

KLE Society's  
KLE Technological University



**Software Testing**

**On**

**Raita Samparka Kendra**

**Bachelor of Engineering**

**In**

**Computer Science and Engineering**

**Submitted By**

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## **PROBLEM STATEMENT**

### **Raita Sampark Kendra:**

- Farmers will buy the fertilizers at RSK, in order to purchase they have to registered by the executives.
- Farmers should complete the KYC of his/her farm (register the farm details, property id, area etc.), a farmer can register one or more farm land.
- Executives will make an entry of each purchase made by the farmer along with the crop details.
- Maintain the history of the crops in their farm which will help them to claim insurance in case of disaster.

### **PART A: Software Requirements specifications**

#### **Functional Requirements**

1. Executives shall be able to register the farmer.
2. Executives shall be able to login to the website.
3. Both Executives and Farmers shall be able to view the details of fertilizers.
4. Farmer shall be able to Buy/Add fertilizers.
5. Executives shall be able to make an entry of each purchase made by the farmer along with the crop details.
6. Executives shall be able to maintain the history of the crops in the farm.
7. Farmers shall be able to view contacts of Executives.

#### **Non-Functional requirements**

1. The RSK system should be available to all the farmers during normal working hours (Mon-Fri, 10 am to 6 pm).
2. Downtime within normal working hours should not exceed 5 seconds in any one day.
3. The system latency should not exceed 3000ms for one process.
4. The system should not assign more than 1500000bytes of memory for one process.
5. Farmers of the RSK system should identify themselves using their farmer id card.

## Software Architecture

### Layered Architecture: RSK System

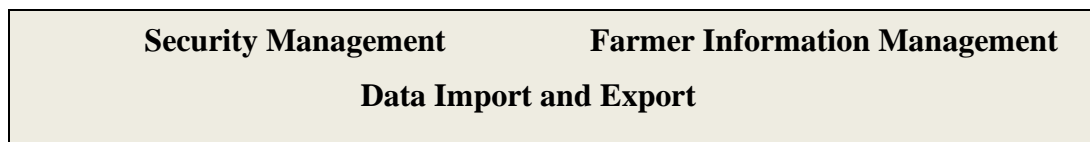
#### User Interfaces



#### Configuration Services



#### Application Services



#### Utility Management



#### Explanation:

1. The top layer is responsible for implementing the user interface. In this case, the UI has been implemented using a web browser.
2. The second layer provides the user interface functionality that is delivered through the web browser. It includes components to allow farmers to log in to the system and checking components that ensure that the operations they use are allowed by their role. This layer includes form and menu management components that present information to farmers.
3. The third layer implements the functionality of the system and provides components that implement system security, Farmer information creation and updating, import and export of Farmer data databases.
4. Finally, the lowest layer, which is built using a commercial database management system, provides transaction management and persistent data storage.

Name	Layered architecture
Description	Organizes the system into layers with related functionality associated with each layer. A layer provides services to the layer above it so the lowest-level layers represent core services that are likely to be used throughout the system.
Example	A layered model of a system for farmer data base.
When used	Used when building new facilities on top of existing systems; when the development is spread across several teams with each team responsibility for a layer of functionality; when there is a requirement for multi-level security
Advantages	Allows replacement of entire layers so long as the interface is maintained. Redundant facilities (e.g., authentication) can be provided in each layer to increase the dependability of the system
Disadvantages	In practice, providing a clean separation between layers is often difficult and a high-level layer may have to interact directly with lower-level layers rather than through the layer immediately below it. Performance can be a problem because of multiple levels of interpretation of a service request as it is processed at each layer.

