



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

REQUIREMENTS AND DESIGN SPECIFICATION

Mobile Monitoring App

Emilio Mumba

The 5 Concurrent Nodes

Khathutshelo Shaun Matidza
Sylvester Sandile Mpangane
Thabang Michael Letageng
Aluwani Augustine Simetsi
Matthew Nel

Department of Computer Science, University of Pretoria

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1 Vision and Scope

1.1 Project Vision

Digital forensics is defined as the use of scientifically derived and proven methods towards the preservation, collection, validation, identification, analysis, interpretation and presentation of digital evidence derived from digital sources for the sole purpose of facilitating or furthering the reconstruction of events found to be criminal or helping to anticipate the unauthorized actions shown to be disruptive to planned operations [3]. Readiness is considered as the process of being prepared for a digital investigation before an incident has occurred [2].

The proposal of a mobile monitoring application will promote readiness in digital forensics and protect mobile users from malicious entities and activities. It aims to provide a proactive measure that is undertaken by the mobile device user or mobile device owner. Having this application installed on mobile devices will proactively ensure that relevant digital evidence is made ready and available before an incident occurs. The mobile monitoring application is expected to monitor user activities on a mobile device and report application data/logs to a dashboard on a desktop computer. It will generate reports giving the investigator quick and comprehensive data/logs that provide a starting point during a mobile device investigation.

The objective of the mobile monitoring application is to collect data/logs and assist in understanding the activities performed by a mobile user as well as shedding more light into the behaviour of the mobile user. Combining activities from the various applications promotes a proactive approach which in turn enforces proactive (readiness) measures.

1.2 Project Scope

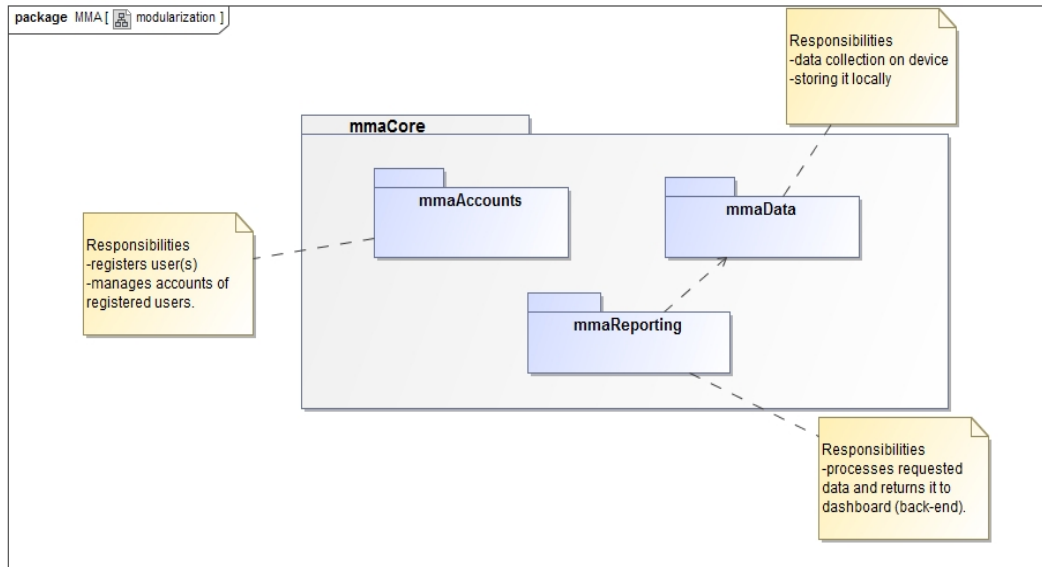


Figure 1: High level system modules

The high level modules of the Mobile Monitoring App is as indicated on figure 1 above. The responsibilities of each module are also noted.

2 Application Requirements and Design

The following section will explain each module in the Mobile Monitoring App. It will discuss the use-case design and functional requirements extracted from the use-case; along with the selected service contracts.

