**Evaluation**

1. Mutation of target system (Scenario 2a)
   1. Visual Mutator: Not able to get correct results. Reason: If we select only those ocl features that has been implemented and their corresponding tests, it says error occurred for some and modifies the program incorrectly which is also illogical. Also, the drawback is that the features cannot be mutated with standard mutation operators as there is no opportunity to modify like that but, with object mutation operators, we get incorrect results however with some correct live mutants. So, had done that manually and got some live mutants.
   2. Manual: Results in the table.
2. Mutating old test cases (Scenario 4)
   1. **From Mutant 2 => Old test case mutant killed but after they are transformed to the target, it is not killed. Reason: Assert implementation is incorrect.**
   2. **From Mutant 14 => Old test case mutant passed but after they are transformed to the target, it killed. Reason: System implementation is incomplete (After implementing that part, fount it to be an equivalent mutant).**
   3. **From Mutant 16 => Old test case mutant passed but after they are transformed to the target, it killed. Reason: System implementation is incomplete.**
   4. **From Mutant 17 => Old test case mutant killed but after they are transformed to the target, it passed. Reason: Assert implementation is incorrect.**
3. Mutation of target test cases: (Scenario 5a): Results in the table.
   1. **From Mutant 9 => Mutant passed and on investigation found it to be non-equivalent. So it’s a bad smell for test case migration. Reason: System implementation is incorrect.**
4. Mutation of test case migration/transformation (Scenario 6a): Results in the table.

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| --- | --- | --- | --- | --- | --- |
| **Scenario no.** | **No. of mutants** | **Good indication** | **Bad indication** | **No indication** | **Mutation score** |
| **2a (without reverse engineering)** | **25** | **20** | **0** | **5** | **1** |
| **4** | **25** | **19** | **4** | **2** | **0.83** |
| **5a (without reverse engineering)** | **25** | **21** | **1** | **3** | **0.96** |
| **6a (without reverse engineering)** | **25** | **25** | **0** | **0** | **1** |