

Software Quality Engineering

Assignment 1

Submitted By

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Date

September 14, 2025

Department of Software Engineering



FAST – National University of Computer & Emerging Sciences

Project Overview: *Restaurant-Management-System*

Scope

- This project is a web application aimed at enabling restaurant customers to browse a menu, register/sign up, log in, and place online orders.
- It also provides an admin interface to manage menu items and monitor customer orders.
- The scope includes user authentication (signup/login), menu display, order placement, and basic state management (cart, order confirmation).
- It does not include payment gateway integration (unless you add it), nor complex reporting, nor multi-restaurant or multi-branch support (from what's visible)

Size:

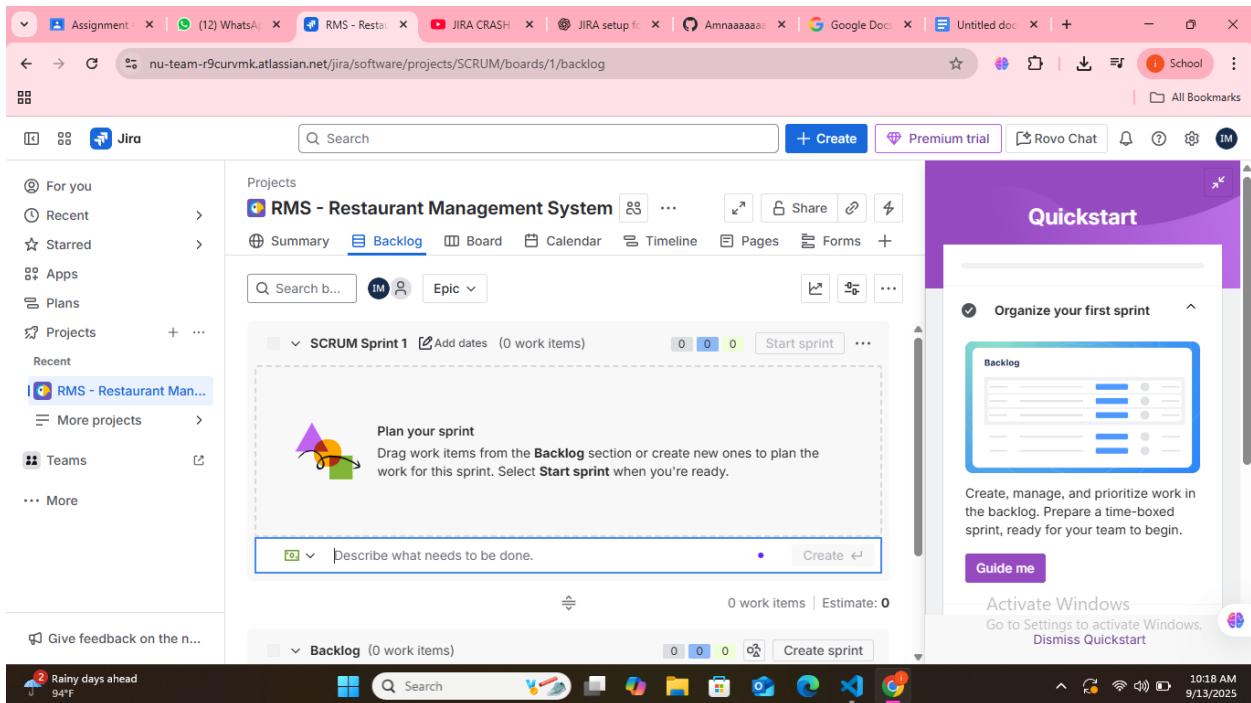
- The codebase is built using Vue 3 + Vite (front-end stack), with HTML, JavaScript, CSS present.
- It's medium-small scale:
- Mainly front-end features so far (menu display, UI, basic authentication).
 - A small number of core modules (authentication, menu, order).
 - Likely a small user base or a prototype rather than fully production-ready.

Modules:

Module	Functionality
Authentication Module	Signup, Login for customers; possibly admin login later.
Menu Module	Display menu items (categories, item details) to customers.
Order Module	Cart, placing orders, showing confirmation.
Frontend UI Module	Responsive views, pages for menu, signup/login, etc.
Admin / Management Module	For admins to edit menu items or view orders (assuming you'll implement this).

Part A: Project Management with JIRA

1. Setting Up Project



2.

(a) Epics

The screenshot shows the Jira interface for the 'RMS - Restaurant Management System' project. The 'Backlog' tab is selected. A modal window titled 'Epic' is open, showing a tree structure with 'No epic' at the root, followed by 'User' and 'Order and Menu Management'. A message in the modal says 'Plan your sprint' and 'Drag work items from the Backlog section or create new ones to plan the work for this sprint. Select Start sprint when you're ready.' Below the modal, the backlog section shows '(0 work items)'. A notification at the bottom left says 'You've created "SCRUM-1" work item'. The system status bar at the bottom right shows 'Activate Windows' and the date '9/13/2025'.

(b) Stories:

The screenshot shows the Jira interface for the 'RMS - Restaurant Management System' project. The 'Backlog' tab is selected. A modal window titled 'Epic' is open, showing a tree structure with 'No epic' at the root, followed by 'User' and 'Order and Menu Management'. A message in the modal says 'Plan your sprint' and 'Drag work items from the Backlog section or create new ones to plan the work for this sprint. Select Start sprint when you're ready.' Below the modal, the backlog section shows '(0 work items)'. The main board view shows 'SCRUM Sprint 1' with 15 tasks: 'SCRUM-6 Customer Signup', 'SCRUM-7 Customer Login', 'SCRUM-9 Admin Login', 'SCRUM-10 View Menu', 'SCRUM-11 Place Order', all labeled 'USER AUTH...' and 'TO DO'. A notification at the bottom left says 'You've created "SCRUM-1" work item'. The system status bar at the bottom right shows 'Activate Windows' and the date '9/13/2025'.

(c)Tasks

The screenshot shows a Jira board titled "SCRUM Sprint 1" with 10 work items visible. The board has columns for "USER AUTHENTICATION", "TO DO", and "IM". The tasks are:

- SCRM-13 Design signup form (UI with fields for name, email, password). Status: TO DO
- SCRM-14 Implement backend API for customer signup. Status: TO DO
- SCRM-15 Build login page UI for customers. Status: TO DO
- SCRM-16 Implement backend authentication logic for customer login. Status: TO DO
- SCRM-17 Design and build admin login page. Status: TO DO
- SCRM-18 Implement role-based access control for admins. Status: TO DO
- SCRM-19 Create menu display page for customers. Status: TO DO
- SCRM-20 Fetch menu items dynamically from database. Status: TO DO
- SCRM-21 Create order placement/cart page. Status: TO DO
- SCRM-22 Implement backend logic to save orders and generate confirmation. Status: TO DO

The sidebar on the left shows an "Epic" section with "No epic" selected. The bottom of the screen shows a Windows taskbar with various icons and the date/time.

