East West University

Department of CSE

Assignment

Course Code and Name: CSE430 Software Testing and Quality Assurance	
Assignment no: 1	
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Ans to the Question Number 1

Boundary Value Coverage (BVC):

For n=3

4n+1=4(3)+1=13 test cases.

We test for each variable (x, y, z) at:

1. **Min (1)**
2. **Min+ (2)**
3. **Max (50)**
4. **Max− (49)**
5. **Nominal (25)**

Test Case	x	y	z	Expected Output
1	1	1	1	1
2	2	1	1	1
3	50	1	1	1
4	49	1	1	1
5	1	2	1	1
6	1	50	1	1
7	1	49	1	1
8	1	12	2	1
9	1	1	50	1
10	1	1	49	1
11	25	25	25	25
12	50	50	50	50
13	49	50	49	1

Robustness Testing:

For n=3

6n+1=6(3)+1=19 test cases.

In addition to BVC test cases, include:

1. **Min− (0)**: Just below the minimum.
2. **Max+ (51)**: Just above the maximum.

Test Case	x	y	z	Expected Output
1	1	1	1	1
2	2	1	1	1
3	50	1	1	1
4	49	1	1	1
5	1	2	1	1
6	1	50	1	1
7	1	49	1	1
8	1	1	2	1
9	1	1	50	1
10	1	1	49	1
11	25	25	25	25
12	50	50	50	50
13	49	50	49	1
14	0	1	1	Invalid
15	1	0	1	Invalid
16	1	1	0	Invalid
17	51	1	1	Invalid
18	1	51	1	Invalid
19	1	1	51	Invalid

Ans to the Question Number 2

Boundary Value Coverage (BVC)

For n = 2 (string and single character), 4n + 1= 9 test cases are required.

Test boundary conditions for the **string** length:

Min = 5, Min+=6, Max = 20, Max− = 19.

Test boundary conditions for the **character presence**:

- Character present and not present.

One nominal case.

Test Case	String (Length)	Single Character	Expected Output
1	"abcde" (5)	'a'	Present
2	"abcdef" (6)	'z'	Not Present
3	"abcdefghijklmnopqrst" (20)	't'	Present
4	"abcdefghijklmnopqrs" (19)	'x'	Not Present
5	"abcdefghij" (10)	'f'	Present
6	"abcde" (5)	'x'	Not Present
7	"abcdef" (6)	'f'	Present
8	"abcdefghijklmnopqrst" (20)	'z'	Not Present
9	"abcdefghijklmnopqrs" (19)	's'	Present

Robust Testing

For n = 2, 6n + 1 =1 3 test cases are required

Test boundary conditions for the string length:

- String shorter than Min = 5 (Min-)
- String longer than Max =20 (Max+).

Test Case	String (Length)	Single Character	Expected Output
1	"abcde" (5)	'a'	Present
2	"abcdef" (6)	'z'	Not Present
3	"abcdefghijklmnopqrst" (20)	't'	Present
4	"abcdefghijklmnopqrs" (19)	'x'	Not Present
5	"abcdefghij" (10)	'f'	Present
6	"abcd" (4)	'a'	Invalid Input
7	"abcdefghijklmnopqrstu" (21)	'u'	Invalid Input
8	"" (0)	'a'	Invalid Input
9	"abcde" (5)	" (empty)	Invalid Input
10	"abcde" (5)	'ab'	Invalid Input

11	"abcde" (5)	'x'	Not Present
12	"abcdefghijklmnopqrst" (20)	'z'	Not Present
13	"abcdefghijklmnopqrs" (19)	's'	Present

Worst-Case Testing

for n = 2 we need

5^n = 25 test cases.

Approach for Worst-Case Testing

- Minimum value (Min).
- Just above the minimum value (Min+).
- Nominal/middle value (Nominal).
- Just below the maximum value (Max−).
- Maximum value (Max).

