4.2.1 EQUIVALENCE PARTITIONING (K3)



Equivalence partitioning (EP, partition testing): A black-box test technique in which test conditions are equivalence partitions exercised by one representative member of each partition (ISO 29119-1)

Equivalence partition (equivalence class): A subset of the value domain of a variable within a component or system in which all values are expected to be treated the same based on the specification



Equivalence partitions can be identified for any data element related to the test object



- Any partition may be divided into sub partitions
- Each value must belong to one equivalence partition only



Valid partition: A partition containing valid values Invalid partition: A partition containing invalid values



Valid partition: A partition containing valid values Invalid partition: A partition containing invalid values



Coverage (test coverage): The degree to which specified coverage items are exercised by a test suite, expressed as a percentage

Coverage item: An attribute or combination of attributes derived from one or more test conditions by using a test technique



PARTITIONS TOTAL NUMBER = 4



Coverage = Number of Partitions Tested Total Number of Partitions x 100%

MULTIPLE SETS OF PARTITIONS



Each Choice Coverage: It is required that test cases exercise each partition from each set of partitions at least once

MULTIPLE SETS OF PARTITIONS

COLOUR

LOW SEVERITY



PARTITIONS TOTAL NUMBER = 3

PARTITIONS TOTAL NUMBER = 4

Each Choice Coverage = 100%

Minimum Number of Tests = 4

MULTIPLE SETS OF PARTITIONS

COLOUR







PARTITIONS TOTAL NUMBER = 3

TESTED	EACH CHOICE COVERAGE				
	$\frac{3+4}{7}$ × 100% = 100%				
	1 + 2 7 × 100% ≈ 43%				

PARTITIONS TOTAL NUMBER = 4



Performance Rating	Partition Name	Rule		
< 0	Invalid Rating	Reject the input. Error message: "Invalid rating: Rating cannot be negative"		
0 - 4	No Bonus	No bonus		
5 - 7	Standard Bonus	A bonus of \$1,000		
8 - 10	High Bonus	A bonus of \$2,000		
> 10	Invalid Rating	Reject the input. Error message: "Invalid rating: Rating cannot exceed 10"		



	Performance	Partition Name				
	< 0	Invalid Rating				
-	0 - 4	No Bonus				
	5 - 7		Standard Bonus			
	8 - 10	High Bonus				
	> 10		Invalid Rating			
Invalid	Valid	Vali	d	Vali	d	Invalid
-1	0 4	5	7	8	10	11
Partition 1 "Invalid Rating"	Partition 2 "No Bonus"	Partitie "Standard	o <mark>n 3</mark> Bonus"	Partition 4 "High Bonus"		Partition 5 "Invalid Rating

		and the second second second		the second stands	and the second second		
	Performance Rating < 0 0 - 4 5 - 7 8 - 10 > 10		Partition Name Invalid Rating No Bonus Standard Bonus High Bonus				
			Invalid Rating				
Invalid	Valid		d	Valid		Invalid	
-1	0 4	5	7	8	10	11	
Partition 1	Partition 2	Partition 3		on 3 Partition 4		Partition 5	
"Invalid Rating"	"No Bonus"	"Standard Bonus"		nus" "High Bonus"		"Invalid Rating"	
1	I					I	
-3	2	5		9		15	Sec. 4

```
def bonus(rating: int):
        if rating \leq -1:
            return "Invalid rating: Rating cannot be negative"
        elif rating >= 0 and rating <= 4:
            return 0
        elif rating >= 5 and rating <= 7:
            return 1000
        elif rating >= 8 and rating <= 10:
            return 2000
        else:
            return "Invalid rating: Rating cannot exceed 10"
rating = 12
    result = bonus(rating)
    print(result)
→ Invalid rating: Rating cannot exceed 10
```

rating = 7
result = bonus(rating)
print(result)