

IT314 Software Engineering

UNIT TESTING - BACKEND
GROUP 29 - Market Connect
Prof. Saurabh Tiwari

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1. Unit Testing Overview

1.1 Coverage Metrics Code coverage metrics measure the extent to which source code is executed by tests:

- Statements: Percentage of executable statements executed by tests
- Branches: Percentage of conditional branches (if/else) executed
- Functions: Percentage of function definitions executed
- Lines: Percentage of source code lines executed

2. Overall Coverage Summary

2.1 Executive Summary

All files

92.44% Statements 2630/2845 87.67% Branches 1287/1468 89.35% Functions 277/310 92.79% Lines 2460/2651

The project achieves strong overall unit test coverage with statements (92.44%), branches(87.67%), functions (89.35%), and lines (92.79%) around **90%**. Branch coverage (87.67%) indicates room for improvement in testing conditional logic.

3. Terminal Outputs

JS googleAuth.test.js U JS socket.startIntervals.test.js U X

New folder (5) > Backend > tests > JS socket.startIntervals.test.js > ...

1 const path = require("path");

	PROBLEMS	OUTPUT	DEBUG CONSOLE	PORTS	TERMINAL	
Backend/auth		100	96.29	100	100	
googleAuth.js		100	96.29	100	100	7
Backend/config		100	92.3	100	100	
groqConfig.js		100	92.3	100	100	12
Backend/controllers		92.87	88.7	94.66	93.28	
assistantController.js		91.89	85.86	94.11	91.74	...,339-340,369-3
auctionController.js		94.11	95.45	100	94.02	69,91,111,132
cartController.js		85.84	83.33	100	85.18	...,328-329,357-3
categoryController.js		91.76	82.81	100	91.76	...,148,178,191,2
chatController.js		100	97.14	100	100	81
couponController.js		93.75	84.61	100	93.75	91,175,202-203
orderController.js		96.55	91.76	100	96.5	33,44,52,55,80
paymentController.js		96.2	88.46	100	96.81	33-37,197-206
productController.js		98.16	98.33	92.85	98.03	168-169
returnController.js		82.09	76.72	80.76	82.66	...-598,613,654-65
reviewController.js		88	80.76	83.33	89.85	27-35,102,166,196
sellerAnalyticsController.js		100	100	100	100	
sellerController.js		100	100	100	100	
user.js		97.16	90.66	100	98.73	24,343-345
Backend/middlewares		100	100	100	100	
auth.js		100	100	100	100	
multer.js		100	100	100	100	
validateSchema.js		100	100	100	100	
Backend/models		95.96	88.09	100	98.23	
Chat.js		100	100	100	100	
Faq.js		100	100	100	100	
bids.js		100	100	100	100	
category.js		100	100	100	100	
coupon.js		88	85	100	100	58-59,61
order.js		100	100	100	100	
payment.js		100	100	100	100	
product.js		100	100	100	100	
return.js		100	100	100	100	
review.js		100	75	100	100	88
sharedSchemas.js		100	100	100	100	
user.js		91.66	90	100	91.3	96,104
Backend/routes		98.27	83.33	84.61	98.26	
assistant.js		100	100	100	100	
auctionRoutes.js		100	100	100	100	
cart.js		100	100	100	100	

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Search                

ASUS Zenbook

JS googleAuth.test.js U JS socket.startIntervals.test.js U X

New folder (5) > Backend > tests > JS socket.startIntervals.test.js > ...

1 const path = require("path");

