# Advantest Assignment

# Document Information

|  |  |
| --- | --- |
| Author(S) | Shashwat Anand |
| Version | 1.0 |
| Date | 10th March 2019 |

# 1. Business Summary

## 

## 1.1 Objective

Design a tester tool which can read test suites and execute them on test system depending on required OS, devices and report the status of execution.

## 1.2 Design Abstract

As part of this requirement, following things has to be implemented: -

1. Retrieve the stored test suite files from shared drive (for assignment I am reading from folder)
2. Ideally tester tool which read and figure out the required OS and devices need for execution of the test suite (for POC I kept the name of files as TSuite\_mac\_D1\_D2\_19, where test suite is “TSuite19”, required OS is “mac”, D1 and D2 are devices which is needed to execute the test suite and 19 is the execution time of it.
3. When user passes the test suite file name as argument then tester tool finds the its required OS, needed devices.
4. Then tester tool finds the test system which is having same OS and devices and currently not in use. Ideally this information can be stored in some data base and retrieved (for POC I didn’t created data base schema or entities due to time constraints, I just tried to model the test system data with POJO and keep it in in-memory data structure.
5. Once tester tool finds the test system the it should start the execution of test suite and return to process other test suite which is passed as program arguments to it.
6. Each test suite execution should report its execution status on completion to the user who has started it. To retrieve email is ideally we should read the user name of from system variables and query LDAP (active directory) or company database to find user email and send the report to him/her (here in POC is retrieved the user name used hard code email id to send the report)

# 2. System

# 2.1 System Configuration

Below is my system configuration.

