



**Daffodil**  
*International*  
**University**

## **SEMESTER PROJECT**

**Title: Smart Parking System Validation**

Course Code: CIS431

Batch: 15

Section: 16\_A &15\_B

Course Title: Software Quality Assurance and Testing

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## **(1)Write Business Case:**

A smart parking booking form ensures users enter valid data before reserving a parking slot.

### **Assumptions:**

1. **Vehicle Number Length** – must be between 6 and 10 characters.
2. **Parking Duration (Hours)** – must be between 1 and 24.
3. **Vehicle Height (cm)** – must be between 100 cm and 250 cm.
4. **Parking Fee (BDT)** – must be between 50 and 2,000.
5. **Driver Age** – must be between 18 and 75 years.

## (2)USER INTERFACE:

 **Smart Parking**

Fill in your details to reserve a parking slot

<b>Vehicle Number</b> <input type="text" value="ABC1234"/> e.g. ABC1234 6–10 alphanumeric characters	<b>Parking Duration (hrs)</b> <input type="text" value="e.g. 5"/> e.g. 5 Range: 1 – 24 hours
<b>Vehicle Height (cm)</b> <input type="text" value="e.g. 180"/> e.g. 180 Allowed: 100 – 250 cm	<b>Parking Fee (₹)</b> <input type="text" value="e.g. 500"/> e.g. 500 ₹50 – ₹2000
<b>Driver Age</b> <input type="text" value="e.g. 30"/> e.g. 30 Age must be 18 – 75	

STATUS Waiting for input...

**Reset** **Reserve Slot**

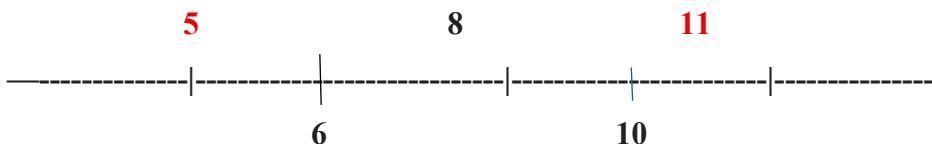
### 3. FIND REPRESENTATIVES (BOUNDARY VALUE METHOD)

#### Field 1: Vehicle Number Length

Range:  $6 \leq \text{length} \leq 10$

Boundary Values: 5, 6, 8, 10, 11

Diagram:



Valid Representatives: 6,8,10

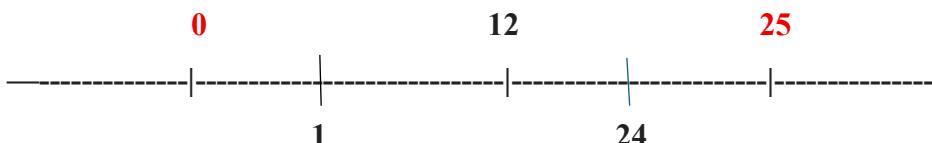
Invalid Representatives: 5, 11, Fred (Non-Numeric Value)

#### Field 2: Parking Duration (Hours)

Range:  $1 \leq \text{hours} \leq 24$

Boundary Values: 0, 1, 12, 24, 25

Diagram:



Valid Representatives: 1,12,24

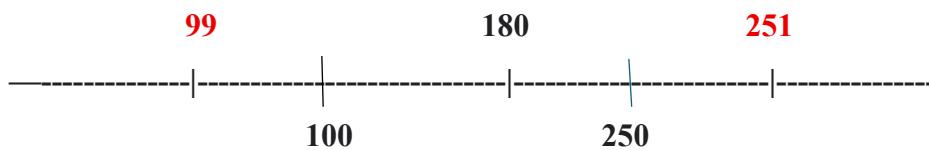
Invalid Representatives: 0, 25, Fred (Non-Numeric Value)

#### Field 3: Vehicle Height (cm)

Range:  $100 \leq \text{height} \leq 250$

Boundary Values: 99, 100, 180, 250, 251

Diagram:



Valid Representatives: 100,180,250

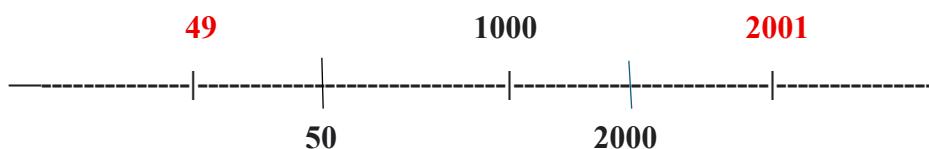
Invalid Representatives: 99,251, Fred (Non-Numeric Value)

#### **Field 4: Parking Fee (BDT)**

Range:  $50 \leq \text{fee} \leq 2000$

Boundary Values: 49, 50, 1000, 2000, 2001

Diagram:



Valid Representatives: 50,1000,2000

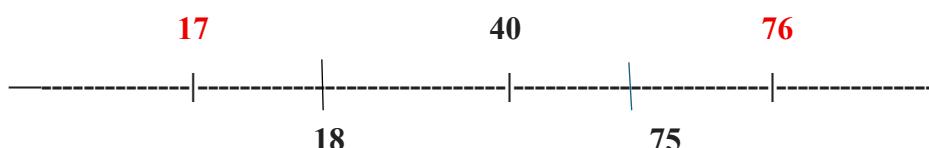
Invalid Representatives: 49, 2001, Fred (Non-Numeric Value)

#### **Field 5: Driver Age**

Range:  $18 \leq \text{age} \leq 75$

Boundary Values: 17, 18, 40, 75, 76

Diagram:



Valid Representatives: 18,40,75

Invalid Representatives: 17, 76, Fred (Non-Numeric Value)

## 4 REPRESENTATIVES TABLE

Variable	Equivalence Class	Status	Representatives
Vehicle Number Length	EC <sub>11</sub> : 6 ≤ len ≤ 10	Valid	"KA1234" (6 chars)
	EC <sub>12</sub> : len < 6	Invalid	"AB123" (5 chars)
	EC <sub>13</sub> : len > 10	Invalid	"DHK12345678" (11 chars)
Parking Duration	EC <sub>21</sub> : 1 ≤ x ≤ 24	Valid	12
	EC <sub>22</sub> : x < 1	Invalid	0
	EC <sub>23</sub> : x > 24	Invalid	25
Vehicle Height (cm)	EC <sub>31</sub> : 100 ≤ x ≤ 250	Valid	180
	EC <sub>32</sub> : x < 100	Invalid	99
	EC <sub>33</sub> : x > 250	Invalid	251
Parking Fee (BDT)	EC <sub>41</sub> : 50 ≤ x ≤ 2000	Valid	1000
	EC <sub>42</sub> : x < 50	Invalid	49
	EC <sub>43</sub> : x > 2000	Invalid	2001
Driver Age	EC <sub>51</sub> : 18 ≤ x ≤ 75	Valid	40
	EC <sub>52</sub> : x < 18	Invalid	17
	EC <sub>53</sub> : x > 75	Invalid	76

## 5. WRITE TEST CASES

### Test Case 1

Target Field: Vehicle Number Length  
Vehicle Number = "AB123"

Parking Duration = 12

Vehicle Height = 180

Parking Fee = 1000

Driver Age = 40

Expected Result:  Cannot Submit

### Test Case 2

Target Field: Vehicle Number Length  
Vehicle Number = "KA1234"

Parking Duration = 12

Vehicle Height = 180

Parking Fee = 1000

Driver Age = 40

Expected Result:  Can Submit

### Test Case 3

Target Field: Parking Duration

Vehicle Number = "DHK1234"

Parking Duration = 0

Vehicle Height = 180

Parking Fee = 1000

Driver Age = 40

Expected Result:  Cannot Submit

### Test Case 4

Target Field: Parking Duration

Vehicle Number = "DHK1234"