3:

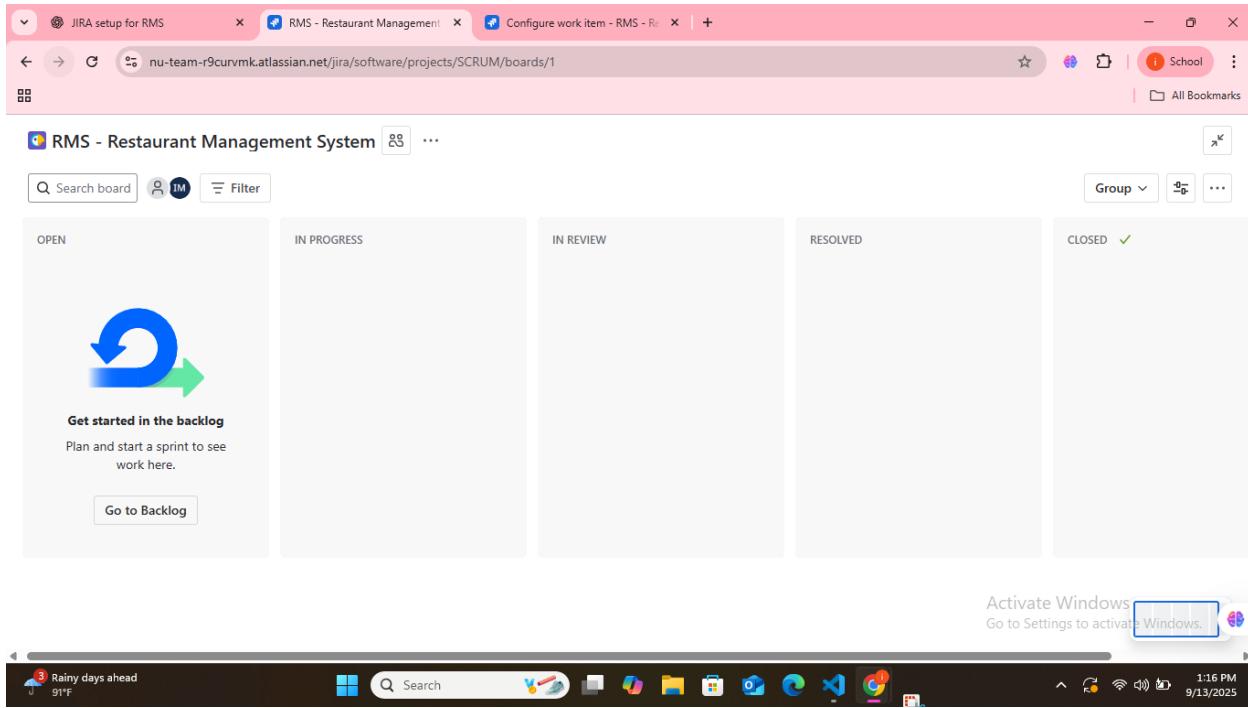
(a)

The screenshot shows the Jira Workflow builder interface for the "RMS - Restaurant Management System". The workflow diagram consists of the following states and transitions:

- START** leads to **OPEN**.
- OPEN**, **IN PROGRESS**, **IN REVIEW**, **RESOLVED**, and **CLOSED** are connected by bidirectional arrows labeled "Any".

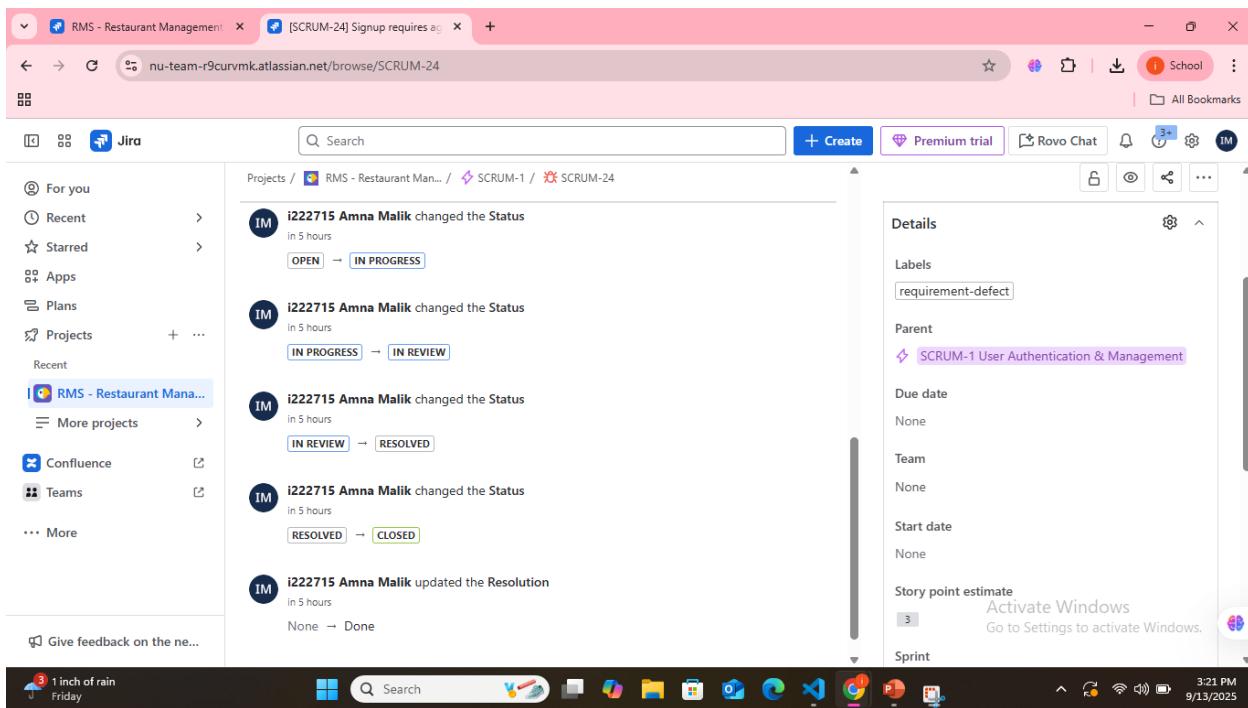
On the right side of the interface, there is a "Map work progress to team processes" section with a diagram showing three overlapping shapes (blue, orange, green) with arrows indicating flow between them. Below this is a "Workflow builder BETA" button. At the bottom, there is a "Workflow builder agent" section with a text input field for creating a new status "IN REVIEW" and a "Create a new status called IN REVIEW" button.

