COMSATS UNIVERSITY

ISLAMABAD, ABBOTTABAD

Software Testing

Lab Final

Unit & UX Automation Testing

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Q1. Unit Testing for Algorithm

Flight Cost Estimator

Github Link

TEST CASES:

Test Case 1: Minimum Valid Distance

Technique Used: Equivalence Partitioning (EP)

- **Partition Considered**: Valid positive distances
- **Selected Input**: 1 km, the minimum boundary within this valid partition.
- **Rationale**: Testing at the lower limit of a partition ensures that the boundary condition is handled correctly.

Field	Value
Test Case ID	TC1
Description	Test the cost calculation at the minimum valid distance for Economy class during a non-peak season.
Input Distance	1 km
Service Class	Economy
Peak Season	False
Expected Result	$0.10

Field	Value
Rationale	This test verifies the base rate calculation without any multipliers and checks the handling of the smallest valid input.

Test Case 2: High Distance During Peak Season

Technique Used: Equivalence Partitioning (EP)

- **Partition Considered**: High valid distances during peak season.
- **Selected Input**: 12000 km, a high typical value within the valid partition.
- **Rationale**: Testing a high value during peak season ensures that the algorithm correctly applies both the distance rate and the peak season multiplier.

Field	Value
Test Case ID	TC2
Description	Test the cost calculation for a high distance in Economy class during peak season.
Input Distance	12000 km
Service Class	Economy
Peak Season	True
Expected Result	$1440.0
Rationale	Validates that peak season multipliers are correctly added to the base cost for high distances.

Test Case 3: Zero Distance

Technique Used: Equivalence Partitioning (EP)

- **Partition Considered**: Invalid distances (non-positive integers).
- **Selected Input**: 0 km, representing the boundary condition within this invalid partition.
- **Rationale**: Ensures the system rejects or handles distances that should not be valid.

Field	Value
Test Case ID	TC3

Field	Value
Description	Test handling of zero distance to ensure error or specific handling is triggered.
Input Distance	0 km
Service Class	Economy
Peak Season	False
Expected Result	IllegalArgumentException
Rationale	Checks if the algorithm correctly identifies and handles non-positive distances as invalid.

Test Case 4: Invalid Service Class

Technique Used: Equivalence Partitioning (EP)

- **Partition Considered**: Invalid service classes.
- **Selected Input**: "Ultra", a string not recognized as a valid class.
- **Rationale**: Tests the algorithm's ability to reject unrecognized service classes.

Field	Value
Test Case ID	TC4
Description	Test the algorithm with an invalid service class to confirm error handling.
Input Distance	5000 km
Service Class	Ultra
Peak Season	False
Expected Result	IllegalArgumentException
Rationale	Ensures that invalid service class inputs are correctly identified and handled with an error.

Technique Used: Equivalence Partitioning (EP)

- **Partition Considered**: High valid distances for premium services during non-peak season.
- **Selected Input**: 12000 km in First class during a non-peak period.
- **Rationale**: Validates that the cost calculations for premium services are correctly applied without the peak season multiplier.

Field	Value
Test Case ID	TC5
Description	Test the cost estimation for a long-distance flight in First class during a non-peak season.
Input Distance	12000 km
Service Class	First
Peak Season	False
Expected Result	$2400.0
Rationale	Tests that the premium rate for First class is correctly calculated over a long distance without additional seasonal adjustments.

Q2: SubjectExpert UX Automation (Odd)

[GitHub Link](#)