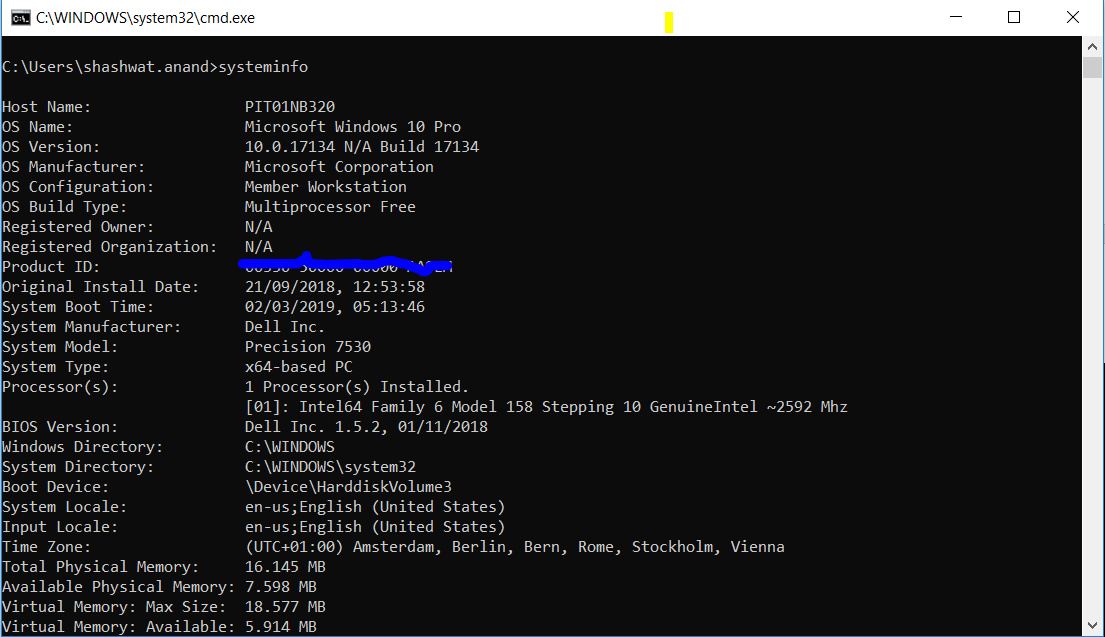


Figure : System Information

# 2.2 Design

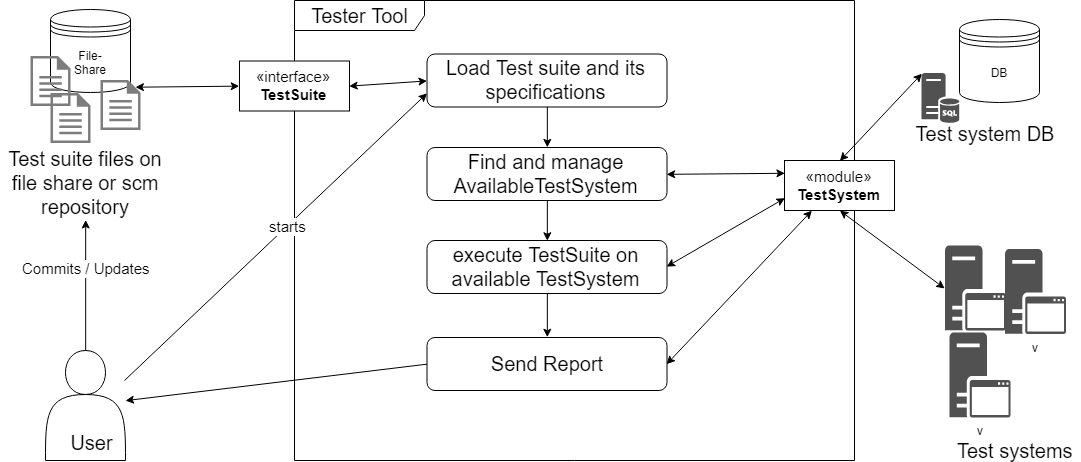


Figure : Architecture Diagram of system

As shown in figure, different modules of the system

* Tester tool
* Test System Database
* Test suite file share or repository

Once user interact with tester tool and gives command to execute the test suite then system should check if test suite name provided by user exists in repository if yes then load it and find the required OS and device needed.

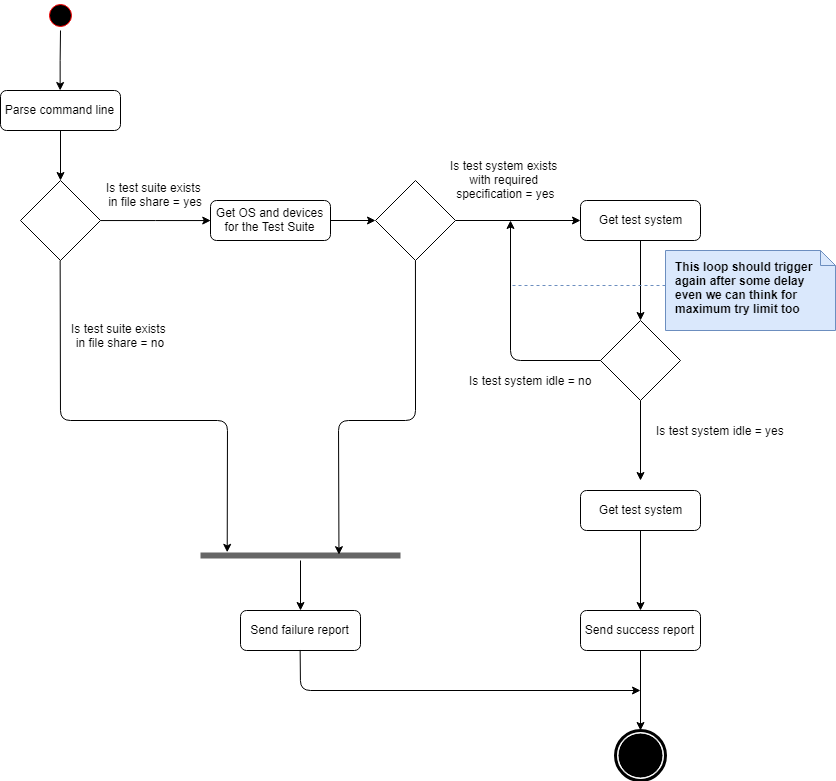


Figure : Process Diagram

With this information tester tool query the database for test system with available system exists of not. Once it found the list of list of test system with needed configuration then it checks the which test system is idle so test suite can be executed on the found test system.

Once test suite execution starts then tester tool should start processing other test suite.

Each test suite execution should report the status of it at the end to user who has initiated the command.

This is explained in above in figure 3 in abstract business process diagram of whole system.

# 2.3 Database design for Test System

Test System table

|  |  |  |
| --- | --- | --- |
| Test System ID | Name | Supported OS |
|  |  |  |

Device table

|  |  |
| --- | --- |
| Device ID | Device Name |
|  |  |

Test System Device relation table

|  |  |  |
| --- | --- | --- |
| Device Table ID | Test System ID | Device ID |
|  |  |  |

APIs needed from test system database CURD operation if Tester tool user can do those operations

* createTestSystem
* updateTestSystem
* deleteTestSystem
* createDevice
* deleteDevice
* updateDevice
* createRelationBetweenTestSystemAndDevice
* removeRelationBetweenTestSystemAndDevice

Below APIs for query operations of Tester tool

* findAllTestSystem
* findTestSystemByName
* findAllDevices
* findDeviceByName
* findDevicesByTestSystem
* findAvaiableTestSystemByOSDevices(OS, DeviceList)

Above API I thought only for minimalistic table design. Test System and Device table can many more attributes.

