

# Black Box Design Techniques

Specification based.

## User model

The **User model** is managed by *ActiveRecord (Ruby on Rails ORM)* and it defines the core data structure, associations, and validations for *user accounts*, handling both *manual signup* and *OAuth flows* (currently only *Google*), enforcing field formats and lengths, managing relationships, and customizing JSON output to exclude sensitive data like **password\_digest** and **email**.

### Equivalence Partitions

	Partition Types	Boundary Values	Test case Values
email	invalid	0 - 6 ( <i>string length</i> )	't.d' ,
	valid	6 - 100 ( <i>string length</i> )	'johnUser_232@test.dk' ,
	invalid	> 100 ( <i>string length</i> )	'a'*200 + '@example.com'
first_name	valid	2 - 60 ( <i>string length</i> )	Maximilian ,
	invalid	> 60 ( <i>string length</i> )	'A' * 200
last_name	valid	2 - 60 ( <i>string length</i> )	Wolfeschlegelsteinhausenbergerdorff ,
	invalid	> 60 ( <i>string length</i> )	'A' * 200
bio	valid	0 - 2_000 ( <i>string length</i> )	'I like AI food'*15
	invalid	> 2_000 ( <i>string length</i> )	'I like to cook with AI'*500
uid	valid	0 - 100 ( <i>string length</i> )	xoheuif3qr3
	invalid	> 100 ( <i>string length</i> )	'u'*450
provider	valid	0 - 40 ( <i>string length</i> )	apple
	invalid	> 40 ( <i>string length</i> )	'a'*100
password	invalid	0 - 6 ( <i>string length</i> )	psw ,
	valid	6 - 50 ( <i>string length</i> )	superSecPsw!a31b_qwe0#
	invalid	> 50 ( <i>string length</i> )	'p'*100
image_src	invalid	0 - 14 ( <i>string length</i> )	http://s.d ,
	valid	14 - 400 ( <i>string length</i> )	https://munchora.pro/uploads/recipes/3r93xhue938383.jpg
	invalid	> 400 ( <i>string length</i> )	'http://img.dk/uploads/' + 'x'*778 (800)

3-value Boundary Value Analyse

Field	Boundary Condition	Boundary Values	3 Test Case Values (below, on, above)
email	0 - 6 (string length)	0	'', 't'
	6 - 100 (string length)	6	'u@t.d', 'u@t.dk', 'u1@t.dk'
	6 - 100 (string length)	100	'a'*87 + '@example.com' (99), 'a'*88 + '@example.com' (100), 'a'@89 + '@example.com' (101)
first_name	0 - 2	0	'', 0
	2 - 60 (string length)	2	0, Li, 'Lee'
	2 - 60 (string length)	60	'A'*59, 'A'*60, 'A'*61
last_name	0 - 2	0	'', J
	2 - 60 (string length)	2	J, Jo, 'Joe'
	2 - 60 (string length)	60	'A'*59, 'A'*60, 'A'*61
bio	0 - 2_000 (string length)	0	'', 'a'
	0 - 2_000 (string length)	2000	'a'*1_999, 'a'*2_000, 'a'*2_001
uid	0 - 100 (string length)	0	'', 'a'
	0 - 100 (string length)	100	'a'*99, 'a'*100, 'a'*101
provider	0 - 40 (string length)	0	'', 'u'
	0 - 40 (string length)	40	'u'*39, 'u'*40, 'u'*41
password	0 - 6 (string length)	0	'', 'p`
	6 - 50 (string length)	6	'secpw', 'secpsw', 'secpswd'
	6 - 50 (string length)	50	'p'*49, 'p'*50, 'p'*51
image_src	0 - 14 (string length)	0	'', 'h'
	14 - 400 (string length)	14	'http://img.dk' (13), 'http://img.dk/' (14), 'http://img.dk/1' (15)
			'http://img.dk/uploads/' + 'x'*377 (399),

Field	14 - 400 (string boundary Condition)	400 Boundary Values	'http://img.dk/uploads/' + 'x'*378 (400) , 3 Test Case Values (below, on, above)(401)
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Edge Cases

This outlines the field-level test cases for the **User model**, specifying expected formats and example invalid values to ensure robust validation against **incorrect types**, **malformed emails**, and **invalid URLs**.

Field	Format	Test Case Value
email	URI - :mailto	null, plainaddress, @missinguser.com, user@.com, user@com.com, user@example.com
first_name	UTF-8 encoded Unicode string	wrong data types
last_name	UTF-8 encoded Unicode string	wrong data types
bio	UTF-8 encoded Unicode string	wrong data types
uid	UTF-8 encoded Unicode string	wrong data types
provider	UTF-8 encoded Unicode string	wrong data types
password	UTF-8 encoded Unicode string	wrong data types
image_src	URI - :http/https	a.com, invalid_url, http://a.co, http://site.com/uploads/x.jpg

Decision table

This table summarizes the key conditions and expected outcomes for **user creation**, covering both *manual signup* and *OAuth flows*, and highlights which combinations of field validity result in a successful account creation.

User model	R1	R2	R3	R4	R5	R6	R7	R8
Conditions								
Email & names valid?	F	T	F	T	F	T	F	T
Password valid?	F	F	T	T	/	/	/	—
Provider & uid present?	/	/	/	/	F	F	T	T
Image_src valid?	/	/	/	/	/	/	/	/
Bio valid?	/	/	/	/	/	/	/	/
Expected Validation Context	Manual signup	Manual signup	Manual signup	Manual signup	OAuth signup	OAuth signup	OAuth signup	OAuth signup
Actions								
User created (valid)?	☑	☑	☑	☑	☑	☑	☑	☑