The bottom of the screen shows a Windows taskbar with various icons and the date/time.



(b)

Bug #1:



Bug #2:

The screenshot shows the Jira interface with a sidebar on the left and a main work item view on the right. The sidebar includes links for 'For you', 'Recent', 'Starred', 'Apps', 'Plans', 'Projects' (selected), 'More projects', 'Confluence', 'Teams', and 'More'. The main view displays a timeline of events for bug i222715:

- i222715 Amna Malik changed the Status in 5 hours. Status: OPEN → IN PROGRESS.
- i222715 Amna Malik changed the Status in 5 hours. Status: IN PROGRESS → IN REVIEW.
- i222715 Amna Malik changed the Status in 5 hours. Status: IN REVIEW → RESOLVED.
- i222715 Amna Malik changed the Status in 5 hours. Status: RESOLVED → CLOSED.
- i222715 Amna Malik updated the Resolution in 5 hours. Resolution: None → Done.

The right panel shows the 'Details' section with fields: Assignee (i222715 Amna Malik), Labels (requirement-defect), Parent (SCRUM-1 User Authentication & Management), and Due date (Activate Windows). A note at the bottom says "Go to Settings to activate Windows." The status bar at the bottom shows the date as 9/13/2025 and the time as 3:25 PM.

Bug #3:

The screenshot shows the Jira interface with a sidebar on the left and a main work item view on the right. The sidebar includes links for 'For you', 'Recent', 'Starred', 'Apps', 'Plans', 'Projects' (selected), 'More projects', 'Confluence', 'Teams', and 'More'. The main view displays a timeline of events for bug i222715:

- i222715 Amna Malik changed the Status in 5 hours. Status: OPEN → IN PROGRESS.
- i222715 Amna Malik changed the Status in 5 hours. Status: IN PROGRESS → IN REVIEW.
- i222715 Amna Malik changed the Status in 5 hours. Status: IN REVIEW → RESOLVED.
- i222715 Amna Malik changed the Status in 5 hours. Status: RESOLVED → CLOSED.
- i222715 Amna Malik updated the Resolution in 5 hours. Resolution: None → Done.

The right panel shows the 'Details' section with fields: Assignee (i222715 Amna Malik), Labels (requirement-defect), Parent (SCRUM-2 Order and Menu Management), and Due date (Activate Windows). A note at the bottom says "Go to Settings to activate Windows." The status bar at the bottom shows the date as 9/13/2025 and the time as 3:27 PM.

Bug #4:

The screenshot shows a Jira issue page for bug i222715. The status transitions are as follows:

- i222715 Amna Malik changed the Status in 5 hours: OPEN → IN PROGRESS
- i222715 Amna Malik changed the Status in 5 hours: IN PROGRESS → IN REVIEW
- i222715 Amna Malik changed the Status in 5 hours: IN REVIEW → RESOLVED
- i222715 Amna Malik changed the Status in 5 hours: RESOLVED → CLOSED
- i222715 Amna Malik updated the Resolution in 5 hours: None → Done

The Jira sidebar shows the user has access to RMS - Restaurant Man..., Confluence, Teams, and More projects.

Bug #5:

The screenshot shows a Jira issue page for bug i222715. The status transitions are as follows:

- i222715 Amna Malik changed the Status in 5 hours: OPEN → IN PROGRESS
- i222715 Amna Malik changed the Status in 5 hours: IN PROGRESS → IN REVIEW
- i222715 Amna Malik changed the Status in 5 hours: IN REVIEW → RESOLVED
- i222715 Amna Malik changed the Status in 5 hours: RESOLVED → CLOSED
- i222715 Amna Malik updated the Resolution in 5 hours: None → Done

The Jira sidebar shows the user has access to RMS - Restaurant Man..., Confluence, Teams, and More projects.

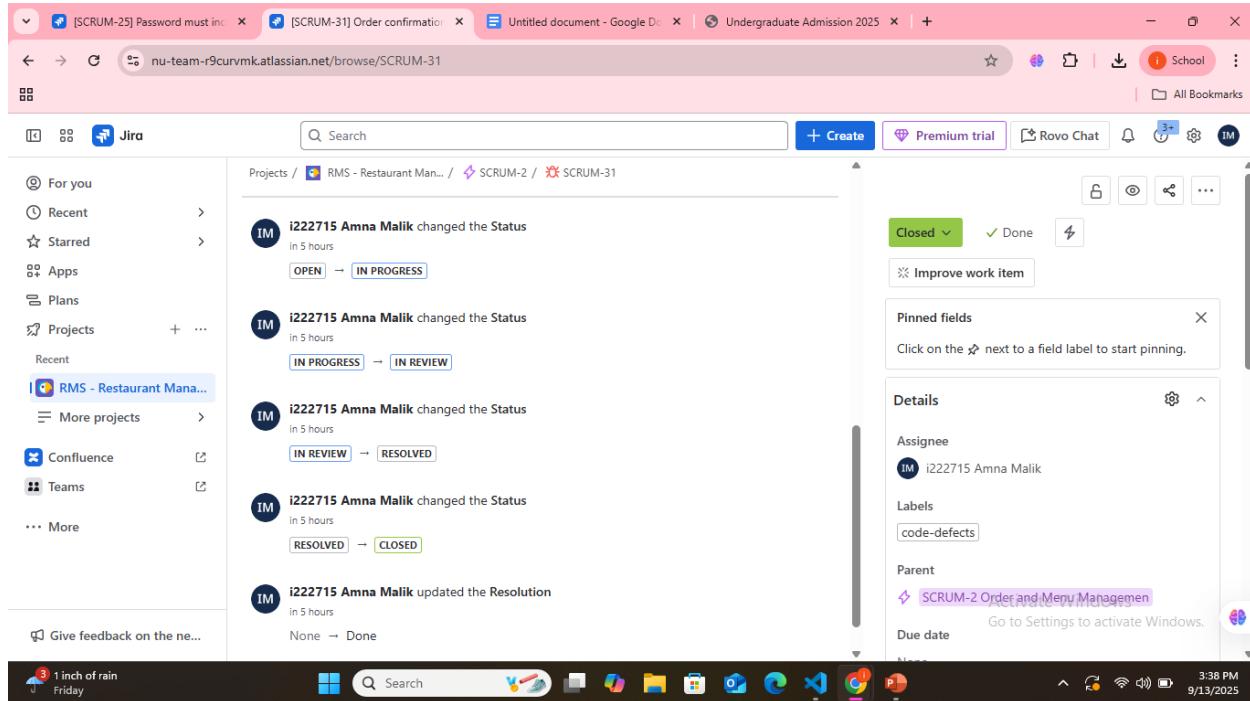
Bug #6:

The screenshot shows a Jira work item page for bug #6. The work item is titled "i222715 Amna Malik changed the Status". It has a status transition history from OPEN to IN PROGRESS, then to IN REVIEW, then to OPEN, then to RESOLVED, and finally to CLOSED. The status is currently set to CLOSED. The details panel on the right shows the assignee as "i222715 Amna Malik", labels as "code-defects", and a parent link to "SCRUM-1 User Authentication & Management". The work item is pinned to the dashboard.