## PART B: Test plan and Test cases

Requirement id	Test id	Input	Expected output	Test status
1	1.1	About us	Display details of the RSK System.	PASS
	1.2	Know more	Takes to official website of RSK	PASS
	1.3	Contact Us	Display mail and mobile numbers	PASS
	1.4	Return to home	Takes back to Home Page	PASS
2	2.1	Schemes	Display different types of schemes to apply	PASS
	2.2	Click here to apply	Direct links to available schemes	PASS
3	3.1	Executive Login	Display new page for executive login	PASS
	3.2	Login Button	Takes to Registration form Of farmers	PASS
	3.3	Reset	Reset the details filled in the form	PASS
	3.4	Submit	Form submitted successfully	PASS
	3.5	Checkbox	Add total amount of fertilizers	PASS
4	4.1	Executive logout	Log out from executive mode	PASS
	4.2	Return Home	Return to home page	PASS

### Testcase 0

**Title:** Contact Details

**Description:** A user should be able to view all the contact details available for purchase of fertilizers.

**Precondition:** Home page consisting of Contact details button.

**Assumption:** The full stack website is running.

**Test Steps:**

1. The home page must be displayed.
2. Clicking on about us button.

**Expected Result:** User is able to view the contact list with mail ids.

## **Testcase 1**

**Title:** Available Schemes

**Description:** A user should be able to view all the available schemes for purchase of fertilizers.

**Precondition:** Home page consisting of Schemes button.

**Assumption:** The full stack website is running.

**Test Steps:**

1. The home page must be displayed.
2. Clicking on schemes button.

**Expected Result:** User is able to view the available schemes.

## **Testcase 2**

**Title:** Login for Executives

**Description:** Executive can login through login portal by entering username and password.

**Precondition:** Executive page consisting of Login button.

**Assumption:** The full stack website is running.

**Test Steps:**

1. The executive page must be displayed.
2. Entering valid username and password.
3. Login through the portal.

**Expected Result:** Executive should make entry of farmers through form.

## **PART C:**

### **Description of Testing Tool:**

Apache JMeter is an open source, Java-based, load testing tool that can be used to analyze the functional behavior of a system and measure the performance of a system under a load test. A load test will simulate end-user behavior that approach the limits of an application's specifications. Apache JMeter can be used to simulate varying or heavy loads on singular or multiple servers, networks or objects to test a system's strength.

Jmeter works by simulating groups of users that send requests to a server or network, then returning statistics back to a user through visual diagrams. Apache Jmeter's GUI looks similar to a browser; however, Jmeter cannot render HTML pages or the JavaScript found in the pages as a browser would. Additionally, Jmeter supports the use of plug-ins. Plug-ins supported by JMeter will extend the functionality of Jmeter and can be installed through the Plugin Manager.

## BENEFITS OF APACHE JMETER:

- Open source code base.
- Support for browser plug-ins.
- Support for offline analysis of test results.
- Displays test results in a variety of ways, including charts, trees, tables or log files.
- User-friendly graphical user interface (GUI).
- Support for multiple types of tests and basic protocols.

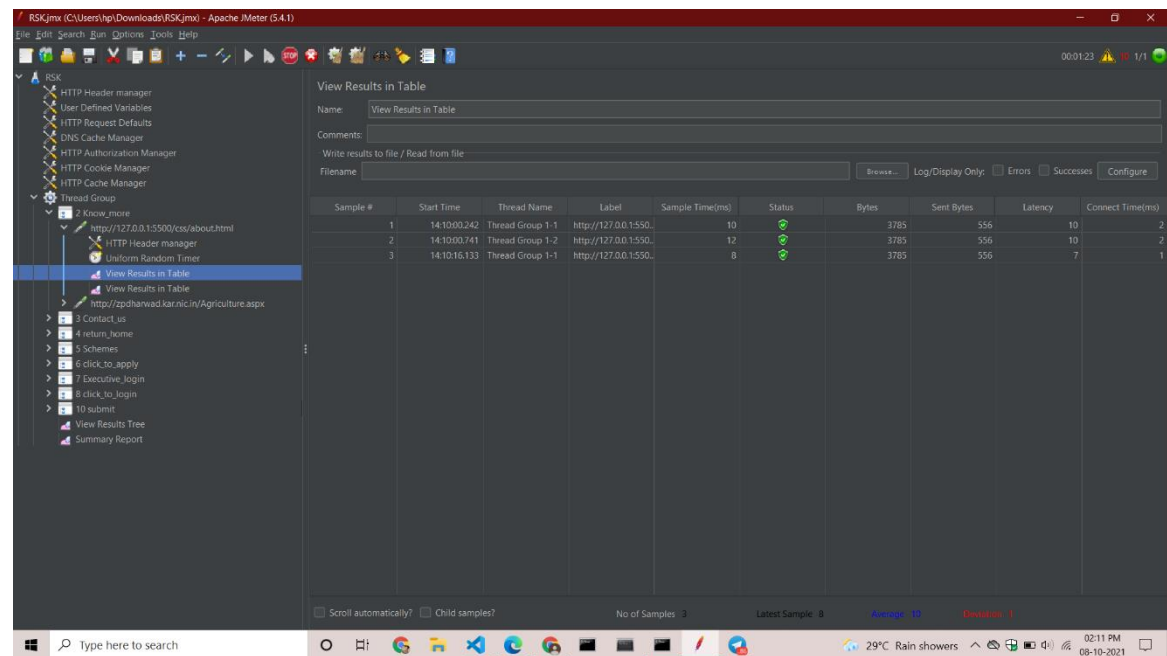
## Screenshots:

