Assignment 1

Task 8

**Author Details**

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**Identify the most appropriate black box testing strategy for each piece of functionality, and justify your answer.**

*Write 2 paragraphs of justification per answer, and mention at least one alternate strategy and why it would not work as well as your chosen strategy.*

**Functionality 1: Whether an item is overdue.**

Testing strategy: Boundary Value Analysis (BVA) and Equivalence Partitioning (EP)

Justification: Boundary Value Analysis (BVA) is highly effective for determining whether an item is overdue because it focuses on the edge cases, which are the most likely points where errors may occur. Since this functionality involves date comparisons, testing the dates just before, on, and just after the due date will ensure that the system correctly identifies the transition from not overdue to overdue. For example, testing the exact due date (should return false) and the day after (should return true) can reveal any slight errors. Equivalence Partitioning (EP) meanwhile reduces the number of test cases needed while still covering all possible inputs. By grouping dates into equivalent classes, those before the due date and those after, it ensures that the system behaves consistently across the ranges without exhaustive testing of every possible date.

An alternative strategy is Decision Table Testing that is effective for functionalities involving multiple conditions leading to different outcomes. However, for a simple overdue check based on a date comparison, decision tables might be unnecessary complex. The decision table would only have two rules, before due date and after due date, making it less efficient compared to BVA and EP which are directly concerned with the testcases. BVA and EP are more straightforward and easier to implement.

**Functionality 2: The calculation of fees owed.**

Testing strategy: Decision Table Testing

Justification: Decision Table Testing is ideal for the calculation of fees owed because it allows for a systematic approach to testing all possible combinations of inputs, such as age brackets, outstanding fees, and applicable discounts. This functionality involves several conditions that interact in different ways and a decision table helps map out all these possible interactions to test every possible scenario. For example, it can handle cases where different age groups receive different discounts and ensure that the correct fee is calculated for each possible combination. This comprehensive approach makes certain that no possible condition is overlooked.

An alternative strategy in Equivalence Partitioning (EP) can be considered, particularly to test different age ranges or fee amounts. However, EP alone would not be as effective because it does not account for the complex interactions between multiple conditions. While EP could reduce the number of test cases by grouping similar inputs, it might lack specific combinations of conditions, and this could lead to incorrect fee calculations. Therefore, Decision Table Testing which can handle multiple conditions and their interactions provides a more thorough testing strategy.

**Functionality 3:**

Testing strategy: Combination of Decision Table Testing and Equivalence Partitioning (EP)

Justification: A combination of Decision Table Testing and Equivalence Partitioning (EP) is suited to determine whether a person is allowed to use the makerspace facilities because it covers both the complexity of multiple conditions and the need for testing within specific input ranges. Decision Table Testing is beneficial for capturing all possible combinations of age and training status and making sure that the system correctly handles each scenario. For example, a person of the required age with the necessary training and another person of the required age without the necessary training. Equivalence Partitioning on the other hand is conducive for testing within specific age ranges and that the ages are handled correctly. The two strategies combined provide comprehensive coverage of the input with attention on both the interaction of conditions and the satisfaction of condition for a given age range.

An alternative strategy is Boundary Value Analysis (BVA) for the testing of edge cases around the minimum required age. However, BVA alone might not fully account for the different combinations of conditions such as age and training status, which are crucial in this scenario. BVA tests the limits of individual inputs, but without considering the interactions between different conditions, it might overlook errors that arise from the combinations of inputs. Therefore, the combined approach of Decision Table Testing and Equivalence Partitioning (EP) is a more thorough testing strategy for this functionality.