Testing Reports

Revision History:

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| Date | Author | Description |
| 8-10-20 | Shizhe LIU | The first version of the test report was released |
| 15-10-20 | Kedong XIU | Some contents of the test report are modified |
| 22-20-20 | Shizhe LIU & Weikang DU | According to the requirements, the automatic test part is added |
| 23-20-20 | Kedong XIU | The test report is improved again |
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## Introduction

## Intended Audience and Purpose

This document provides the testing method and procedure, corresponding to the requirement from the customer. It consists of 4 parts, the testing principles, manual testing, automatic testing and the testing procedure.

## 1.2    How to use the document

You may refer to the content section for the structure of the document, in which Sec. Principles of Software testing contains the principles when you testing you need to obey; Sec. Manual Testing shows the steps and expected results of the integration test; Sec. Automatic Testing describes the aim of automatic testing and the categories of automatic testing framework. Sec. Test Procedure shows the test flow chart.

## Principles of Software testing

## Principles of Testing as early as possible

Software testing should be carried out as soon as possible. According to statistics, about 60% of the errors come from before design, and the cost of correcting a software error will increase with the development of software life cycle. The earlier a mistake is found, the less it will cost to fix it.

## Principles of IPO

The test case consists of two parts: the test input data and the corresponding expected output results.

## Principles of Independent Testing

Software testing is conducted by organizations that are economically and administratively independent of the development organization. Programmers should avoid checking their own programs, and programming agencies should not test their own programs.

## Manual Testing

In this section, there are four kinds of tests: Unit test, System test, Integration test and Acceptance test. In the process of testing, it is necessary to strictly check whether the relevant code has completed the specified function according to the requirements analysis (RA) document.

Generally, the test will first detect whether the use cases in the RA document have been completed. For example, the server needs to be able to respond to the client's related requests. Then, we need to test whether the server can actually handle these requests.

## Integration Testing

In the integration test, we need to check whether the docking with other modules is good. In fact, integration testing is a big part of the workload, because the server is responsible for interacting with the three parts. We need to check whether the interface between the server and other modules is good one by one. If the interface cannot be connected, we need to negotiate with other modules and redesign the interface for docking.

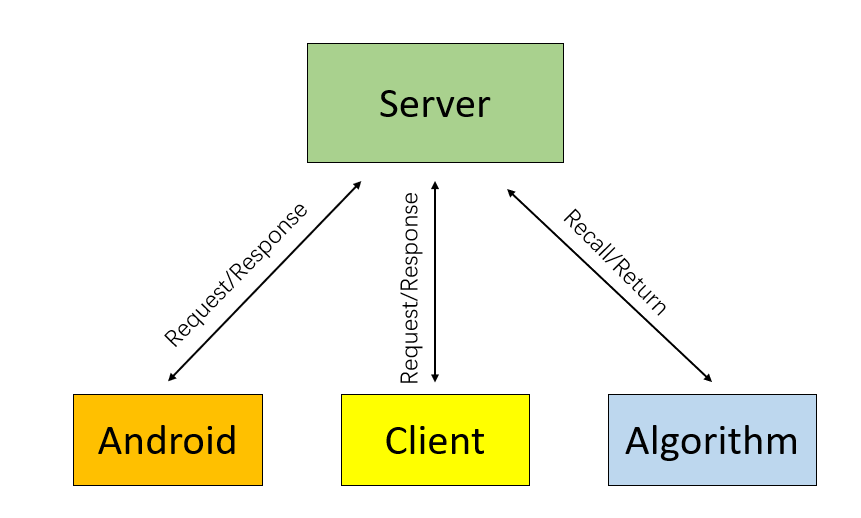


Fig 1: Module interaction

## Automatic Testing

Software automatic testing is to change the old traditional manual testing method into the new work of using machine software testing. Automatic testing runs the tested program under the present conditions, and analyzes the running results.

Automatic testing framework can be divided into five categories:

i) Test Script Modularity

ii) Test Library Architecture

iii) Data-driven Testing

iv) Keyword Driven Testing

v) Hybrid Test Automation

We plan to use Keyword Driven Testing as our Automatic testing framework, and choose robot framework software as our automated testing tool.

## Robot Framework

Robot Framework is a generic open source automation framework. It can be used for test automation and robotic process automation (RPA). Robot Framework has a modular architecture that can be extended with bundled and self-made [libraries](https://robotframework.org/#libraries).