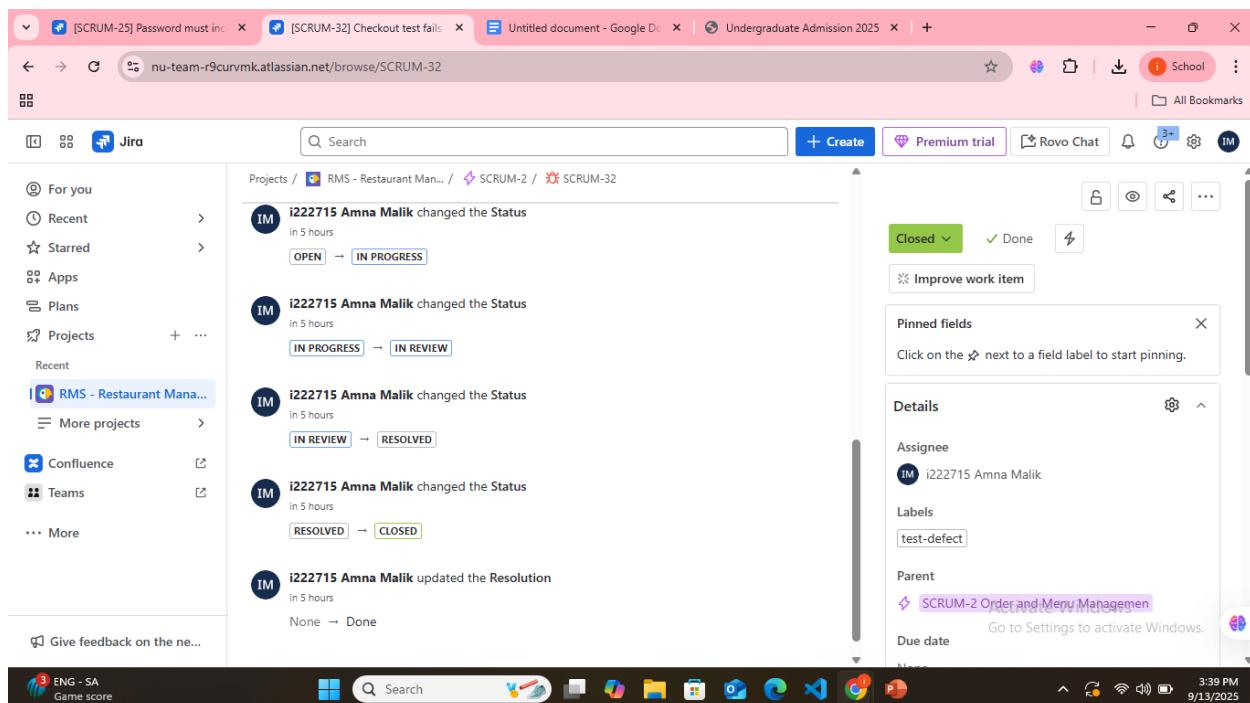
Bug #7:

The screenshot shows a Jira work item page for bug #7. The work item is titled "i222715 Amna Malik changed the Status". It has a status transition history from OPEN to IN PROGRESS, then to IN REVIEW, then to RESOLVED, and finally to CLOSED. The status is currently set to CLOSED. The details panel on the right shows the assignee as "i222715 Amna Malik", labels as "code-defects", and a parent link to "SCRUM-2 Order and Menu Management". The work item is pinned to the dashboard.

Bug #8:



Bug #9:



Bug #10:

The screenshot shows a Jira issue detail page for bug i222715. The status history is as follows:

- Changed from OPEN to IN PROGRESS by Amna Malik in 5 hours
- Changed from IN PROGRESS to IN REVIEW by Amna Malik in 5 hours
- Changed from IN REVIEW to RESOLVED by Amna Malik in 5 hours
- Changed from RESOLVED to CLOSED by Amna Malik in 5 hours
- Updated the Resolution by Amna Malik in 5 hours

The right side of the screen displays the issue details, including assignee (Amna Malik), labels (test-defect), and parent (SCRUM-2 Order and Menu Management). A pinned field section is also visible.

4.

The screenshot shows a Jira backlog board for SCRUM Sprint 1. The board lists the following items:

- SCRM-24 Signup requires age field, but not in requirements (User Authentication & Management)
- SCRM-25 Password must include symbols (not in requirements) (User Authentication & Management)
- SCRM-26 Menu requires category filter, not in requirements (Order and Menu Management)
- SCRM-27 Menu page not mobile responsive (Order and Menu Management)
- SCRM-28 Signup form misaligned on smaller screens (User Authentication & Management)
- SCRM-29 Login button not working (User Authentication & Management)
- SCRM-30 Cart total calculation incorrect for multiple items (Order and Menu Management)
- SCRM-31 Order confirmation email not sent (Order and Menu Management)
- SCRM-32 Checkout test fails when quantity = 0 (Order and Menu Management)
- SCRM-33 Search test case fails with special characters (Order and Menu Management)

The board interface includes filters for Epic, Type, Label, and Clear filters, along with a Start sprint button.

Requirement Defects:

The screenshot shows the Jira interface for the 'RMS - Restaurant Management System' project. The 'Backlog' tab is selected. A filter sidebar on the right is open, with the 'Label' tab selected. The 'requirement-defect' label is checked. The backlog table lists several items under 'SCRUM Sprint 1', including 'SCRUM-24 Signup requires age field, but not in r', 'SCRUM-25 Password must include symbols (not i', and 'SCRUM-26 Menu requires category filter, not in r'. The total estimate for the sprint is 7 of 73.

Design Defects:

The screenshot shows the Jira interface for the 'RMS - Restaurant Management System' project. The 'Backlog' tab is selected. A filter sidebar on the right is open, with the 'Label' tab selected. The 'design-defect' label is checked. The backlog table lists several items under 'SCRUM Sprint 1', including 'SCRUM-27 Menu page not mobile responsive' and 'SCRUM-28 Signup form misaligned on smaller sc'. The total estimate for the sprint is 8 of 73.

