



Classync - Virtual Classroom Platform

Unit Testing Report

Group - 33

Course: Software Engineering
Professor: Prof. Saurabh Tiwari
Mentor: Shyam Patel

Team Members:

Role	Name (ID)
Team Leader	ATIK VOHRA - 202301447
Member	KANANI TANUJ - 202301474
Member	SANAGADHIYA RADHIKA - 202301184
Member	PATEL JAY - 202301430
Member	CHOVATIYA AYUSH - 202301461
Member	OM PATEL - 202301163
Member	BADRESIYA ANSH - 202301477
Member	PREM KUKADIYA - 202301452
Member	RAMOLIYA SHUBHAM - 202301442
Member	GAJERA MANTHAN - 202301488

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

Table 2.1: Overall Unit Testing Coverage

Coverage Type	Statements	Branches	Functions	Lines
Overall Project	86.19%	73.51%	86.06%	87.61%

The project achieves strong overall unit test coverage with statements (86.19%), functions (86.06%), and lines (87.61%) all exceeding 85%. Branch coverage (73.51%) indicates room for improvement in testing conditional logic.

3. Detailed File-Level Coverage

3.1 File Coverage Results

Table 3.1: Complete Unit Test Coverage (Sorted by Statement Coverage)

File/Directory	Statements	Branches	Functions	Lines
app/admin	100%	100%	100%	100%
app/ai-tools	100%	100%	100%	100%
app/ai-tools/chatbot	100%	100%	100%	100%
app/ai-tools/summary	100%	78.57%	100%	100%
app/api/ai-bubble	100%	78.57%	100%	100%
app/api/ai-chat	100%	78.57%	100%	100%
app/api/assignments/[id]	100%	91.17%	100%	100%
app/api/auth/check-email-verified	100%	100%	100%	100%
app/api/classroom	100%	100%	100%	100%
app/api/classroom/[id]	100%	100%	100%	100%
app/api/comments	100%	84%	100%	100%
app/api/courses	100%	96.66%	100%	100%
app/api/courses/[id]	100%	100%	100%	100%
app/api/courses/enroll	100%	100%	100%	100%
app/api/courses/unenroll	100%	100%	100%	100%
app/api/download/[type]/[id]	100%	100%	100%	100%
app/api/groups	100%	100%	100%	100%
app/api/initdb	100%	100%	100%	100%
app/api/notifications	100%	95%	100%	100%
app/api/seed	100%	100%	100%	100%
app/api/stream/vote	100%	86.66%	100%	100%
app/api/students	100%	100%	100%	100%
app/api/summarize	100%	100%	100%	100%
app/api/users	100%	93.75%	100%	100%
app/api/users/[uid]	100%	100%	100%	100%
app/api/users/remove-photo	100%	100%	100%	100%
app/api/users/update-photo	100%	87.5%	100%	100%

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Table 3.1 continued

File/Directory	Statements	Branches	Functions	Lines
app/api/users/update-username	100%	100%	100%	100%
app/api/users/upload-photo	100%	81.81%	100%	100%
app/assignments	100%	100%	100%	100%
components	100%	100%	100%	100%
components/ai-bubble	100%	100%	100%	100%
components/chat	100%	100%	100%	100%
components/groups	100%	100%	100%	100%
app/ai-tools/chatbot/components	99.37%	82.43%	100%	100%
app/api/groups/[groupId]	98.64%	90.9%	100%	100%
components/group-edit	98.3%	72.88%	93.75%	98.14%
app/api/announcements	98%	87.5%	100%	98%
app/api/student/progress	97.91%	100%	100%	100%
app/student/progress	97.75%	71.79%	100%	98.8%
lib/langchain	97.5%	100%	50%	97.5%
app/api/courses/progress	96.15%	100%	100%	100%
app/api/assignments	95.95%	82.69%	100%	95.83%
components/ui	94.52%	82.01%	95.83%	94.91%
app/api/auth/send-verification-email	94.23%	78.37%	100%	94.11%
app/api/chat	93.33%	95.65%	100%	96.49%
lib/utils	92%	80%	100%	92%
app/api/instructor/analytics	91.85%	83.14%	100%	94.53%
app/sidebar	90.9%	74.28%	91.66%	91.37%
app/api/stream	90.03%	77.73%	86.95%	90.83%
app	90%	50%	50%	89.47%
app/api/auth	88.88%	92.59%	75%	88.88%
app/instructor/analytics	88.63%	66.23%	86.95%	90.12%
app/api/auth/verify	87.87%	91.3%	100%	90.62%
app/assignments/[id]	87.87%	58.53%	70%	95%
app/api/notifications/stream	87.5%	60%	88.88%	96%
app/classroom/[id]/group/[groupId]	86.11%	62.96%	71.42%	86.11%
app/homepage	83.41%	78.21%	72.41%	84.18%
components/admin	82.51%	66.41%	88.09%	84.36%
app/student	81.16%	62.23%	91.07%	81.98%
app/verify-success	80%	50%	66.66%	84.61%
components/navigation	79.34%	69.02%	72.81%	80.84%
components/auth	77.66%	74.76%	76.78%	78.36%
components/whiteboard	77.1%	59.3%	76.47%	79.2%