2.1 Modular System

The application is going to use a modular design. This will allow the following:

- add new functionality in the future
- decouple the system

- achieve maintainability and testability quality requirements

2.2 MobileMonitoringApp - Accounts module

2.2.1 Scope

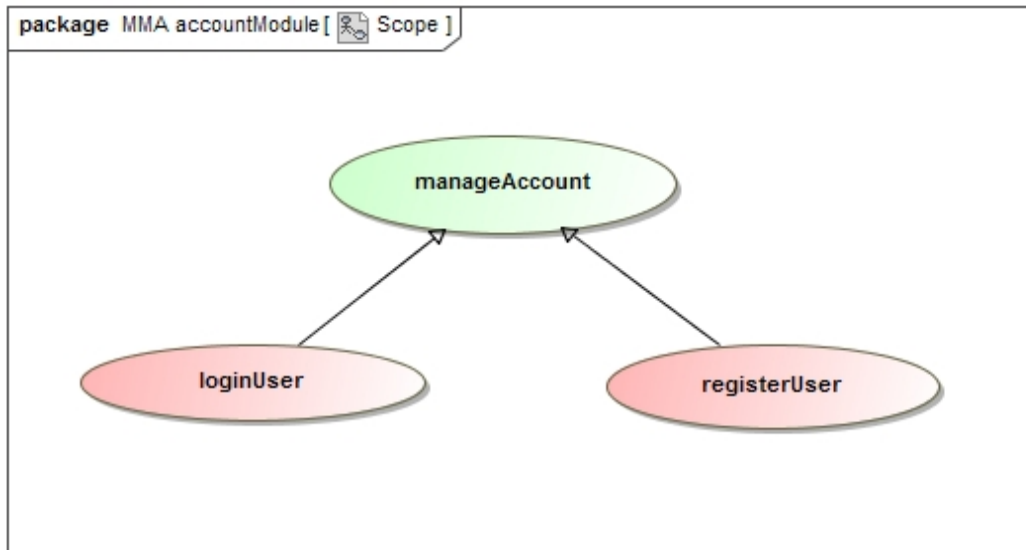


Figure : Scope of mmaAccounts module

2.2.2 Use-Cases

This section provides details on the use-case requirements for the use-cases offered by this module.

2.2.2.1 registerUser - priority: important This use-case registers a user on initial installation after user accepts terms and conditions of use.

2.2.2.2 loginUser - priority: important This use-case logs a user on initial installation after user accepts terms and conditions of use.

Service Contract The service contract for registerUser is shown in the figure below. The pre-conditions are enforced (raises an exception if not met) and on success the user is registered and the device and user data is persisted through the local database.

