

**Consider a software system that accepts an input value between 1 and 1000, inclusive. Using Equivalence Class Partitioning and Boundary Value Analysis, determine the minimum number of test cases required to adequately test this system.**

- a) Define the equivalence classes for the input range.**
- b) Determine the valid and invalid equivalence classes.**
- c) Identify the boundary values for each equivalence class.**
- d) Provide a minimum set of test cases that will exercise all of the identified boundary values.**

One possible solution could be:

- a) Equivalence classes for the input range:

We can divide the input range into three equivalence classes:

Class 1: values between 1 and 9 (inclusive)

Class 2: values between 10 and 990 (inclusive)

Class 3: values between 991 and 1000 (inclusive)

- b) Valid and invalid equivalence classes:

Valid equivalence classes: Class 1, Class 2, Class 3

Invalid equivalence classes:

Class 0: values less than 1

Class 4: values greater than 1000

- c) Boundary values for each equivalence class:

Class 1:

Lower boundary value: 1

Upper boundary value: 9

Class 2:

Lower boundary value: 10

Upper boundary value: 990

Class 3:

Lower boundary value: 991

Upper boundary value: 1000

d) Minimum set of test cases:

To exercise all of the identified boundary values, we can use the following minimum set of test cases:

Test case 1: Input value = 1 (Lower boundary value of Class 1)

Test case 2: Input value = 9 (Upper boundary value of Class 1)

Test case 3: Input value = 10 (Lower boundary value of Class 2)

Test case 4: Input value = 990 (Upper boundary value of Class 2)

Test case 5: Input value = 991 (Lower boundary value of Class 3)

Test case 6: Input value = 1000 (Upper boundary value of Class 3)