 Marwadi University Marwadi Chandarana Group	Marwadi University Faculty of Engineering and Technology Department of Information and Communication Technology	
Subject: Capstone Project	Testing and Validation	
Project : - Job Gujarat	Date: 24-09-2025	Enrolment No: 92310133019 & 92310133013

Introduction

When we built Job Gujarat, we knew it had to work perfectly from day one because our client already had thousands of people waiting to use it. We couldn't afford fancy testing tools or automated test suites, so we took a practical approach - manually testing every single feature, validating each workflow, and making sure the platform actually solves the problem it was built for. This document covers how we validated that our platform works, what issues we found and fixed, and how we confirmed it meets our objectives.

Testing Methodology

➤ Our Validation Approach

We used what we call "real-world testing" - actually using the platform the way real users would. Instead of writing automated tests, we created test accounts and went through every possible scenario manually. Here's how we approached it:

➤ Testing Environment:


- Development: Tested locally on our laptops while building
- Staging: Used Vercel preview links before pushing to production
- Production: Carefully tested live features with test accounts

➤ Manual Testing Process:

1. Created different user accounts (jobseeker, employer, admin)
2. Tested each feature multiple times with different inputs
3. Used different devices and internet speeds
4. Asked friends and family to test and give feedback
5. Documented issues in a shared Google Sheet

➤ What We Focused On:

- Does every button and link work correctly?
- Can users complete the main workflows without errors?
- Do emails get delivered properly?
- Does the job recommendation system show relevant results?
- Is the platform usable on slow internet and old phones?

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Unit Tests (Component-Level Validation)

➤ Backend Functionality Testing

Test 1: User Registration Process

- **What we tested:** Can new users create accounts successfully?
- **How we tested:** Registered 10 different test accounts with various phone numbers and email addresses
- **Results:** Found that Gmail addresses worked perfectly, but some Yahoo emails went to spam. Added instruction text to check spam folder.

Test 2: Job Posting Functionality

- **What we tested:** Can employers post jobs with all required details?
- **How we tested:** Posted 15 test jobs with different combinations of fields
- **Results:** Initially, the salary field accepted text instead of numbers. Fixed by adding proper validation. Also found that job descriptions with more than 500 words weren't saving properly due to database field limit.

Test 3: Resume Upload Feature

- **What we tested:** Can users upload resumes in different formats?
- **How we tested:** Tried uploading PDF, DOC, DOCX, and image files of various sizes
- **Results:** PDFs worked fine up to 5MB. DOC files weren't previewing correctly. Large files (>5MB) would upload but timeout during processing. Added file size validation and format checking.


Test 4: Search and Filter System

- **What we tested:** Does the job search return relevant results?
- **How we tested:** Searched for various keywords, locations, and salary ranges
- **Results:** Basic search worked but was case-sensitive initially. Searching "Driver" wouldn't find "driver" jobs. Fixed by converting everything to lowercase before searching.

Test 5: Application Tracking

- **What we tested:** Can jobseekers see their application status?
- **How we tested:** Applied to multiple jobs and checked if status updates showed correctly
- **Results:** Status was updating in database but not reflecting immediately in UI. Had to add real-time refresh functionality.

➤ Frontend Interface Testing

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Test 6: Mobile Responsiveness

- **What we tested:** Does the site work on different screen sizes?
- **How we tested:** Opened the site on 5 different phones and 2 tablets
- **Results:** Navigation menu was breaking on screens smaller than 350px. Apply button was getting hidden behind the footer on some devices. Fixed with CSS adjustments.

Test 7: Form Validations

- **What we tested:** Do all forms show proper error messages?
- **How we tested:** Deliberately entered wrong data in every form field
- **Results:** Phone number field was accepting alphabets. Email validation wasn't checking for proper format. Fixed all validation issues.

Integration Tests (Workflow Validation)

Test 1: Complete Job Application Flow

What we tested: Can a user successfully find and apply for a job from start to finish?

Testing Process:

1. Created fresh jobseeker account
2. Completed profile with all details
3. Uploaded resume
4. Searched for "Sales Executive" jobs
5. Applied to a test job
6. Checked if application appeared in employer dashboard

Issues Found:


- After applying, users weren't getting confirmation message - they didn't know if application went through
- Uploaded resumes weren't attached to applications properly
- Application timestamp was showing wrong time (server timezone issue)

Fixes Applied:

- Added success notification after application submission
- Fixed file attachment logic in backend
- Configured server to use IST timezone

Test 2: Email Notification System

What we tested: Do all email notifications get sent at the right time?

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Testing Process:

1. Tested welcome email on registration
2. Tested application confirmation emails
3. Tested job recommendation emails
4. Tested password reset emails
5. Checked email delivery to different providers

Issues Found:

- Emails were going to spam for Outlook users
- Job recommendation emails were sending even for inactive users
- Some emails had broken formatting on mobile

Fixes Applied:

- Configured proper SPF records for email domain
- Added logic to only send recommendations to active users
- Fixed email templates to be mobile-responsive

Test 3: Job Recommendation Algorithm

What we tested: Does the system recommend relevant jobs based on user profile?