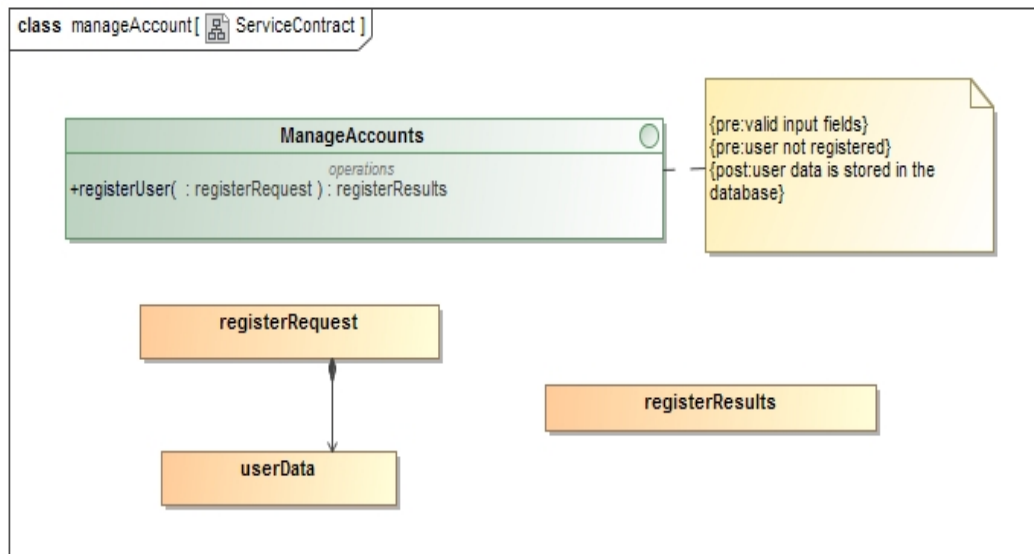


Figure : The service contract for registering a new user on the app

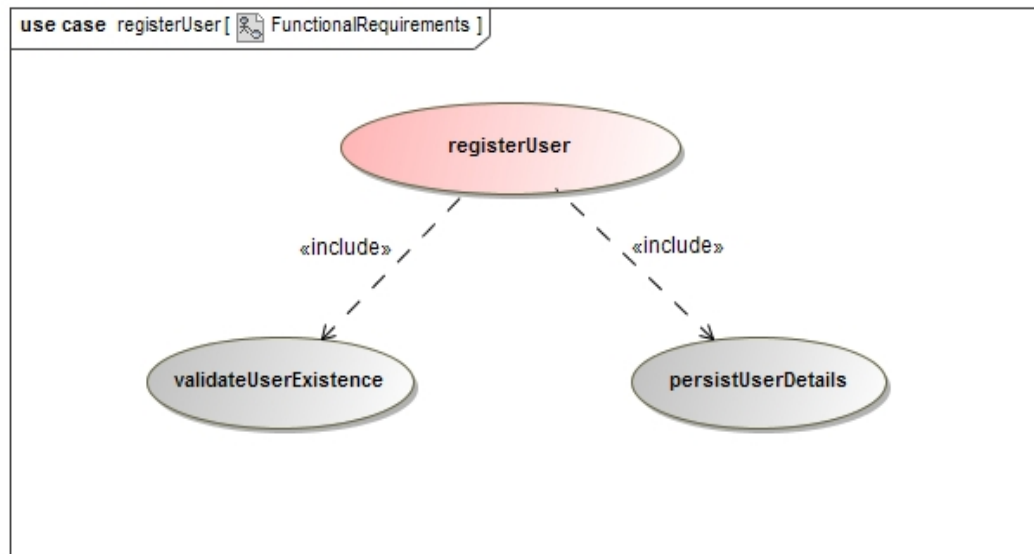


Figure : The functional requirements for registerUser

2.3 MobileMonitoringApp - Data module

2.3.1 Scope

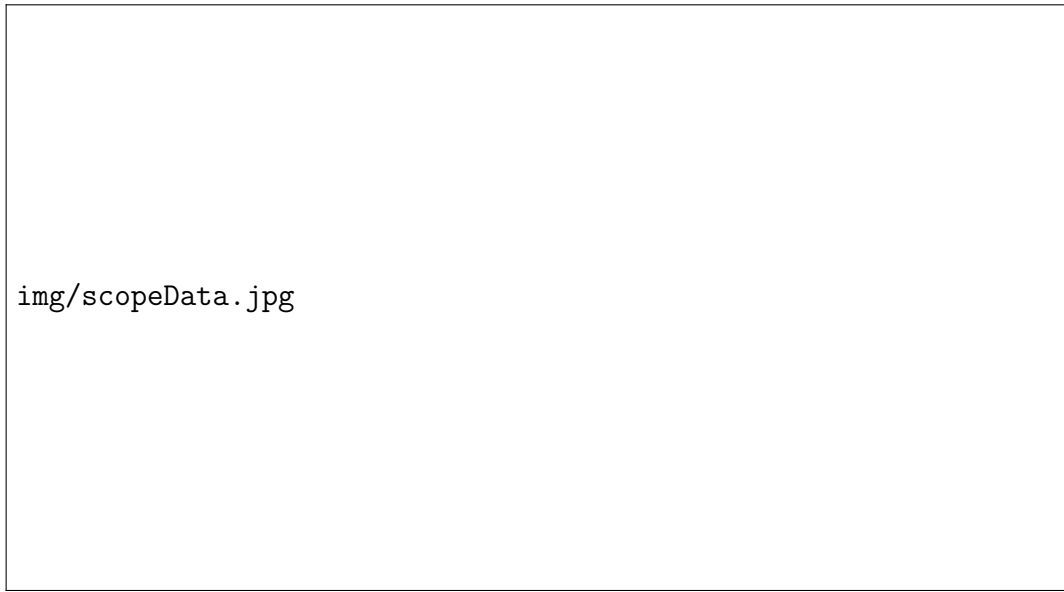


Figure : Scope of mmaAccounts module


2.3.2 Use-Cases

This section provides details on the use-case requirements for the use-cases offered by this module.

2.3.2.1 retrieveDeviceInfo - priority: important This use-case retrieves all the relevant device information from the device.


2.3.2.2 retrieveCommunicationActivities - priority: important This use-case retrieves all the users communication activities from the various apps on the device.

Service Contract The service contract for manageData is shown in the figure below. The pre-conditions are enforced (raises an exception if not met) and on success the data is sent to the local database.