# 2.4 Report Module

Below is sequence diagram for reporting module (although ideally I want to retrieve email and other details of user from LDAP by for POC I used hardcode email)

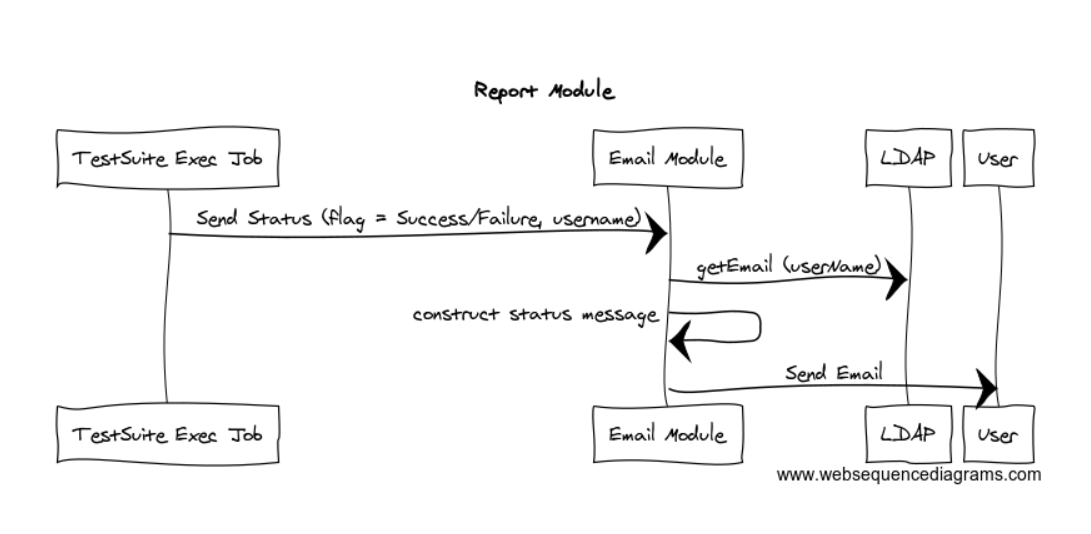


Figure : Report Module Sequence Diagram

hi

# 5. Improvement

1. Giving support to search using wild cards.
2. UI testing can be automated.
3. Adding support and testing for different platforms

# 6. Time Complexity

As far is time complexity is concerned for queries is Big O (n)

As you can see in class SearchResultProvider, I used stream and parallel stream. Stream filter always traverses the complete and applies the filter criteria to each element.

I used parallel stream only when if number of available processor is more than 1 and number of tuples in memory as more than 1000. Parallel stream give better performance if it has to act on more data to process.

# 7. Remark

Design took maximum time, had to take lot decision

1. UI or Console Application
2. Should I use functional paradigm of Java

8. Load Analysis

With all my day today applications, I found the following results. When I loaded the application with 300 MB text file with 129 processes running on system (Fig 8.1). Following are the observations.

* System was using 5.75 GB of RAM (Fig 8.2)
* After loading the 300 MB file RAM utilization went up by 700 MB (approx.) (Fig 8.3).
* It took 5 seconds to load the file “Time take to load file : 4820” ms

To summarize if we want to load 1 GB file then we may require 2.5 GB RAM for loading the file with you day to day application.