Code Defects:

The screenshot shows the Jira interface for the 'RMS - Restaurant Management System' project. The 'Backlog' tab is selected. A filter sidebar on the right is open, showing various defect types. The 'code-defects' checkbox is checked, and the results show three work items from SCRUM Sprint 1:

- SCRUM-29 Login button not working
- SCRUM-30 Cart total calculation incorrect for mu
- SCRUM-31 Order confirmation email not sent

The sidebar also lists other defect types like design-defect, requirement-defect, admin, authentication, backend, checkout, customer, database, and backend.

Test Defects:

The screenshot shows the Jira interface for the 'RMS - Restaurant Management System' project. The 'Backlog' tab is selected. A filter sidebar on the right is open, showing various defect types. The 'test-defect' checkbox is checked, and the results show one work item from SCRUM Sprint 1:

- SCRUM-33 Search test case fails with special char

The sidebar also lists other defect types like design-defect, admin, authentication, backend, checkout, code-defects, customer, database, and design-defect.

5.

The image shows two side-by-side screenshots of Jira work item pages, both titled "Search test case fails with special characters" and "Login button not working".

Top Work Item (SCRUM-33):

- Description:** Search function test fails when input includes "@" or "#".
- Subtasks:** Add subtask
- Connected work items:** No results found.
- Activity:** SCRUM-10 View Menu (OPEN)
- Details:**
 - Assignee: i222715 Amna Malik
 - Labels: test-defect
 - Parent: SCRUM-2 Order and Menu Management
 - Due date: Activate Windows (None)

Bottom Work Item (SCRUM-29):

- Description:** Clicking the login button does nothing, no API request is triggered.
- Subtasks:** Add subtask
- Connected work items:** SCRUM-16 Implement backend authentication logic... (OPEN)
- Confluence content:** Filter by space: Rainy days ahead, 85°F. Search content or paste in a link: Create in Confluence.
- Details:**
 - Assignee: i222715 Amna Malik
 - Labels: code-defects
 - Parent: SCRUM-1 User Authentication & Management
 - Due date: Activate Windows (None)

6.

(a)

The screenshot shows the Jira interface for the RMS - Restaurant Management System project. The left sidebar shows recent projects, and the main area displays the backlog. The backlog is filtered for 'Type' (1) and shows the following items:

Issue	Type	Status	Priority	Assignee
SCRUM-6 Customer Signup	USER AUTHENTICATION	OPEN	3	AA
SCRUM-7 Customer Login	USER AUTHENTICATION	OPEN	2	IM
SCRUM-9 Admin Login	USER AUTHENTICATION	OPEN	2	IM
SCRUM-10 View Menu	ORDER AND MENU M...	OPEN	3	AA
SCRUM-11 Place Order	ORDER AND MENU M...	OPEN	5	AA

Below this, there is a section for 'SCRUM Sprint 1' with 5 of 17 work items visible. The backlog summary indicates 0 work items.

Backlog (0 work items)

Activate Windows
Go to Settings to activate Windows.

At the bottom, the taskbar shows various open applications including Jira, RMS - Restaurant Management, Google Docs, and a browser window for the Jira backlog.

Jira | Issue & Project Tracking S... RMS - Restaurant Management SCD - Google Docs

nu-team-r9curvmk.atlassian.net/jira/software/projects/SCRUM/boards/1/backlog?issueType=10009%2C10008%2C10004&selectedIssue=SCRU...

RMS - Restaurant Management System

Search backlog... Epic Type 1 Label Clear filters

SCRUM Sprint 1 Add dates (9 of 24 work items visible)

Issue Key	Summary	Status	Priority	Assignee
SCRUM-24	Signup requires age field, but not in requirements	OPEN	3	AA
SCRUM-25	Password must include symbols (not in requirements)	OPEN	2	IM
SCRUM-26	Menu requires category filter, not in requirements	OPEN	2	AA
SCRUM-27	Menu page not mobile responsive	OPEN	5	IM
SCRUM-28	Signup form misaligned on smaller screens	OPEN	3	AA
SCRUM-29	Login button not working	OPEN	5	IM
SCRUM-30	Cart total calculation incorrect for multiple items	OPEN	5	AA
SCRUM-31	Order confirmation email not sent	OPEN	3	IM
SCRUM-33	Search test case fails with special characters	OPEN	2	AA

+ Create More results

Activate Windows Go to Settings to activate Windows.

85°F Haze

Search

8 of 24 work items visible Estimate: 30 of 72

10:23 PM 9/13/2025

(b)

Jira | Issue & Project Tracking S... RMS - Restaurant Management SCD - Google Docs

nu-team-r9curvmk.atlassian.net/jira/software/projects/SCRUM/boards/1/backlog?issueType=10009%2C10008%2C10004&selectedIssue=SCRU...

RMS - Restaurant Management System

Search + Create Premium trial Rovo Chat

For you Recent Starred Apps Plans Projects Recent More projects Confluence Teams ... More Give feedback on the ne...

Projects

SCRUM Sprint 1 Add dates (24 work items)

Issue Key	Summary	Status	Priority	Assignee
SCRUM-6	Customer Signup	OPEN	3	
SCRUM-7	Customer Login	OPEN	2	
SCRUM-9	Admin Login	OPEN	2	
SCRUM-10	View Menu	OPEN	3	
SCRUM-11	Place Order	OPEN	5	
SCRUM-13	Design signup form (UI...)	OPEN	2	
SCRUM-14	Implement...	OPEN	3	i222715 Amna Malik
SCRUM-15	Build login page UI for ...	OPEN	2	

SCRUM-1 / SCRUM-9

Created 6 hours ago Updated 5 minutes ago

Configure

Activity All Comments History Work log

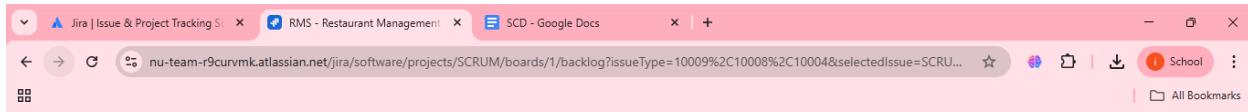
i222715 Amna Malik 5 minutes ago This is Admin log.

Activate Windows Go to Settings to activate Windows.

83°F Haze

Search

10:39 PM 9/13/2025



Jira | Issue & Project Tracking Software | RMS - Restaurant Management | SCD - Google Docs

nu-team-r9curvmk.atlassian.net/jira/software/projects/SCRUM/boards/1/backlog?issueType=10009%2C10008%2C10004&selectedIssue=SCRU...

Search + Create Premium trial Rovo Chat School All Bookmarks

For you Recent Starred Apps Plans Projects More projects Confluence Teams ... More Give feedback on the ne...