img/serviceContracManageData.jpg

Figure : The service contract for manage data on the device



img/functionalRequirementsRetrieveCommunicationActivities.jpg

Figure : The functional requirements for retrieveCommunicationActivities

2.4 MobileMonitoringApp - Reports module

2.4.1 Scope

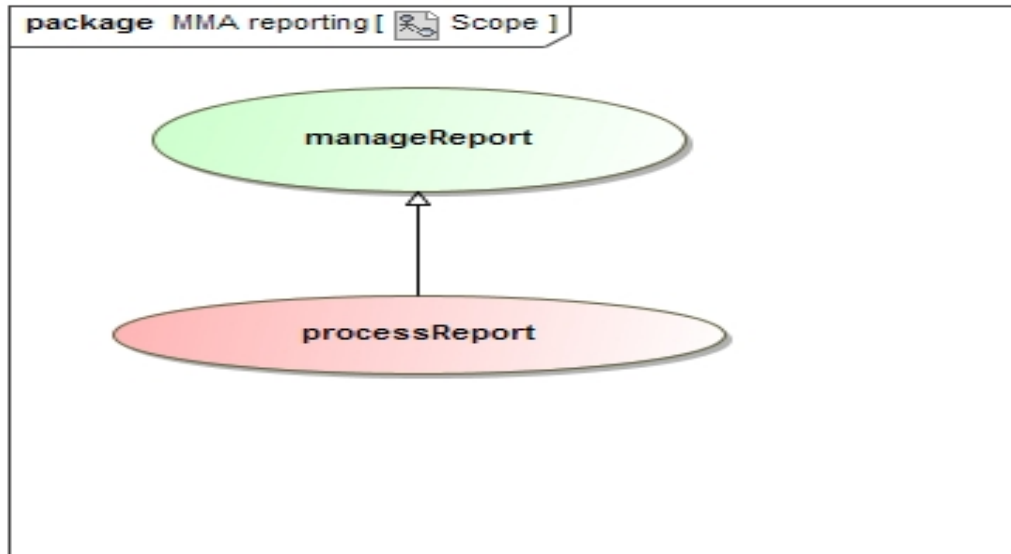


Figure : Scope of mmaReporting module

2.4.2 Use-Cases

This section provides details on the use-case requirements for the use-cases offered by this module.

2.4.2.1 processReport - priority: important This use-case retrieves logs from the device and sends them onto a server where they will be saved on a database.

Service Contract The service contract for processReport is shown in the figure below. The pre-condition is not enforced i.e.If the app fails to establish a connection with the server, the report will be saved temporarily on the device until a connection is established.