PROBLEMS OUTPUT DEBUG CONSOLE PORTS TERMINAL

	100	100	100	100	100
cart.js	100	100	100	100	100
category.js	100	100	100	100	100
chat.js	100	100	100	100	100
coupon.js	100	100	100	100	100
faq.js	100	100	100	100	100
order.js	100	100	100	100	100
payment.js	100	100	100	100	100
product.js	100	100	100	100	100
return.js	100	100	100	100	100
review.js	90.9	83.33	66.66	90.9	29-30
seller.js	88.23	100	66.66	87.5	8-9
sellerAnalyticsRoutes.js	100	100	100	100	
user.js	100	75	100	100	63,78,85
Backend/scripts	100	100	100	100	
backfillAddressIds.js	100	100	100	100	
createAdmin.js	100	100	100	100	
seedData.js	100	100	100	100	
Backend/tests/mocks	94.48	88.62	89.47	95.68	
Category.js	100	100	100	100	
Chat.js	93.1	88.46	86.36	91.93	16-19,61,68,94
Coupon.js	96.72	91.8	100	100	21,31,43-46
Order.js	90.51	77.14	82.35	94.18	19,65,75,130,134
Payment.js	100	94.44	100	100	2
Product.js	95.4	90.9	100	94.91	62,71,81
Return.js	97.05	92.3	100	96	22
Review.js	90	100	66.66	90	13
User.js	95.38	90.16	100	97.72	17
auth.js	100	100	100	100	
cloudinary.js	100	100	100	100	
Backend/tests/utils	100	100	100	100	
reqRes.js	100	100	100	100	
Backend/validations	100	100	100	100	
auction.js	100	100	100	100	
cart.js	100	100	100	100	
coupon.js	100	100	100	100	
order.js	100	100	100	100	
payment.js	100	100	100	100	
product.js	100	100	100	100	
return.js	100	100	100	100	
review.js	100	100	100	100	

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← → 🔍 New folder (5)

JS googleAuth.test.js U JS socket.startIntervals.test.js U X

New folder (5) > Backend > tests > JS socket.startIntervals.test.js > ...

```
1 const path = require("path");
```

PROBLEMS OUTPUT DEBUG CONSOLE PORTS TERMINAL

	100	100	100	100	29-30
return.js	100	100	100	100	29-30
review.js	90.9	83.33	66.66	90.9	29-30
seller.js	88.23	100	66.66	87.5	8-9
sellerAnalyticsRoutes.js	100	100	100	100	63,78,85
user.js	100	75	100	100	63,78,85
Backend/scripts	100	100	100	100	
backfillAddressIds.js	100	100	100	100	
createAdmin.js	100	100	100	100	
seedData.js	100	100	100	100	
Backend/tests/mocks	94.48	88.62	89.47	95.68	
Category.js	100	100	100	100	
Chat.js	93.1	88.46	86.36	91.93	16-19,61,68,94
Coupon.js	96.72	91.8	100	100	21,31,43-46
Order.js	90.51	77.14	82.35	94.18	19,65,75,130,134
Payment.js	100	94.44	100	100	2
Product.js	95.4	90.9	100	94.91	62,71,81
Return.js	97.05	92.3	100	96	22
Review.js	90	100	66.66	90	13
User.js	95.38	90.16	100	97.72	17
auth.js	100	100	100	100	
cloudinary.js	100	100	100	100	
Backend/tests/utils	100	100	100	100	
reqRes.js	100	100	100	100	
Backend/validations	100	100	100	100	
auction.js	100	100	100	100	
cart.js	100	100	100	100	
coupon.js	100	100	100	100	
order.js	100	100	100	100	
payment.js	100	100	100	100	
product.js	100	100	100	100	
return.js	100	100	100	100	
review.js	100	100	100	100	
sharedSchema.js	100	100	100	100	
user.js	100	100	100	100	

Summary of all failing tests

FAIL tests/user.controller.test.js

- User Controller > forgotPassword - success sends mail and returns 200

```
expect(jest.fn()).toHaveBeenCalledWith(...expected)
```

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4. Results

All Files

All files	Statements	Branches	Functions	Lines				
92.44% Statements 2638/2845 87.67% Branches 1287/1468 89.35% Functions 277/318 92.79% Lines 2460/2651								
Press <i>n</i> or <i>j</i> to go to the next uncovered block, <i>b</i> , <i>p</i> or <i>k</i> for the previous block.								
Filter: <input type="text"/>								
File	Statements	Branches	Functions	Lines				
Backend/auth	100%	65/65	96.29%	26/27	100%	7/7	100%	63/63
Backend/config	100%	10/10	92.3%	12/13	100%	1/1	100%	10/10
Backend/middlewares	100%	49/49	100%	18/18	100%	6/6	100%	48/48
Backend/scripts	100%	111/111	100%	24/24	100%	8/8	100%	110/110
Backend/tests/utils	100%	8/8	100%	3/3	100%	2/2	100%	8/8
Backend/validations	100%	53/53	100%	0/0	100%	0/0	100%	53/53
Backend/routes	98.27%	228/232	83.33%	20/24	84.61%	11/13	98.26%	227/231
Backend/models	95.96%	119/124	88.09%	37/42	100%	11/11	98.23%	111/113
Backend/tests/mocks	94.48%	480/508	88.62%	335/378	89.47%	85/95	95.68%	355/371
Backend/controllers	92.87%	1434/1544	88.7%	793/894	94.66%	142/150	93.28%	1402/1503