### Overall Process:

The screenshot displays the Apache JMeter GUI. On the left, a tree view shows a test plan named 'dta.jmx' with various components including HTTP Header manager, User Defined Variables, HTTP Request Defaults, DNS Cache Manager, HTTP Authorization Manager, HTTP Cookie Manager, and a Thread Group. The Thread Group contains a '2 contact\_us' sampler, which is expanded to show its sub-components: HTTP Header manager, Uniform Random Timer, and 'View Results in Table'. Below this, there are four 'Schemes' samplers, five 'Login' samplers, and an '8 Submit' sampler. The 'View Results in Table' component is selected, and its results are displayed in the main panel. The results table has columns for Sample #, Start Time, Thread Name, Label, Sample Time(ms), Status, Bytes, Sent Bytes, Latency, and Connect Time(ms). The table shows 14 samples, all with a status of 'Success'. The bottom status bar indicates 'No of Samples: 14', 'Latest Sample: 5', and 'Errors: 0/0'.

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(ms)
1	15:05:59.314	Thread Group 1-1	http://127.0.0.1:5500/	4	Success	3785	511	3	0
2	15:06:19.910	Thread Group 1-1	http://127.0.0.1:5500/	6	Success	3411	513	6	2
3	15:05:59.313	Thread Group 1-1	2 contact_us	10	Success	7196	1024	9	2
4	15:07:46.048	Thread Group 1-1	http://127.0.0.1:5500/	599	Success	32128	1566	7	2
5	15:07:55.317	Thread Group 1-1	http://127.0.0.1:5500/	7	Success	3826	513	7	2
6	15:06:19.917	Thread Group 1-1	4 Schemes	606	Success	35954	2079	14	4
7	15:07:59.696	Thread Group 1-1	http://127.0.0.1:5500/	20	Success	5482	1531	10	0
8	15:07:55.324	Thread Group 1-1	5 executive_login	20	Success	5482	1531	10	0
9	15:08:28.647	Thread Group 1-1	http://127.0.0.1:5500/	1423	Success	201890	2635	7	3
10	15:08:30.077	Thread Group 1-1	https://pagead2.g...	603	Success	769	375	0	408
11	15:08:30.681	Thread Group 1-1	https://pagead2.g...	171	Success	11966	400	148	0
12	15:07:59.718	Thread Group 1-1	5 Login	2197	Success	214625	3410	155	411
13	15:10:06.195	Thread Group 1-1	http://127.0.0.1:5500/	5	Success	2389	509	5	2
14	15:08:30.852	Thread Group 1-1	8 Submit	5	Success	2389	509	5	2