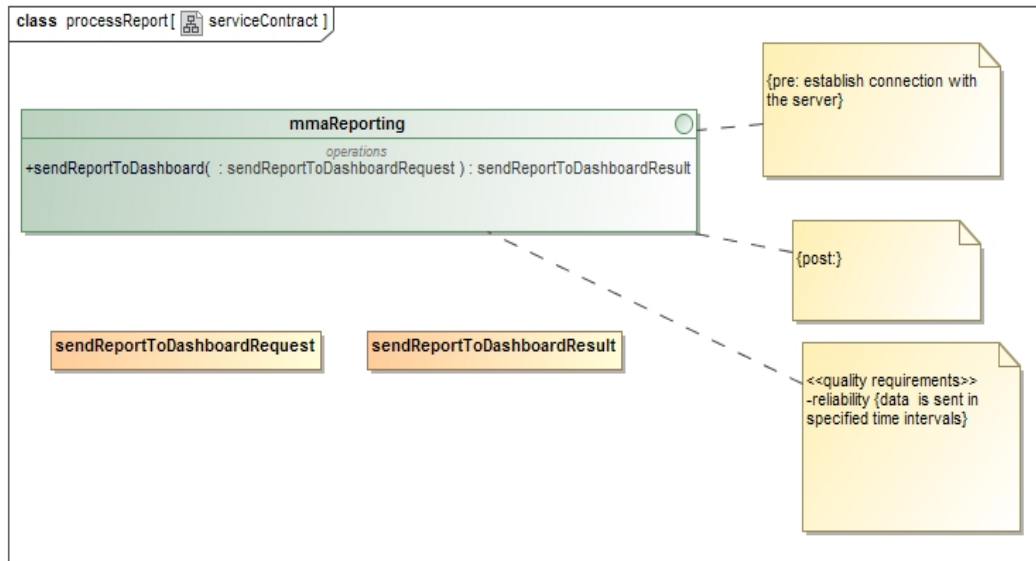


Figure : The service contract for processing a report on the app

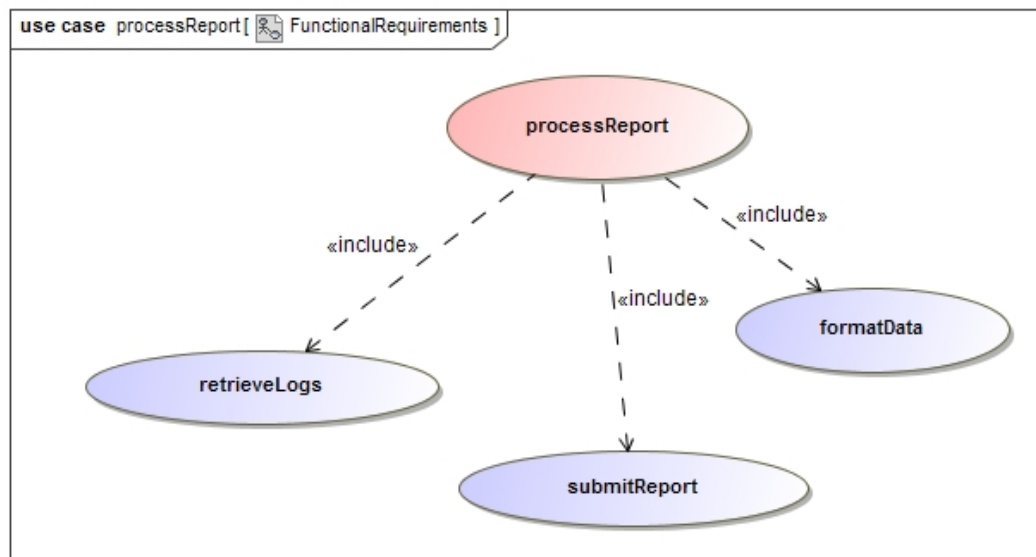


Figure : The functional requirements for processReport