routes

File	Statements	Branches	Functions	Lines
assistant.js	100%	8/8	100%	0/0
auctionRoutes.js	100%	14/14	100%	0/0
cart.js	100%	10/10	100%	0/0
category.js	100%	10/10	100%	0/0
chat.js	100%	9/9	100%	0/0
coupon.js	100%	10/10	100%	0/0
faq.js	100%	19/19	100%	4/4
order.js	100%	12/12	100%	0/0
payment.js	100%	11/11	100%	0/0
product.js	100%	16/16	100%	0/0
return.js	100%	12/12	100%	0/0
review.js	90.9%	20/22	83.33%	5/6
seller.js	88.23%	15/17	100%	2/2
sellerAnalyticsRoutes.js	100%	9/9	100%	0/0
user.js	100%	53/53	75%	9/12
			100%	5/5
			100%	53/53

controllers

File ▾	Statements	Branches	Functions	Lines				
assistantController.js	91.89%	102/111	85.86%	79/92	94.11%	16/17	91.74%	100/109
auctionController.js	94.11%	64/68	95.45%	21/22	100%	7/7	94.02%	63/67
cartController.js	85.84%	97/113	83.33%	35/42	100%	13/13	85.18%	92/108
categoryController.js	91.76%	78/85	82.81%	53/64	100%	5/5	91.76%	78/85
chatController.js	100%	57/57	97.14%	34/35	100%	7/7	100%	56/56
couponController.js	93.75%	60/64	84.61%	22/26	100%	5/5	93.75%	60/64
orderController.js	96.55%	140/145	91.76%	78/85	100%	13/13	96.5%	138/143
paymentController.js	96.2%	152/158	88.46%	69/78	100%	13/13	96.81%	152/157
productController.js	98.16%	107/109	98.33%	118/120	92.85%	13/14	98.03%	100/102
returnController.js	82.09%	188/229	76.72%	89/116	80.76%	21/26	82.66%	186/225
reviewController.js	88%	66/75	80.76%	21/26	83.33%	5/6	89.85%	62/69
sellerAnalyticsController.js	100%	26/26	100%	8/8	100%	3/3	100%	26/26
sellerController.js	100%	57/57	100%	30/30	100%	4/4	100%	54/54
user.js	97.16%	240/247	90.66%	136/150	100%	17/17	98.73%	235/238

Code coverage generated by [istanbul](#) at 2025-11-29T05:08:18.160Z

models

File ▾	Statements	Branches	Functions	Lines
Chat.js	100%	5/5	100%	0/0
Faq.js	100%	3/3	100%	0/0
bids.js	100%	4/4	100%	0/0
category.js	100%	9/9	100%	2/2
coupon.js	88%	22/25	85%	17/20
order.js	100%	6/6	100%	0/0
payment.js	100%	4/4	100%	0/0
product.js	100%	18/18	100%	6/6
return.js	100%	5/5	100%	0/0
review.js	100%	17/17	75%	3/4
sharedSchemas.js	100%	4/4	100%	0/0
user.js	91.66%	22/24	90%	9/10

scripts

File ▾	Statements	Branches	Functions	Lines
backfillAddressIds.js	100%	26/26	100%	8/8
createAdmin.js	100%	28/28	100%	4/4
seedData.js	100%	57/57	100%	12/12

Middlewares

File ▾	Statements	Branches	Functions	Lines
auth.js	100%	36/36	100%	16/16
multer.js	100%	4/4	100%	0/0
validateSchema.js	100%	9/9	100%	2/2