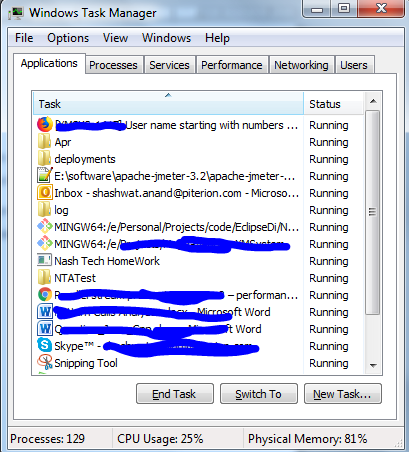


Fig 8. 1

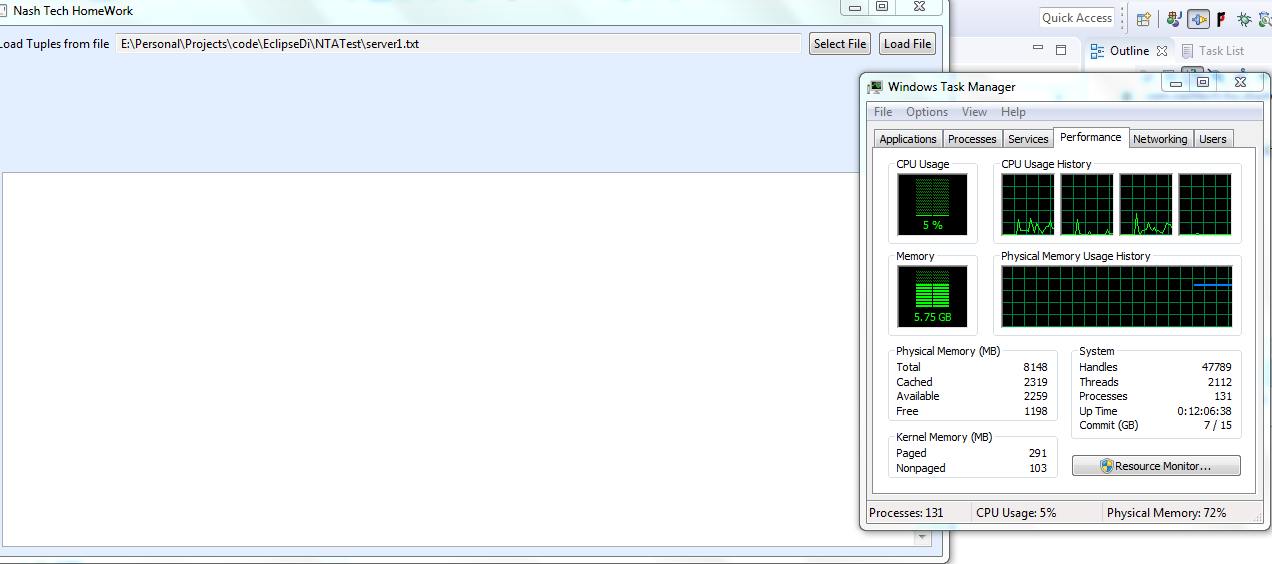


Fig 8. 2

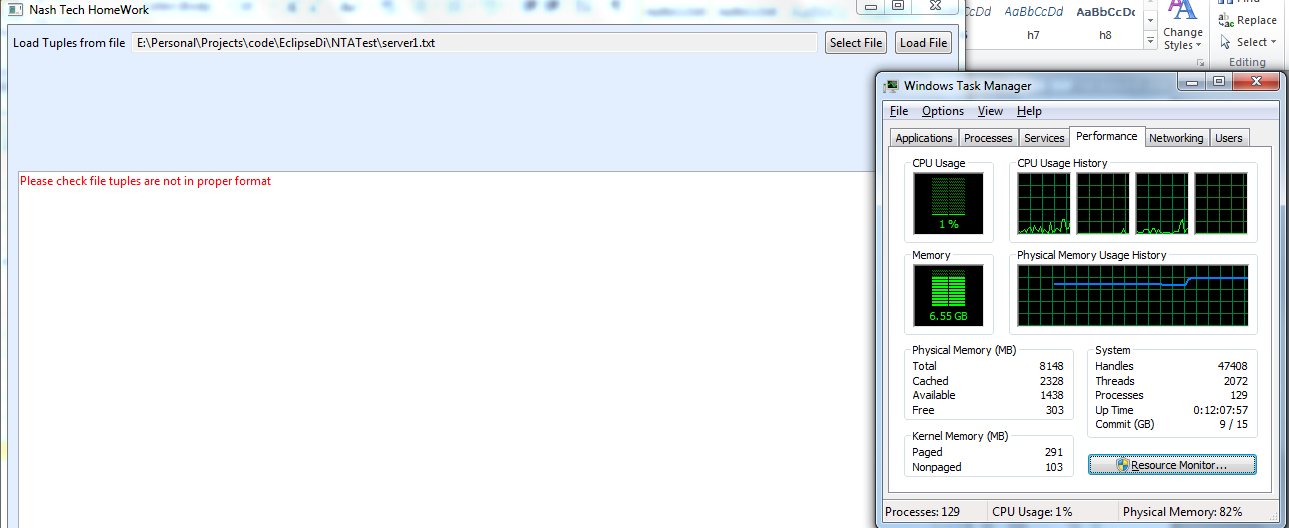


Fig 8. 3