Projects RMS - Restaurant Management System Summary Backlog Board Calendar Timeline Pages Forms +

Search backlog Epic Type Label Clear filters

SCRUM-9 Admin Login OPEN 2 SCRUM-10 View Menu OPEN 3 SCRUM-11 Place Order OPEN 5 SCRUM-13 Design signup form (UI...) OPEN 2 SCRUM-14 Implement backend API... OPEN 3 SCRUM-15 Build login page UI for ... OPEN 2 SCRUM-16 Implement backend auth... OPEN 3 SCRUM-17 Design a ... More results OPEN 2 SCRUM-18 Implement role-based ... OPEN 3

SCRUM-1 / SCRUM-14 Updated 6 hours ago

Activity All Comments History Work log

i222715 Amna Malik 3 seconds ago This is task 2 Implement backend API for customer signup.

Activate Windows Go to Settings to activate Windows.

83°F Haze 10:40 PM 9/13/2025

Jira | Issue & Project Tracking Software | RMS - Restaurant Management | SCD - Google Docs

nu-team-r9curvmk.atlassian.net/jira/software/projects/SCRUM/boards/1/backlog?issueType=10009%2C10008%2C10004&selectedIssue=SCRU...

Search + Create Premium trial Rovo Chat School All Bookmarks

For you Recent Starred Apps Plans Projects More projects Confluence Teams ... More Give feedback on the ne...

Projects RMS - Restaurant Management System Summary Backlog Board Calendar Timeline Pages Forms +

Search backlog Epic Type Label Clear filters

SCRUM-20 Tech menu items dynamic... OPEN 3 SCRUM-21 Create order placement... OPEN 3 SCRUM-22 Implement backend lo... OPEN 5 SCRUM-24 Signup requires age fie... OPEN 3 SCRUM-25 Password must include ... OPEN 2 SCRUM-26 Menu requires categor... OPEN 2 SCRUM-27 Menu page not mobile... OPEN 5 SCRUM-28 Signup form misalignme... OPEN 3 SCRUM-29 Login button not workin... OPEN 5 SCRUM-30 Cart total calculation in...

SCRUM-1 / SCRUM-25 Updated 1 hour ago

Activity All Comments History Work log

i222715 Amna Malik 1 second ago This is bug 2: Password must include symbols (not in requirements)

Activate Windows Go to Settings to activate Windows.

83°F Haze 10:41 PM 9/13/2025

Jira

For you

Recent

Starred

Apps

Plans

Projects

RMS - Restaurant Management System

Summary Backlog Board Calendar Timeline Pages Forms Zephyr Essential

Search backlog

Epic Type Label

SCRUM Sprint 1 Add dates (24 work items)

SCRUM-6 Customer Signup OPEN AA

SCRUM-7 Customer Login OPEN IM

SCRUM-9 Admin Login OPEN IM

SCRUM-10 View Menu OPEN AA

SCRUM-11 Place Order OPEN AA

SCRUM-13 Design signup form (UI with fields for ... OPEN AA

SCRUM-14 Implement backend API for customer s... OPEN IM

SCRUM-15 Build login page UI for customers. OPEN IM

SCRUM-16 Implement backend authentication log... OPEN IM

SCRUM-17 Design and build admin login page. OPEN AA

SCRUM-18 Implement role-based access control f... OPEN IM

Start sprint

SCRUM-1 / SCRUM-6

All Comments History Work log

Add a comment... Suggest a reply... Status update... Thanks...

Pro tip: press M to comment

Aymen Akhtar 10 minutes ago

Customer Signup functionality implemented with input validation and error handling.

AA

Projects

RMS - Restaurant Management System

Summary Backlog Board Calendar Timeline Pages Forms Zephyr Essential

Search backlog

Epic Type Label

SCRUM-15 Build login page UI for customers. OPEN IM

SCRUM-16 Implement backend authentication log... OPEN IM

SCRUM-17 Design and build admin login page. OPEN AA

SCRUM-18 Implement role-based access control f... OPEN IM

SCRUM-19 Create menu display page for custome... OPEN AA

SCRUM-20 Fetch menu items dynamically from da... OPEN IM

SCRUM-21 Create order placement/cart page. OPEN IM

SCRUM-22 Implement backend logic to save orde... OPEN AA

SCRUM-24 Signup requires age field, but not in re... OPEN AA

SCRUM-25 Password must include symbols (not in... OPEN IM

SCRUM-26 Menu requires category filter, not in re... OPEN AA

SCRUM-27 Menu page not mobile responsive OPEN IM

SCRUM-2 / SCRUM-21

Add a comment... Suggest a reply... Status update... Thanks...

Pro tip: press M to comment

Aymen Akhtar 20 seconds ago

Order placement and cart page completed with item addition/removal, total calculation, and checkout button

AA

(c)

7.

The screenshot shows two separate Jira sessions side-by-side.

Left Session (Top): The Jira interface for the "RMS - Restaurant Management System" project. The "Backlog" tab is selected. The backlog is organized into "SCRUM Sprint 1" and "SCRUM Sprint 2". Under "SCRUM Sprint 1", there are five work items: "SCRUM-34 Test Case 1", "SCRUM-35 Test Case 2", "SCRUM-36 Test Case 3", "SCRUM-37 Test Case 4", and "SCRUM-38 Test Case 5". Each item has a status of "OPEN" and an "IM" icon. A "Start sprint" button is visible at the top right of the backlog section. The status bar at the bottom indicates "5 of 29 work items visible" and "Estimate: 0 of 73".

Right Session (Bottom): The Jira interface for the "RMS - Restaurant Management System" project, specifically viewing the "Test Cases" under "TEST CYCLE 1". The "Zephyr Essential" tab is selected. The test cycle details show "No estimated time" and "Planned start date: 14/Sep/25". The "Test Cases" section lists four test cases: "SCRUM-T1 (1.0) TC-01", "SCRUM-T2 (1.0) TC-02", "SCRUM-T3 (1.0) TC-03", and "SCRUM-T4 (1.0) TC-04". Each test case has an "IM" icon. A "Start a new test execution" button is visible at the top right. The status bar at the bottom indicates "No estimated time" and "Actual 32s".

The screenshot shows the Jira interface for a project titled "RMS - Restaurant Management System". The user is viewing the "Test Cases" section under the "TEST CYCLE 1" tab. There are five test cases listed:

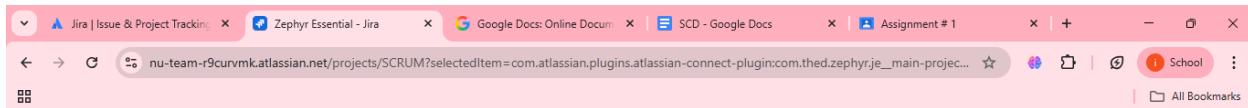
- SCRUN-T1 (1.0) TC-01 (00:00:53)
- SCRUN-T2 (1.0) TC-02 (00:00:06)
- SCRUN-T3 (1.0) TC-03 (00:00:16)
- SCRUN-T4 (1.0) TC-04 (00:00:16)

The "SCRUM-T2 (1.0) TC-02" test case is currently being executed, showing a duration of 00:00:06 and a status of "PASS". The "Execution" details are as follows:

Environment	Iteration	Release version	Assigned To
None	None	None	i222715 Amna Malik
Executed by	Estimated	Actual	Notes
i222715 Amna Malik	None	6s	Activate Windows Go to Settings to activate Windows.

