

## Software Engineering (IT314)

**G21 - Online Forum** 

**Mutation Testing** 

Mutation Testing 1

## Introduction

Mutation Testing is a method used in software development to evaluate the quality and effectiveness of test suites by introducing small, intentional changes (mutations) into them. If our input is able to differentiate between original and mutated code, then it is said that we have killed the mutant, else it survives, indicating potential weaknesses.

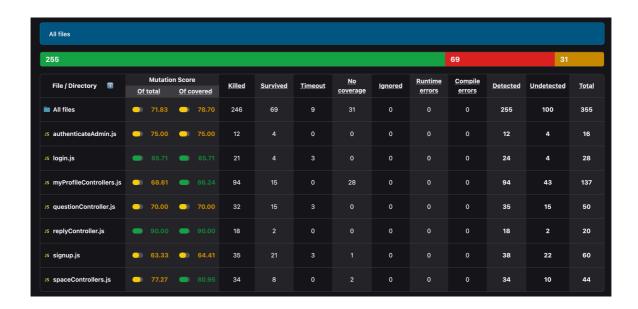
For mutation testing, we have used **Stryker-mutator (v8.6.0)** along with **mocha-runner**.

Given below is the configuration file used for Stryker

```
/**
  * @type {import('@stryker-mutator/api/core').StrykerOptions}
  */
const config = {
  mutate: [
    'back-end/server/controllers/**/*.js',
    '!test/**/*.test.js'
  ],
  testRunner: 'mocha',
  mochaOptions: {
    spec: ['test/**.test.js'],
  },
  reporters: ['html', 'clear-text', 'progress'],
  coverageAnalysis: 'perTest'
};
export default config;
```

Mutation Testing 2

## **Result**



	   % Mutat:	ion score	<del></del> 		<del></del>		
File	total	covered	# killed	# timeout	# survived	# no cov	# errors
All files	71.83	78.70	246	9	69	31	0
authenticateAdmin.js	75.00	75.00	12	0	4	0	0
login.js	85.71	85.71	21	3	4	0	0
myProfileControllers.js	68.61	86.24	94	0	15	28	0
questionController.js	70.00	70.00	32	3	15	0	0
replyController.js	90.00	90.00	18	0	2	0	0
signup.js	63.33	64.41	35	3	21	1	0
spaceControllers.js	77.27	80.95	34	0	8	2	0

Mutation Testing 3