Data is defined in files using the syntax shown in the [examples](https://robotframework.org/#examples) below. A file containing tests or tasks creates a suite, and placing these files into directories creates a nested structure of suites.

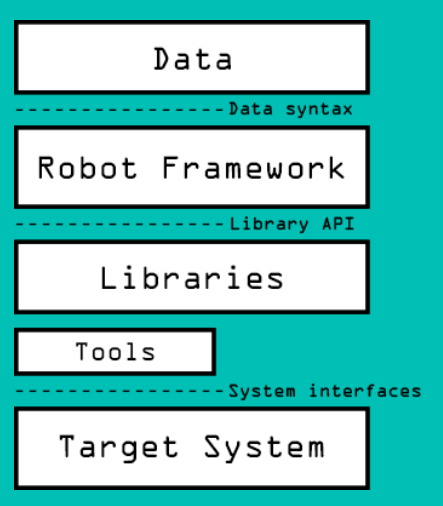


Fig 2: Architecture of Robot framework

If you want to learn more about the robot framework, visit the website: <https://robotframework.org/>.

## Testing Procedure

We plan to conduct manual testing first, and then use the existing automated testing framework and tools for automated testing. The test flow chart is shown below.

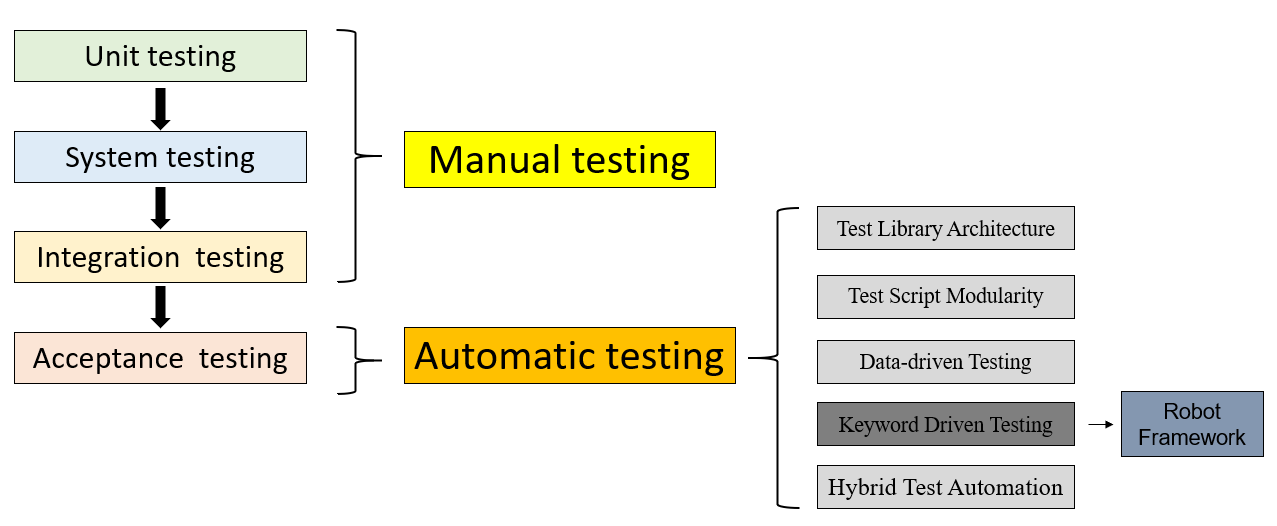


Fig 3: Testing procedure

## Testing Results

Because we didn't complete the whole software, we didn't do the acceptance test. At present, we have completed part of the work of integration test, and found that the server can connect with the client and algorithm side successfully.

It is worth mentioning that the coder and tester of our group are jointly held by two people. Considering the principle of software testing, they should test each other's code to ensure the effectiveness of the test.

The results of the integration are listed here and you may find the correspondence to requirements in the RA document.

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Case NO.** | **Module** | **Result** | **Corresponding Requirement** |
| 1 | User Log in | Finished | Users can log in and enter the corresponding webpage |
| 2 | User Log out | Finished | Users log out, and go back to the log in page |
| 3 | User Sign up | Finished | The user can create a new account |
| 4 | Call Algorithm | Finished | It can successfully call the algorithm and get the running results |
| 5 | Store Results | Finished | Users can store relevant results |
| 6 | Query Results | Finished | Users can query relevant results |
| 7 | Handle Webpage request | Finished | Server can handle Webpage request |