The system status bar at the bottom indicates "81°F Haze" and the date/time "1:15 AM 9/14/2025".

The second identical screenshot below it shows the same view, indicating a duplicate entry or a second instance of the same screen.



Jira | Issue & Project Tracking Zephyr Essential - Jira Google Docs: Online Document SCD - Google Docs Assignment # 1 + - X

nu-team-r9curvmk.atlassian.net/projects/SCRUM?selectedItem=com.atlassian.plugins.atlassian-connect-plugin:com.thed.zephyr.je_main-project... School All Bookmarks

Projects

RMS - Restaurant Management System

Summary Backlog Board Calendar Timeline Pages Forms Zephyr Essential

TEST CYCLE 1

No estimated time • No execution time • Planned start date: 14/Sep/25 • Planned end date: 14/Sep/25

Test Cases 5

Group by: Tester Show only assigned to me

i222715 Amna Malik 5 test cases

- SCRUM-T1 (1.0) TC-01 00:00:53
- SCRUM-T2 (1.0) TC-02 00:00:06
- SCRUM-T3 (1.0) TC-03 00:00:42
- SCRUM-T4 (1.0) TC-04 00:00:00

Start a new test execution

SCRUM-T4 (1.0) TC-04

No estimated time • No execution time • 14/Sep/25 1:16 am

PASS 00:00:00

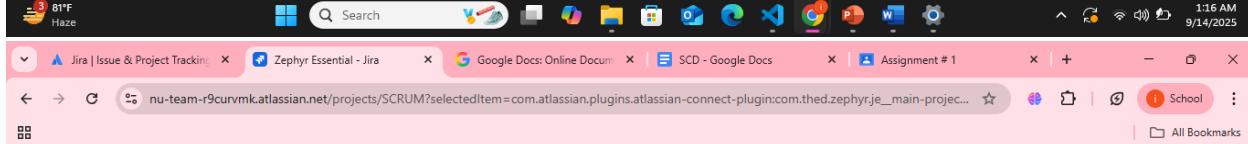
Execution

Environment: None Iteration: None

Release version: None Assigned To: i222715 Amna Malik

Executed by: i222715 Amna Malik Estimated: None

Actual: None Activate Windows Go to Settings to activate Windows.



Jira | Issue & Project Tracking Zephyr Essential - Jira Google Docs: Online Document SCD - Google Docs Assignment # 1 + - X

nu-team-r9curvmk.atlassian.net/projects/SCRUM?selectedItem=com.atlassian.plugins.atlassian-connect-plugin:com.thed.zephyr.je_main-project... School All Bookmarks

Projects

RMS - Restaurant Management System

Summary Backlog Board Calendar Timeline Pages Forms Zephyr Essential

TEST CYCLE 1

No estimated time • No execution time • Planned start date: 14/Sep/25 • Planned end date: 14/Sep/25

Test Cases 5

Group by: Tester Show only assigned to me

i222715 Amna Malik 5 test cases

- SCRUM-T1 (1.0) TC-01 00:00:53
- SCRUM-T2 (1.0) TC-02 00:00:06
- SCRUM-T3 (1.0) TC-03 00:00:42
- SCRUM-T4 (1.0) TC-04 00:00:00

Start a new test execution

SCRUM-T5 (1.0) TC-05

No estimated time • Actual 12s • 14/Sep/25 1:17 am

FAIL 00:00:12

Execution

Environment: None Iteration: None

Release version: None Assigned To: i222715 Amna Malik

Executed by: i222715 Amna Malik Estimated: None

Actual: 12s Activate Windows Go to Settings to activate Windows.

The screenshot shows a Microsoft Edge browser window with several tabs open:

- Jira | Issue & Project Tracking
- [SCRUM-38] Test Case 5 - Jir...
- Google Docs: Online Document
- SCD - Google Docs
- Assignment # 1

The main content area displays a Jira work item detail page for SCRUM-38. The work item is currently closed and marked as done. The status history shows three changes by Amna Malik:

- i222715 Amna Malik changed the Status 20 seconds ago: OPEN → IN PROGRESS
- i222715 Amna Malik changed the Status 17 seconds ago: IN PROGRESS → IN REVIEW
- i222715 Amna Malik changed the Status 13 seconds ago: IN REVIEW → CLOSED

A modal message at the bottom left says: "You've created 'SCRUM-39' work item". The system tray at the bottom right shows the date as 9/14/2025 and the time as 1:31 AM.

Part B: Code Quality Analysis with SonarQube

SonarQube dashboard screenshot:

The screenshot shows the SonarQube dashboard for the "Restaurant Web" project. The overall status is "Passed". The dashboard provides an overview of code quality metrics:

- Quality Gate:** Passed
- New Code:** 0 Open issues (A), 18 Open issues (C), 3 Open issues (A)
- Overall Code:** 0 Accepted issues (G), 0.0% Coverage (R), 0.0% Duplications (G)
- Security:** 0 Open issues (A)
- Reliability:** 18 Open issues (C)
- Maintainability:** 3 Open issues (A)
- Accepted Issues:** 0 Valid issues that were not fixed.
- Security Hotspots:** 3

The SonarQube interface includes navigation tabs for Overview, Issues, Security Hotspots, Code, Measures, and Activity. The system tray at the bottom right shows the date as 9/13/2025 and the time as 7:02 PM.

