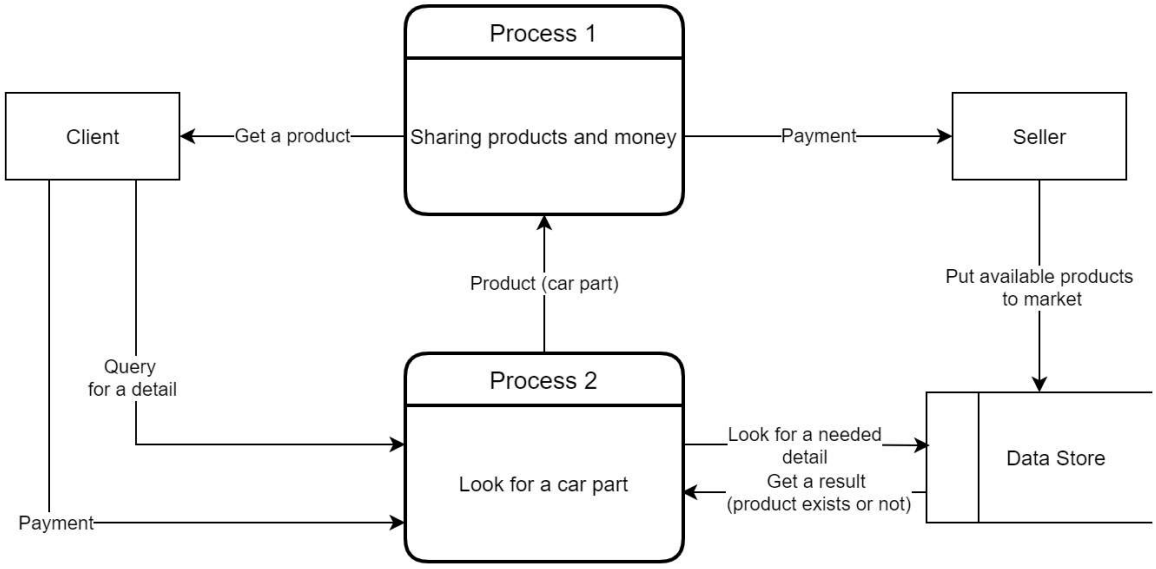
Data Flow Diagram of the Current System

Level 0



Picture 3. Current system DFD

Level 1



Picture 4. DFD level 2 of a current system

Inputs and outputs of the Current system

Table 3.

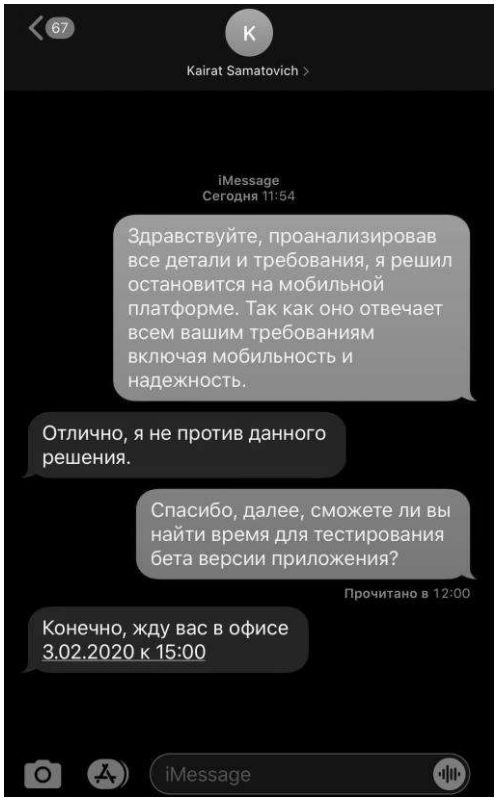
Input	**Process**
• Name • Phone • List of car parts	• Manual recording of all data • Scheduling the time • Fork data from clients
Output	**Storage**
• New car part	• Workbook

Alternative solutions

Table 4

	Benefits	**Drawbacks**
Mobile application	● Convenient and fast to use ● Does not need a PC	● Does not support all the platforms ● Cannot be easily adapted to the website ● Cannot be easily updated
Website	● Can be used by all platforms ● Easy to use and create ● Friendly for an updates	● Security issues ● Cannot be used for dynamic tasks or pages
Application	● Fully customizable ● Does not require additional applications such as browser	● Needs to be downloaded and installed ● Hardships in cross-platforming

Evidence



Picture 5. Evidence of client agreement

Chosen solution: The mobile app was chosen because the client focuses on fast and convenient work that will be easy to use everywhere and anytime.

Requirements

- Should collect user's data.
- Should have proper item uploading page with image format testing.
- Should have a customer and seller mode.
- Should include search by name, price, and car model.
- Simple and convenient design including animations with javascript.