

Boundary Value Testing

Testing to see if we get null or non- null values. Initial Boundary value Testing with very exaggerated boundaries.

Table 1: Variables and Values Tested

Variables	Minimum	Maximum	Nominal
Barrel Pose (x, y, z)	Negative Infinity	Positive Infinity	0
Radius	0	Positive Infinity	$0 > \text{radius} < 0.25$
Mass	0	Positive Infinity	$0 > \text{mass} < 10$
Drag Coefficient	0	Positive Infinity	0.5
Initial Speed	0	Positive Infinity	10
External Force (x, y, z)	Negative Infinity	Positive Infinity	100

Table 2: Results for Initial Boundary Value Testing (Exaggerated Values)

Case	Barrel Pose (x, y, z)	Radius	Mass	Drag Coefficient	Initial Speed	External Force (x, y, z)	Results
1	Negative Infinity	Nominal	Nominal	Nominal	Nominal	Nominal	Not Null
2	0	Nominal	Nominal	Nominal	Nominal	Nominal	Not Null
3	Positive Infinity	Nominal	Nominal	Nominal	Nominal	Nominal	Not Null
4	Nominal	0	Nominal	Nominal	Nominal	Nominal	Null
5	Nominal	0.25	Nominal	Nominal	Nominal	Nominal	Not Null
6	Nominal	Positive Infinity	Nominal	Nominal	Nominal	Nominal	Not Null
7	Nominal	Nominal	0	Nominal	Nominal	Nominal	Null
8	Nominal	Nominal	1	Nominal	Nominal	Nominal	Not Null
9	Nominal	Nominal	Positive Infinity	Nominal	Nominal	Nominal	Not Null
10	Nominal	Nominal	Nominal	0	Nominal	Nominal	Null
11	Nominal	Nominal	Nominal	0.5	Nominal	Nominal	Not Null
12	Nominal	Nominal	Nominal	Positive Infinity	Nominal	Nominal	Not Null
13	Nominal	Nominal	Nominal	Nominal	0	Nominal	Null
14	Nominal	Nominal	Nominal	Nominal	10	Nominal	Not Null
15	Nominal	Nominal	Nominal	Nominal	Positive Infinity	Nominal	Not Null
16	Nominal	Nominal	Nominal	Nominal	Nominal	Negative Infinity	Not Null
17	Nominal	Nominal	Nominal	Nominal	Nominal	100	Not Null
18	Nominal	Nominal	Nominal	Nominal	Nominal	Positive Infinity	Not Null

Table 3: Results for Initial Boundary Value Testing (With Guards on Mass, radius and Drag Coefficient)

Case	Barrel Pose (x, y, z)	Radius	Mass	Drag Coefficient	Initial Speed	External Force (x, y, z)	Expected and tested Results (Position – x, y, z)
1	Negative Infinity	Nominal	Nominal	Nominal	Nominal	Nominal	Not Null
2	0	Nominal	Nominal	Nominal	Nominal	Nominal	Not Null
3	Positive Infinity	Nominal	Nominal	Nominal	Nominal	Nominal	Not Null
4	Nominal	0	Nominal	Nominal	Nominal	Nominal	Throws Illegal Argument Exception
5	Nominal	0.25	Nominal	Nominal	Nominal	Nominal	Not Null
6	Nominal	1	Nominal	Nominal	Nominal	Nominal	Throws Illegal Argument Exception
7	Nominal	Nominal	0	Nominal	Nominal	Nominal	Throws Illegal Argument exception
8	Nominal	Nominal	1	Nominal	Nominal	Nominal	Not Null
9	Nominal	Nominal	10	Nominal	Nominal	Nominal	Not Null
10	Nominal	Nominal	Nominal	0	Nominal	Nominal	Throws Illegal Argument Exception
11	Nominal	Nominal	Nominal	0.5	Nominal	Nominal	Not Null
12	Nominal	Nominal	Nominal	1	Nominal	Nominal	Throws Illegal Argument Exception
13	Nominal	Nominal	Nominal	Nominal	0	Nominal	Null
14	Nominal	Nominal	Nominal	Nominal	10	Nominal	Not Null
15	Nominal	Nominal	Nominal	Nominal	Positive Infinity	Nominal	Not Null
16	Nominal	Nominal	Nominal	Nominal	Nominal	Negative Infinity	Not Null
17	Nominal	Nominal	Nominal	Nominal	Nominal	100	Not Null
18	Nominal	Nominal	Nominal	Nominal	Nominal	Positive Infinity	Not Null