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Table 3.1 continued

File/Directory	Statements	Branches	Functions	Lines
app/api/submissions	77.09%	59.14%	100%	78.89%
lib	75.19%	71.42%	68.42%	74.57%
components/classroom	74.76%	60.52%	73.47%	79.01%
app/classroom	67.21%	54.79%	86.95%	64.91%











All files

86.19% Statements 5864/6803 73.51% Branches 2931/3987 86.06% Functions 1136/1320 87.61% Lines 5623/6418

Press *n* or *j* to go to the next uncovered block, *b*, *p* or *k* for the previous block.

Filter:

File		Statements		Branches		Functions		Lines	
app	<div><div></div></div>	90%	18/20	50%	2/4	50%	2/4	89.47%	17/19
app/admin	<div><div></div></div>	100%	3/3	100%	0/0	100%	1/1	100%	3/3
app/ai-tools	<div><div></div></div>	100%	14/14	100%	6/6	100%	7/7	100%	10/10
app/ai-tools/chatbot	<div><div></div></div>	100%	3/3	100%	0/0	100%	1/1	100%	3/3
app/ai-tools/chatbot/components	<div><div></div></div>	99.37%	158/159	82.43%	61/74	100%	36/36	100%	149/149
app/ai-tools/summary	<div><div></div></div>	100%	33/33	78.57%	11/14	100%	5/5	100%	33/33
app/api/ai-bubble	<div><div></div></div>	100%	15/15	78.57%	11/14	100%	1/1	100%	15/15
app/api/ai-chat	<div><div></div></div>	100%	15/15	78.57%	11/14	100%	1/1	100%	15/15
app/api/announcements	<div><div></div></div>	98%	49/50	87.5%	42/48	100%	3/3	98%	49/50
app/api/assignments	<div><div></div></div>	95.95%	95/99	82.69%	43/52	100%	9/9	95.83%	92/96
app/api/assignments/[id]	<div><div></div></div>	100%	119/119	91.17%	93/102	100%	6/6	100%	117/117
app/api/auth	<div><div></div></div>	88.88%	40/45	92.59%	25/27	75%	3/4	88.88%	40/45
app/api/auth/check-email-verified	<div><div></div></div>	100%	14/14	100%	6/6	100%	1/1	100%	14/14
app/api/auth/send-verification-email	<div><div></div></div>	94.23%	49/52	78.37%	29/37	100%	4/4	94.11%	48/51
app/api/auth/verify	<div><div></div></div>	87.87%	29/33	91.3%	21/23	100%	1/1	90.62%	29/32
app/api/chat	<div><div></div></div>	93.33%	56/60	95.65%	22/23	100%	4/4	96.49%	55/57
app/api/classroom	<div><div></div></div>	100%	23/23	100%	10/10	100%	2/2	100%	23/23
app/api/classroom/[id]	<div><div></div></div>	100%	22/22	100%	12/12	100%	1/1	100%	22/22
app/api/comments	<div><div></div></div>	100%	36/36	84%	21/25	100%	3/3	100%	33/33
app/api/courses	<div><div></div></div>	100%	61/61	96.66%	29/30	100%	5/5	100%	60/60
app/api/courses/[id]	<div><div></div></div>	100%	22/22	100%	13/13	100%	1/1	100%	22/22
app/api/courses/enroll	<div><div></div></div>	100%	27/27	100%	14/14	100%	2/2	100%	27/27
app/api/courses/progress	<div><div></div></div>	96.15%	25/26	100%	6/6	100%	2/2	100%	24/24
app/api/courses/unenroll	<div><div></div></div>	100%	25/25	100%	10/10	100%	2/2	100%	25/25
app/api/download/[type]/[id]	<div><div></div></div>	100%	25/25	100%	10/10	100%	1/1	100%	25/25
app/api/groups	<div><div></div></div>	100%	40/40	100%	14/14	100%	2/2	100%	40/40
app/api/groups/[groupId]	<div><div></div></div>	98.64%	73/74	90.9%	40/44	100%	5/5	100%	65/65
app/api/initdb	<div><div></div></div>	100%	13/13	100%	0/0	100%	1/1	100%	13/13
app/api/instructor/analytics	<div><div></div></div>	91.85%	124/135	83.14%	74/89	100%	22/22	94.53%	121/128
app/api/notifications	<div><div></div></div>	100%	45/45	95%	19/20	100%	4/4	100%	44/44
app/api/notifications/stream	<div><div></div></div>	87.5%	49/56	60%	18/30	88.88%	8/9	96%	48/50
app/api/seed	<div><div></div></div>	100%	33/33	100%	4/4	100%	3/3	100%	33/33
app/api/stream	<div><div></div></div>	90.03%	235/261	77.73%	206/265	86.95%	20/23	90.83%	228/251
app/api/stream/vote	<div><div></div></div>	100%	48/48	86.66%	26/30	100%	9/9	100%	44/44
app/api/student/progress	<div><div></div></div>	97.91%	47/48	100%	18/18	100%	4/4	100%	46/46