Metric values:

Cyclomatic Complexity	178
Cognitive Complexity	88
Maintainability Index	A
Code Smells	21
Duplications	0.0%
Security Hotspots	E
Reliability Rating	C
Vulnerability Ratings	A

Screenshot of Metric values:

My repositories Code measures Activity

Security ?	
Overview	
Overall Code	
Issues	0
Rating	A
Remediation Effort	0

Reliability ?	
Overview	
Overall Code	
Issues	18
Rating	C
Remediation Effort	1h 30min

Maintainability	
Overview	
Overall Code	
Issues	3
Debt	15min
Debt Ratio	0.0%
Rating	A
Effort to Reach A	0

Security Review	
Overall Code	
Security Hotspots	3
Rating	E
Security Hotspots Reviewed	0.0%

Coverage >

Coverage	
Overview	
Overall Code	
Coverage	0.0%
Lines to Cover	311
Uncovered Lines	311
Line Coverage	0.0%

Duplications	
Overview	
Overall Code	
Density	0.0%
Duplicated Lines	0
Duplicated Blocks	0
Duplicated Files	0

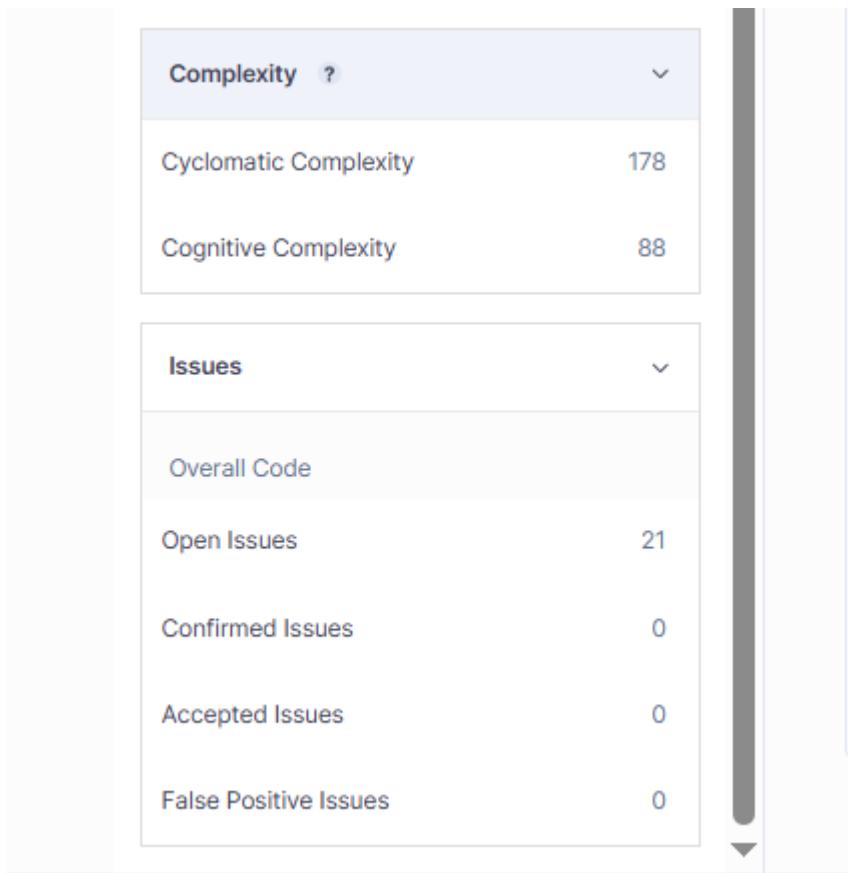
Duplications	
Overview	
Overall Code	
Density	0.0%
Duplicated Lines	0
Duplicated Blocks	0
Duplicated Files	0

Size	
Lines of Code	
Lines of Code	3,109
Lines	3,499
Statements	311
Functions	86
Classes	0
Files	18

src

=resturantweb#





Part C: Quality Engineering Analysis

1. Mapping Metrics to Quality Attributes (McCall's Model)

Quality Attribute	Relevant SonarQube Metric(s)	Justification
Maintainability	<ul style="list-style-type: none"> Maintainability Index (A) Cyclomatic Complexity (178) Cognitive Complexity (88) Code Smells (21) Duplications (0.0%) 	The Maintainability Index provides a direct grade. High complexity and many code smells make code harder to understand and modify. Low duplication is positive.
Reliability	<ul style="list-style-type: none"> Reliability Rating (C) Bugs (likely part of the 21 issues) 	The Reliability Rating directly measures the likelihood of the application to fail. A "C" rating indicates a moderate risk of bugs appearing in production.

Testability	<ul style="list-style-type: none"> • Test Coverage (0.0%) 	Directly measures how much of the codebase is exercised by automated tests. 0% coverage means the code is very difficult to test reliably.
Correctness	<ul style="list-style-type: none"> • All Issues (21) • Vulnerability Rating (A) • Reliability Rating (C) 	The total number of issues reflects deviations from correct coding standards. A high Vulnerability Rating (A) is good for security correctness.
Integrity	<ul style="list-style-type: none"> • Vulnerability Rating (A) • Security Hotspots (0) 	These metrics directly measure the code's resistance to security attacks and breaches. An "A" rating is excellent.

2. Mapping Attributes to Metrics:

a) Maintainability

Best Metrics: Maintainability Index, Cognitive Complexity, Code Smells

Justification: The Maintainability Index 'A' is a fantastic overall grade. However, the high Cognitive Complexity (88) and 21 Code Smells are warning signs. Cognitive Complexity measures how easy the code is to understand for a human. A high value means the code is difficult to read and modify. The Code Smells indicate violations of fundamental coding rules that, while not bugs themselves, create technical debt and make future changes riskier. The excellent Maintainability Index is likely due to the good duplication and security scores, but the complexity needs addressing.

b) Reliability

Best Metrics: Reliability Rating, Test Coverage

Justification: The Reliability Rating of 'C' indicates a moderate risk of application failure. This is directly linked to the 0.0% Test Coverage. Untested code is unpredictable code. Without automated tests, there is no safety net to catch regressions when new features are added or bugs are fixed. This is the most critical finding for reliability.

c) Security

Best Metrics: Vulnerability Rating, Security Hotspots

Justification: The application's security posture is excellent. A Vulnerability Rating of 'A' means no open vulnerabilities were found. The fact that there are 0 Security Hotspots that need reviewing means the code does not contain any obvious patterns that could lead to security weaknesses. This is a major strength of the project.

3. Defect Linkage

- Modules with high Cyclomatic Complexity (178) and Cognitive Complexity (88) are more error-prone, so defects are likely to appear in these areas.
- The presence of 21 Code Smells indicates poor coding practices that can later evolve into functional defects if not fixed.
- Security Hotspots (E) highlight potential vulnerabilities that could lead to security-related failures or defects in production.
- The lack of Test Coverage makes it difficult to detect defects early, increasing the chance of undetected bugs in critical parts of the code.

4. Recommendations:

1. **Refactor Complex Code :** Break down high-complexity methods into smaller functions to reduce Cyclomatic & Cognitive Complexity
2. **Write Unit Tests:** Improve Test Coverage to measure and increase reliability. Currently missing coverage makes defects harder to catch.
3. **Fix Security Hotspots:** Review and patch insecure coding practices flagged by SonarQube (priority since rating = E).
4. **Address Code Smells:** Resolve the 21 code smells to improve maintainability and reduce technical debt.
5. **Continuous Integration Setup:** Automate SonarQube analysis in CI/CD pipeline to continuously monitor quality.

GithubLink:

<https://github.com/Amnaaaaaaaaaaaa/restaurant-management-system.git>