Test Case	String	Single Character	Expected Output
1	"abcde" (5)	'a'	Present
2	"abcde" (5)	'z'	Not Present
3	"abcde" (5)	'f'	Not Present
4	"abcde" (5)	" (empty)	Invalid Input
5	"abcde" (5)	'ab'	Invalid Input
6	"abcdef" (6)	'a'	Present
7	"abcdef" (6)	'z'	Not Present
8	"abcdef" (6)	'f'	Present
9	"abcdef" (6)	" (empty)	Invalid Input
10	"abcdef" (6)	'ab'	Invalid Input
11	"abcdefghij" (10)	'j'	Present
12	"abcdefghij" (10)	'z'	Not Present
13	"abcdefghij" (10)	'f'	Present
14	"abcdefghij" (10)	" (empty)	Invalid Input

15	"abcdefghij" (10)	'ab'	Invalid Input
16	"abcdefghijklmnopqrs" (19)	'a'	Present
17	"abcdefghijklmnopqrs" (19)	'z'	Not Present
18	"abcdefghijklmnopqrs" (19)	'f'	Not Present
19	"abcdefghijklmnopqrs" (19)	" (empty)	Invalid Input
20	"abcdefghijklmnopqrs" (19)	'ab'	Invalid Input
21	"abcdefghijklmnopqrst" (20)	'a'	Present
22	"abcdefghijklmnopqrst" (20)	'z'	Not Present
23	"abcdefghijklmnopqrst" (20)	't'	Present
24	"abcdefghijklmnopqrst" (20)	" (empty)	Invalid Input
25	"abcdefghijklmnopqrst" (20)	'ab'	Invalid Input

Ans to the Question Number 3

Boundary Value Coverage (BVC)

For BVC, the formula for test cases is 4n + 1, where n is the number of inputs (3 here).
Thus, 4 × 3 + 1=13 Test cases.

Test Case	Name of Employee	Employee ID	Designation	Expected Output
1	"John"	"1234567890"	"Manager"	Valid Input, printed
2	"John Smith"	"1234567890"	"Software Engineer"	Valid Input, printed
3	""	"1234567890"	"Manager"	Invalid Input Error

4	"J"	"1234567890"	"Manager"	Valid Input, printed
5	"John Smithson"	"1234567890"	"Manager"	Valid Input, printed
6	"John Smithson "	"1234567890"	"Manager"	Invalid Input Error
7	"John"	""	"Manager"	Invalid Input Error
8	"John"	"123456789"	"Manager"	Invalid Input Error
9	"John"	"1234567890"	""	Valid Input, printed
10	"John"	"1234567890"	"Software Developer"	Valid Input, printed
11	"John"	"1234567890"	"Software Engineer++"	Invalid Input Error
12	"John"	"12345678901"	"Manager"	Invalid Input Error
13	"Alice"	"ABCDEFGHIJ"	"HR"	Valid Input, printed

Robust Testing

For robust testing, the formula is 6n+1, where n=3n
Thus, 6×3+1=19 test cases.

Test Case	Name of Employee	Employee ID	Designation	Expected Output
1	"John"	"1234567890"	"Manager"	Valid Input, printed
2	"John Smith"	"1234567890"	"HR"	Valid Input, printed
3	""	"1234567890"	"Manager"	Invalid Input Error
4	"J"	"1234567890"	"Manager"	Valid Input, printed
5	"John Smithson"	"1234567890"	"Manager"	Valid Input, printed
6	"John Smithson "	"1234567890"	"Manager"	Invalid Input Error
7	"John"	""	"Manager"	Invalid Input Error
8	"John"	"123456789"	"Manager"	Invalid Input Error

9	"John"	"12345678901"	"Manager"	Invalid Input Error
10	"John"	"ABCDEFGHIJ"	"HR"	Valid Input, printed
11	"John"	"ABCDEFGHIJK"	"Manager"	Invalid Input Error
12	"John"	"1234567890"	""	Valid Input, printed
13	John"	"1234567890"	"Software Developer"	Valid Input, printed
14	"John"	"1234567890"	"Software Engineer++"	Invalid Input Error
15	""	""	""	Invalid Input Error
16	"12345"	"1234567890"	"Manager"	Invalid Input Error
17	"John123"	"1234567890"	"HR"	Invalid Input Error
18	"John"	"ABCDEFGHI"	"HR"	Invalid Input Error
19	"John"	"1234567890"	“Senior Project Manager	Invalid Input Error