**1 EVALUTION OF PROJECT SCOPE AND PROJECT PLAN**

**• Evaluate the adequacy of your aim and objectives presented in the project proposal and if the objectives were achieved during implementation. Comments should address the following: o Strengths of the system, any problems, suggested improvements o To what extent did you reach you aim, if not met, why? o Which objectives were met o Which objectives were not met, why?**

The aim presented in the project was a central system where records would be kept, and four different applications and four different user profiles were considered as targets, and the targets were achieved.

As the strength of the system, I tried to write the codes in a way that is suitable for object-oriented programming and has the highest readability.

We have completely achieved our goal.

The goal of four different users, authentication system, database and other operations has been achieved.

Since I could not implement the activity of the admin's approval of users who sent a request to register, the place that did not reach the target, I removed it from the product with the permission of my consultant.

**• Evaluate if any objectives have changed or should have changed**

The target change occurred only in the admin's approval of registration requests.

**• State general satisfaction of the team with the delivered work products (system, code, documentation, etc.)**

In general, I am satisfied with the system and implementation, but it could have been stronger and had a better test process.

**2 EVALUTION OF PROJECT PLAN**

**• Is there any difference between the submitted software plan and the actual implementation? If there is, what are the reasons?**

The difference is only because I could not implement the activity of the admin to approve the users who sent a request to register, so I removed it from the product with the permission of my consultant.

**• Is there any difference between the planned effort and the actual efforts for the tasks? If there is, what are the reasons?**

In terms of time planning, we finished a little earlier than the targeted date. Since I aimed for my Android programming education to take longer, I spent more time on the project when I finished it early, as a result, I made a small early delivery.

**3 EVALUTION OF SOFTWARE REQUIREMENTS SPECIFICATION**

**Are there any changes in the requirements documented in the software requirements specification? What are the changes and the reasons for the change? How did these changes affect your design and implementation?**

The difference is only because I could not implement the activity of the admin to approve the users who sent a request to register, so I removed it from the product with the permission of my consultant.

If I need to go into more detail of the change, I started the first implementation of the part of the admin application. At the same time, I was learning Android programming. When the database and architecture I set up there were inaccurate at first, the extracted part would not be healthy or would not work properly. As a result, a design page came out and the admin will be able to review the feedback instead.

**4 EVALUTION OF SOFTWARE DESIGN**

**Are there any changes in the design elements? What are the changes and the reasons for the change? How did these changes affect your implementation?**

The change in features also affected the design. If I had not removed that deficiency, perhaps other applications would not have been able to access, its complexity would have increased too much, and the system and database would not have worked properly.

**5 EVALUTION OF IMPLEMENTATION**

**5.1 Challenges**

**Discuss the challenges you have faced during the implementation and how you have overcome these challenges.**

Starting from the holiday at the end of the first semester, my Android programming adventure had begun. Since we worked on algorithms and classes with Java language many times before, it was only necessary to design interfaces and database connections correctly in the mobile part. When I tried to handle everything perfectly in the limited time, there were problems in most things, but I was constantly finding the answers by asking Google, reading documents and digging deep into the blogs.

**5.2 Development Environment**

**Discuss the appropriateness of the following:**

• **Chosen development methodology**

Actually, I had chosen agile as the methodology at the beginning of the project, but while I was preparing these documents, I realized over time that all of our project included agile steps. When I sorted the required documents according to their dates, I realized that the process actually worked well and I saw its benefits.

**• Chosen development environment (hardware, software libraries, frameworks, programming language, IDE etc.)**

Since we have progressed from languages with C, C++ and Java origin throughout our education, and after the Advanced Java Programming course given by our consultant last term, I should definitely use the Java language and progress (thanks to that course, maybe I gained programming skills more actively than the first 3 years), so I chose Java. I preferred the mobile application because phones are now more accessible than desktop applications, and I chose the Android platform because it has Java connection. The entire application was implemented in Android's official application, Android Studio, but I used Intellij Idea for a little while for the test code.

Generally used Android and Java libraries.

**6 SECURITY**

**The purpose of this section is to determine if the system provides adequate security of data and programs. In addition to access, security, procedures for backup, recovery, and restart should be reviewed.**

**6.1 Data Protection**

**Determine if the security, backup, recovery, and restart capabilities adequately safeguard data, including master, transaction and source. Online systems naturally require special techniques (such as, transaction logging). Comments should address the following:**

**• The adequacy of the security, backup, recovery, and restart procedures**

The Google Firebase Firestore database API we use defines rules for security. By modifying these rules ourselves, we can decide who can read, write and delete data.

If we switch our application from the normal plan to the Blaze plan, it is possible to take daily backups of the security rules and the data in the application and cloud database to another database, again to the real-time database on Google.

**• The suggested changes**

An encryption algorithm can be used that will be encrypted and decrypted by us in case of any vulnerabilities that may occur in the encryption of the data itself during transport and storage.

**• The effort required to make the changes**

AES encryption can be implemented professionally.

In addition, the transactions made by the users and the admin are kept in the database as a transaction and all footprints are recorded.

**6.2 Disaster Recovery**

**Determine if appropriate files, programs, and procedures are established to enable recovery from a disaster resulting in the loss of data. Comments should address the following:**

**• The adequacy and currency of offsite storage procedures**

There is no extra or backup storage in the current plan, but if the blaze plan is switched to, it can be updated and backed up daily.

**• The extent that procedures cover the following:   
o Master data   
o Transaction data   
o Source programs**

Source codes are stored on github and on my personal disks and other data holds on Google Services.

**• Documentation (such as, systems, operations, user manuals)**

The documents are also backed up on github and on my own disk.

**• The results of any adequacy-of-recovery test**

As a result of these tests, it is necessary to keep backups of more than one program, document and database, and the need for online and offline up-to-date backups should be met.

**6.3 Allowed Access**

**Evaluate the adherence to restriction of access to data. State desired privacy criteria for the system then evaluate how the criteria have been followed up to this point. Comments should address the following:**

**• Established privacy criteria**

The data is encrypted and nobody must be able to access this data.

**• Recommended privacy criteria**

People should freely question every tool they want to question and get information about them.

**• Adherence to and violations of privacy**

As in the existing system, only the plate contains the personal information of the people. Other than that, no extra data is kept.

**• The potential effect on individuals if the privacy criteria are not followed**

In case the data is stolen, the information about which brand, model and chassis number and how many vehicles they own is obtained by the analysis to be made from the data.

**7 PERFORMANCE**

**Assess the ability of the system to handle peak loads and to resolve backlogs when they occur. Any offloading that could be helpful should be investigated. Comments should address the following:**

**• The level of user satisfaction**

As long as the internet has sufficient speed, the database is read and returned to the user as soon as possible.

No algorithms and operations are performed or processing in the backend.

**• The adequacy of the response time (for online systems)**

Maximum sustained write rate to a document is 1 per second.

According to Firebase Document: “Time limit for a transaction 270 seconds, with a 60-second idle expiration time.”

**• The effect of delays on online and/or batch systems**

According to Firebase Document : “Sustaining a write rate above once per second increases latency and causes contention errors. This is not a hard limit, and you can surpass the limit in short bursts.”

**• Suggested changes**

Performance tests can be tried to reduce processing times.

**• The effort required to make the changes**

Codes can be refactored by someone who is an expert in the Firebase API.

**8 USER INTERFACE**

**Analyze the usability of the system. Are there any suggested changes to the UI design?**

Since I have no previous experience in user interface and experience, as my consultant said, it is true that the application contains some text and less visuals. It is possible to make some more user interface improvements by adding visual objects.