Testing Process:

1. Created profiles with different skills and preferences
2. Posted various types of jobs
3. Checked if recommendations matched user profiles
4. Tested daily recommendation email functionality


Issues Found:

- Recommendations were showing expired jobs
- Users with no skills set were getting no recommendations at all
- Same jobs were being recommended repeatedly

Fixes Applied:

- Added filter to exclude expired jobs
- Implemented fallback to show latest jobs if no skill match
- Added logic to track shown recommendations and rotate them

Performance Metrics

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Page Load Time Testing

We tested loading times using Chrome DevTools Network tab on different connections:

Page	Good Internet	Average 4G	Slow 3G
Homepage	2 seconds	3.5 seconds	6 seconds
Job Listings	3 seconds	5 seconds	8 seconds
Application Form	1.5 seconds	2.5 seconds	4 seconds
Company Dashboard	3.5 seconds	5.5 seconds	9 seconds

The site is usable even on slower connections, though not ideal. Most of our users have 4G, so performance is acceptable.

Server Response Testing

We monitored actual usage for a week:

- Login API: 200-300ms average response
- Job search API: 400-500ms for complex queries
- Application submission: 300-400ms
- File upload: 2-3 seconds for 5MB files

The main issue is when Render server goes to sleep after inactivity - first request takes 20-30 seconds. We added a notice on the site about this.

Concurrent User Testing

We asked our classmates to use the site simultaneously:


- 10 users at once: Worked smoothly
- 20 users: Slight delays but functional
- 30 users: Database started showing connection errors
- 50 users: Site became very slow

For a free hosting setup, handling 20-25 concurrent users is reasonable for our current needs.

Mobile Data Usage

We measured data consumption for typical user actions:

- Loading homepage: 800KB
- Viewing job listings: 1.2MB
- Completing application: 2MB (including resume upload)

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- Full session average: 3-4MB

This is important because many users have limited data plans.

Validation Against Objectives

Objective 1: Build a Single Platform for Jobs

Validated: Platform successfully integrates all functions. Currently hosting 47 real jobs with 312 applications received.

Evidence: Screenshot of admin dashboard showing actual job posts and application counts.

Objective 2: Reduce Manual Work and Phone Calls

Validated: Client confirms dramatic reduction in phone calls.

Evidence: Client's WhatsApp message: "Earlier I was getting 200+ calls daily, now maybe 30-40. Most people just apply through the website now."

Objective 3: Help Jobseekers Apply Quickly

Validated: Application process now takes just 2-3 minutes.

Evidence: Timed 10 different users completing applications. Average time: 2 minutes 45 seconds from landing on job page to submission.

Objective 4: Help Companies Manage Applications

Validated: Employers can view, filter, and download applications easily.

Evidence: Test employer processed 25 applications in 5 minutes. Previously took hours through WhatsApp.

Objective 5: Smooth Login and Profile System

Partially Validated: System works but has minor issues.

Evidence:

- Login works for 95% of users
- Some users face issues with social login (Google/Facebook)
- Password reset works but emails sometimes go to spam

Objective 6: Fast, Transparent, and Organized Process


Validated: All processes are clear and trackable.

Evidence:

- Users can track application status
- Clear job categories and filters
- Organized employer dashboard
- Email notifications keep users informed

Issues Found During Validation

- **Critical Issues (Fixed)**

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1. **Database Overload:** When multiple users applied simultaneously, database connections would fail. Fixed by implementing connection pooling.
2. **File Upload Failures:** Large resumes would upload but not save properly. Fixed by increasing timeout limits and adding progress indicators.
3. **Wrong Job Recommendations:** System was recommending jobs from different cities. Fixed location-based filtering.
4. **Duplicate Applications:** Users could apply multiple times to same job. Added validation to prevent duplicates.

➤ **Moderate Issues (Fixed)**

- Search wasn't finding jobs with Gujarati text
- Profile pictures weren't displaying correctly
- Salary filter was including jobs with no salary mentioned
- Email notifications had broken links
- Mobile menu wasn't closing after selection

➤ **Minor Issues (Ongoing)**

- Page takes time to load on first visit after server sleeps
- Some email providers mark our emails as spam
- Pagination doesn't remember your position when you go back
- Filter selections reset when page refreshes

Performance Validation Results

➤ **What Works Well**


- Core functionality is stable and reliable
- Platform handles typical daily load (100-200 users) well
- Job search and filtering works as expected
- Email notifications reach most users
- Mobile experience is smooth for most devices

➤ **What Needs Improvement**

- First load after server idle is very slow (20-30 seconds)
- Image optimization needed for faster loading
- Search could be smarter (currently exact match only)
- Email delivery to some providers needs work
- Better error messages needed for users

Security Validation

We checked for basic security issues:

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- SQL injection: Database queries are parameterized (safe)
- Password storage: Using bcrypt hashing (secure)
- File uploads: Restricted to PDF/DOC only (safe)
- User sessions: Expire after 24 hours (acceptable)
- API access: Requires authentication (secure)

Conclusion

Through extensive manual testing and validation, we've confirmed that Job Gujarat successfully meets its primary objectives. The platform works reliably for its intended purpose - connecting jobseekers with employers while reducing the manual workload for our client.

Yes, there are performance limitations due to free hosting. Yes, some features could be more polished. But the core promise is delivered: our client now manages hundreds of job applications through an organized system instead of drowning in phone calls.

Testing Evidence

All testing was documented through:

- Screenshots of each feature working
- Screen recordings of complete workflows
- Google Sheet with 50+ reported issues and their fixes
- WhatsApp messages from test users

Contribution Statement

- **Member 1 (92310133019):** Conducted backend functionality testing, validated email systems, tested job recommendation algorithm, and documented performance metrics.
- **Member 2 (92310133013):** Performed frontend interface testing, validated mobile responsiveness, conducted user workflow testing, and collected real user feedback.