Parking Duration = 24

Vehicle Height = 180

Parking Fee = 1000

Driver Age = 40

Expected Result:  Can Submit

### Test Case 5

Target Field: Vehicle Height

Vehicle Number = "DHK1234"

Parking Duration = 12

Vehicle Height = 99

Parking Fee = 1000

Driver Age = 40

Expected Result:  Cannot Submit

### Test Case 6

Target Field: Vehicle Height

Vehicle Number = "DHK1234"

Parking Duration = 12

Vehicle Height = 150

Parking Fee = 1000

Driver Age = 40

Expected Result:  Can Submit

### Test Case 7

Target Field: Parking Fee

Vehicle Number = "DHK1234"

Parking Duration = 12

Vehicle Height = 180

Parking Fee = 2000

Driver Age = 40

Expected Result:  Can Submit

### Test Case 8

Target Field: Parking Fee

Vehicle Number = "DHK1234"

Parking Duration = 12

Vehicle Height = 180

Parking Fee = 20

Driver Age = 40

Expected Result:  Cannot Submit

### Test Case 9

Target Field: Driver Age

Vehicle Number = "DHK1234"

Parking Duration = 12

Vehicle Height = 180

Parking Fee = 1000

Driver Age = 17

Expected Result:  Cannot Submit

### Test Case 10

Target Field: Driver Age

Vehicle Number = "DHK1234"

Parking Duration = 12

Vehicle Height = 180

Parking Fee = 1000

Driver Age = 75

Expected Result:  Can Submit

## 6 . TEST CASE TABLE :

Test Case ID	Vehicle No.	Parking Duration	Vehicle Height	Parking Fee	Driver Age	Expected Result
TC01	"AB123" (5 chars)	12	180	1000	40	<span style="color:red;">X</span> Cannot Submit
TC02	"KA1234" (6 chars)	12	180	1000	40	<span style="color:green;">✓</span> Can Submit
TC03	"DHK1234"	0	180	1000	40	<span style="color:red;">X</span> Cannot Submit
TC04	"DHK1234"	24	180	1000	40	<span style="color:green;">✓</span> Can Submit
TC05	"DHK1234"	12	99	1000	40	<span style="color:red;">X</span> Cannot Submit
TC06	"DHK1234"	12	150	2000	40	<span style="color:green;">✓</span> Can Submit
TC07	"DHK1234"	12	180	2000	40	<span style="color:green;">✓</span> Can Submit
TC08	"DHK1234"	12	180	20	40	<span style="color:red;">X</span> Cannot Submit
TC09	"DHK1234"	12	180	1000	17	<span style="color:red;">X</span> Cannot Submit
TC10	"DHK1234"	12	180	1000	75	<span style="color:green;">✓</span> Can Submit

Variable	Status	Representatives	T01	T02	T03	T04	T05	T06	T07	T08	T09	T10
<b>Vehicle Number</b>	Valid	KA1234 (6 chars)		*	*	*	*	*	*	*	*	*
	Invalid	AB123 (5 chars)	*									
<b>Parking Duration</b>	Valid	12	*	*			*	*	*	*	*	*
	Valid	24				*						
	Invalid	0			*							
<b>Vehicle Height</b>	Valid	180 cm	*	*	*	*		*	*	*	*	*
	Valid	150 cm						*				
	Invalid	99 cm					*					
<b>Parking Fee</b>	Valid	1000	*	*	*	*	*				*	*
	Valid	2000						*	*			
	Invalid	20								*		
<b>Driver Age</b>	Valid	40	*	*	*	*	*	*	*	*		
	Invalid	17									*	
	Valid	75										*
<b>Expected Result</b>			N	Y	N	Y	N	Y	Y	N	N	Y



Variable	Status	Representatives	T01	T02	T03	T04	T05	T06	T07	T08	T09	T10
Expected Result			✗	✓	✗	✓	✗	✓	✗	✓	✗	✗