## 1.2 Know More

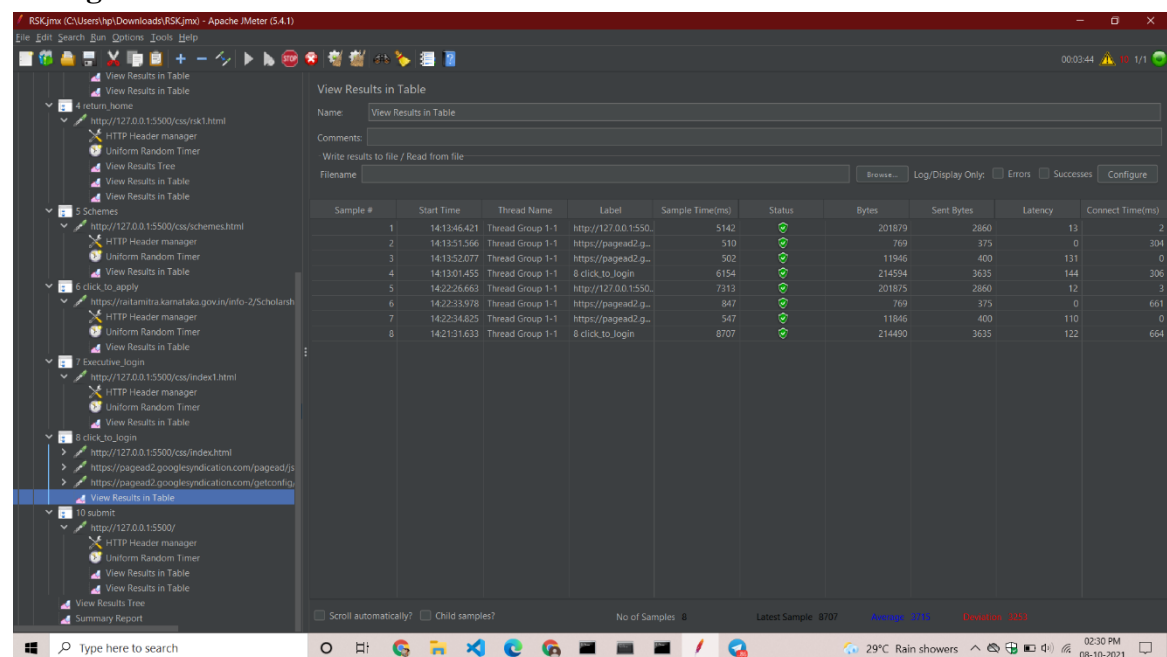


The screenshot shows the Apache JMeter 5.4.1 interface. The left sidebar displays the test plan hierarchy, with the 'Know More' test plan selected. The main window shows the 'View Results in Table' view for the 'Know More' test plan. The table displays the following data:

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(ms)
1	14:10:00.242	Thread Group 1-1	http://127.0.0.1:5500/css/about.html	10	Success	3785	556	10	2
2	14:10:00.741	Thread Group 1-2	http://127.0.0.1:5500/css/about.html	12	Success	3785	556	10	2
3	14:10:16.133	Thread Group 1-1	http://127.0.0.1:5500/css/about.html	8	Success	3785	556	7	1

The status bar at the bottom indicates 'No of Samples: 3', 'Latest Sample: 8', 'Average: 10', and 'Deviation: 1'.

## 3.2 login button



The screenshot shows the Apache JMeter 5.4.1 interface. The left sidebar displays the test plan hierarchy, with the 'login button' test plan selected. The main window shows the 'View Results in Table' view for the 'login button' test plan. The table displays the following data:

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(ms)
1	14:13:46.421	Thread Group 1-1	http://127.0.0.1:5500/css/schemes.html	5142	Success	201879	2860	13	2
2	14:13:51.566	Thread Group 1-1	https://pagead2.googlesyndication.com/pagead/js/adsbygoogle.js	510	Success	769	375	0	304
3	14:13:52.077	Thread Group 1-1	https://pagead2.googlesyndication.com/pagead/js/adsbygoogle.js	502	Success	11946	400	131	0
4	14:13:01.455	Thread Group 1-1	6 click_to_login	6154	Success	214594	3635	144	306
5	14:22:26.663	Thread Group 1-1	http://127.0.0.1:5500/css/index.html	7313	Success	201875	2860	12	3
6	14:22:33.978	Thread Group 1-1	https://pagead2.googlesyndication.com/pagead/js/adsbygoogle.js	847	Success	769	375	0	661
7	14:22:34.825	Thread Group 1-1	https://pagead2.googlesyndication.com/pagead/js/adsbygoogle.js	547	Success	11846	400	110	0
8	14:21:31.633	Thread Group 1-1	6 click_to_login	8707	Success	214490	3635	122	664

The status bar at the bottom indicates 'No of Samples: 8', 'Latest Sample: 8707', 'Average: 3715', and 'Deviation: 1021'.



## 3.1 Executive login

The screenshot shows the Apache JMeter 5.4.1 interface. The left sidebar displays a test plan tree with the following structure:

- RSK (C:\Users\hpi\Downloads\RSK.jmx) - Apache JMeter (5.4.1)
  - 4 return\_home
    - View Results in Table
    - View Results in Table
  - 5 Schemes
    - http://127.0.0.1:5500/css/schemes.html
      - HTTP Header manager
      - Uniform Random Timer
      - View Results Tree
      - View Results in Table
  - 6 click\_to\_apply
    - https://raitamitra.karnataka.gov.in/info-2/Scholarsh...
      - HTTP Header manager
      - Uniform Random Timer
      - View Results in Table
  - 7 Executive\_login
    - http://127.0.0.1:5500/css/index1.html
      - HTTP Header manager
      - Uniform Random Timer
      - View Results in Table
  - 8 click\_to\_login
    - http://127.0.0.1:5500/css/index.html
      - https://pagead2.googlesyndication.com/pagead/js/https://pagead2.googlesyndication.com/getconfig...
      - View Results in Table
  - 10 submit
    - http://127.0.0.1:5500/
      - HTTP Header manager
      - Uniform Random Timer
      - View Results in Table
      - View Results Tree
      - Summary Report

The 'View Results in Table' window is open, showing the following data:

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(ms)
1	14:30:05.652	Thread Group 1-1	http://127.0.0.1:550...	32	Success	5534	1666	13	3
2	14:29:42.934	Thread Group 1-1	7 Executive_login	32	Success	5534	1666	13	3

At the bottom of the window, the status bar shows: No of Samples: 2, Latest Sample: 32, Average: 32, Deviation: 0.

## 1.4 Return To Home

The screenshot shows the Apache JMeter 5.4.1 interface. The left sidebar displays a test plan tree with the following structure:

- RSK
  - HTTP Header manager
  - User Defined Variables
  - HTTP Request Defaults
  - DNS Cache Manager
  - HTTP Authorization Manager
  - HTTP Cookie Manager
  - HTTP Cache Manager
  - Thread Group
    - 2 Know\_more
      - http://127.0.0.1:5500/css/about.html
        - HTTP Header manager
        - Uniform Random Timer
        - View Results in Table
        - View Results in Table
      - 3 Contact\_us
        - http://127.0.0.1:5500/css/contact.html
          - HTTP Header manager
          - Uniform Random Timer
          - View Results in Table
      - 4 return\_home
        - http://127.0.0.1:5500/css/rsk1.html
          - HTTP Header manager
          - Uniform Random Timer
          - View Results Tree
          - View Results in Table
      - 5 Schemes
      - 6 click\_to\_apply
      - 7 Executive\_login
      - 8 click\_to\_login
      - 10 submit

The 'View Results in Table' window is open, showing the following data:

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(ms)
1	14:11:30.152	Thread Group 1-1	http://127.0.0.1:550...	418	Success	32128	1701	10	3
2	14:10:30.433	Thread Group 1-1	4 return_home	418	Success	32128	1701	10	3

At the bottom of the window, the status bar shows: No of Samples: 2, Latest Sample: 418, Average: 418, Deviation: 0.