File 		Statements 		Branches 		Functions 		Lines 	
app/api/students	<div><div></div></div>	100%	22/22	100%	8/8	100%	2/2	100%	22/22
app/api/submissions	<div><div></div></div>	77.09%	175/227	59.14%	97/164	100%	9/9	78.89%	172/218
app/api/summarize	<div><div></div></div>	100%	17/17	100%	2/2	100%	1/1	100%	17/17
app/api/users	<div><div></div></div>	100%	35/35	93.75%	15/16	100%	2/2	100%	35/35
app/api/users/[uid]	<div><div></div></div>	100%	16/16	100%	4/4	100%	1/1	100%	16/16
app/api/users/remove-photo	<div><div></div></div>	100%	16/16	100%	6/6	100%	2/2	100%	16/16
app/api/users/update-photo	<div><div></div></div>	100%	18/18	87.5%	7/8	100%	2/2	100%	18/18
app/api/users/update-username	<div><div></div></div>	100%	37/37	100%	16/16	100%	3/3	100%	37/37
app/api/users/upload-photo	<div><div></div></div>	100%	18/18	81.81%	9/11	100%	2/2	100%	18/18
app/assignments	<div><div></div></div>	100%	6/6	100%	0/0	100%	2/2	100%	6/6
app/assignments/[id]	<div><div></div></div>	87.87%	58/66	58.53%	24/41	70%	7/10	95%	57/60
app/classroom	<div><div></div></div>	67.21%	123/183	54.79%	40/73	86.95%	40/46	64.91%	111/171
app/classroom/[id]/group/[groupId]	<div><div></div></div>	86.11%	31/36	62.96%	17/27	71.42%	5/7	86.11%	31/36
app/homepage	<div><div></div></div>	83.41%	166/199	78.21%	79/101	72.41%	21/29	84.18%	165/196
app/instructor/analytics	<div><div></div></div>	88.63%	78/88	66.23%	51/77	86.95%	20/23	90.12%	73/81
app/sidebar	<div><div></div></div>	90.9%	110/121	74.28%	52/70	91.66%	22/24	91.37%	106/116
app/student	<div><div></div></div>	81.16%	237/292	62.23%	117/188	91.07%	51/56	81.98%	223/272
app/student/progress	<div><div></div></div>	97.75%	87/89	71.79%	56/78	100%	25/25	98.8%	83/84
app/verify-success	<div><div></div></div>	80%	12/15	50%	1/2	66.66%	4/6	84.61%	11/13
components	<div><div></div></div>	100%	34/34	100%	8/8	100%	7/7	100%	33/33
components/admin	<div><div></div></div>	82.51%	368/446	66.41%	176/265	88.09%	74/84	84.36%	356/422
components/ai-bubble	<div><div></div></div>	100%	39/39	100%	20/20	100%	11/11	100%	36/36
components/auth	<div><div></div></div>	77.66%	299/385	74.76%	160/214	76.78%	43/56	78.36%	297/379
components/chat	<div><div></div></div>	100%	22/22	100%	20/20	100%	6/6	100%	22/22
components/classroom	<div><div></div></div>	74.76%	634/848	60.52%	345/570	73.47%	169/230	79.01%	595/753
components/group-edit	<div><div></div></div>	98.3%	58/59	72.88%	43/59	93.75%	15/16	98.14%	53/54
components/groups	<div><div></div></div>	100%	6/6	100%	4/4	100%	2/2	100%	4/4
components/navigation	<div><div></div></div>	79.34%	365/460	69.02%	205/297	72.81%	75/103	80.84%	346/428
components/ui	<div><div></div></div>	94.52%	673/712	82.01%	269/328	95.83%	276/288	94.91%	634/668
components/whiteboard	<div><div></div></div>	77.1%	165/214	59.3%	51/86	76.47%	26/34	79.2%	160/202
lib	<div><div></div></div>	75.19%	194/258	71.42%	80/112	68.42%	26/38	74.57%	176/236
lib/langchain	<div><div></div></div>	97.5%	39/40	100%	14/14	50%	1/2	97.5%	39/40
lib/utils	<div><div></div></div>	92%	23/25	80%	8/10	100%	2/2	92%	23/25