

SOFTWARE FOR OBJECT IDENTIFICATION USING NFC TECHNOLOGY

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I. Formulation of the problem

Numeric codes are one of the most common methods for communicating with objects. Users introduce codes that are associated with physical objects on a keyboard/keypad in order to interact with physical objects, or just identify the code on a touch screen. This way of interaction is very common in retail industry. Also, many attempts have been made to improve the shopping experience through the use of technologies, including RFID, QR codes, camera phones, smartphones, and ESL. However, none of them ensured the solution for the retail industry to be implemented at a scale as the NFC technology.

II. The purpose of the work

The purpose of the study is to develop a software for object identification using NFC Technology as an easy, fast, accurate and secure method of object identification.

III. Software implementation

According to the work [1], NFC tags store an identification code that allows the application to identify the NFC tag. Depending on the tag product, the identification information can be duplicated. Some type of tags because of their serial numbers allow duplications. In addition, there are some NFC tags that are capable to store data, which can be read and written by devices. This information can also be encrypted in order to provide the data contained in the tags with extra security. Therefore, one way to avoid tag duplication is to use tag memory to store a code which is unique to the program.

In the class diagram shown in Figure 1, the software infrastructure to support this kind of interaction is specified. This diagram demonstrates the realization of the software design pattern of the Model View Controller (MVC) in which the Controller realizes the Tag Listener interface that determines the process tag Discovered, which is performed when an NFC tag is discovered by the NFC reading system.

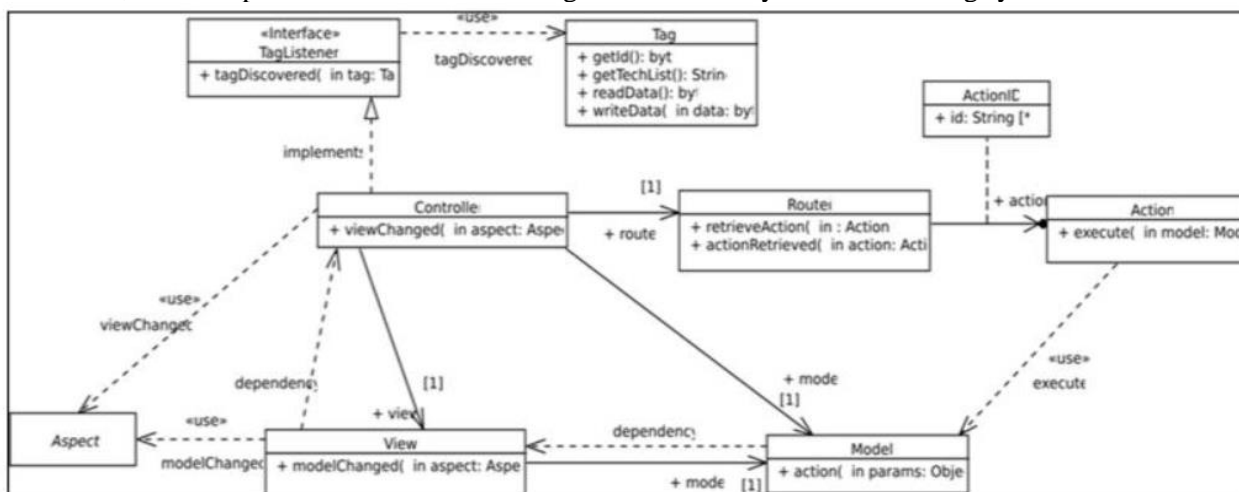


Figure 1 – Class diagram of the software required to support NFC application

Flutter plugin for Android Studio development environment and Dart programming language have been used to implement the software.

Conclusion

Thus, the software for objects identification using NFC technology has been developed and implemented. It allows users to identify objects in a simple, quick, precise, and safe way.

References

1. R. Tesoriero and J. Gallud, "Software Architecture and Framework to Develop NFC-Based Applications," *Sensors*, vol. 18, no. 8, p. 2654, Aug. 2018.