

# Black Box Design Techniques

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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
<b>email</b>	invalid	0 - 6 (string length)	't.d' ,
	valid	6 - 100 (string length)	'johnUser_232@test.dk' ,
	invalid	> 100 (string length)	'a'*200 + '@example.com'
<b>first_name</b>	valid	2 - 60 (string length)	Maximilian ,
	invalid	> 60 (string length)	'A' * 200
<b>last_name</b>	valid	2 - 60 (string length)	Wolfeschlegelsteinhausenbergerdorff ,
	invalid	> 60 (string length)	'A' * 200
<b>bio</b>	valid	0 - 2_000 (string length)	'I like AI food'*15
	invalid	> 2_000 (string length)	'I like to cook with AI'*500
<b>uid</b>	valid	0 - 100 (string length)	xoheuif3qr3

	Partition Types	Boundary Values	Test case Values
	invalid	> 100 (string length)	'u'*450
<b>provider</b>	valid	0 - 40 (string length)	apple
	invalid	> 40 (string length)	'a'*100
<b>password</b>	invalid	0 - 6 (string length)	psw ,
	valid	6 - 50 (string length)	superSecPsw!a31b_qwe0#
	invalid	> 50 (string length)	'p'*100
<b>image_src</b>	invalid	0 - 14 (string length)	http://s.d ,
	valid	14 - 400 (string length)	https://munchora.pro/uploads/recipes/3r93xhue938383.jpg
	invalid	> 400 (string length)	'http://img.dk/uploads/' + 'x'*778 (800)

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### 3-value Boundary Value Analyse

Field	Boundary Condition	Boundary Values	3 Test Case Values (below, on, above)
<b>email</b>	0 - 6 ( <i>string length</i> )	0	'' , 't'
	6 - 100 ( <i>string length</i> )	6	'u@t.d' , 'u@t.dk' , 'u1@t.dk'
	6 - 100 ( <i>string length</i> )	100	'a'*87 + '@example.com' (99) , 'a'*88 + '@example.com' (100) , 'a'*89 + '@example.com' (101)
<b>first_name</b>	0 - 2	0	'' , 0
	2 - 60 ( <i>string length</i> )	2	0 , Li , 'Lee'
	2 - 60 ( <i>string length</i> )	60	'A'*59 , 'A'*60 , 'A'*61
<b>last_name</b>	0 - 2	0	'' , J
	2 - 60 ( <i>string length</i> )	2	J , Jo , 'Joe'
	2 - 60 ( <i>string length</i> )	60	'A'*59 , 'A'*60 , 'A'*61
<b>bio</b>	0 - 2_000 ( <i>string length</i> )	0	'' , 'a'
	0 - 2_000 ( <i>string length</i> )	2000	'a'*1_999 , 'a'*2_000 , 'a'*2_001
<b>uid</b>	0 - 100 ( <i>string length</i> )	0	'' , 'a'
	0 - 100 ( <i>string length</i> )	100	'a'*99 , 'a'*100 , 'a'*101
<b>provider</b>	0 - 40 ( <i>string length</i> )	0	'' , 'u'

Field	Boundary Condition	Boundary Values	3 Test Case Values (below, on, above)
	0 - 40 ( <i>string length</i> )	40	'u'*39 , 'u'*40 , 'u'*41
<b>password</b>	0 - 6 ( <i>string length</i> )	0	' ', 'p'
	6 - 50 ( <i>string length</i> )	6	'secpw' , 'secpsw' , 'secpswd'
	6 - 50 ( <i>string length</i> )	50	'p'*49 , 'p'*50 , 'p'*51
<b>image_src</b>	0 - 14 ( <i>string length</i> )	0	' ' , 'h'
	14 - 400 ( <i>string length</i> )	14	'http://img.dk' (13) , 'http://img.dk/' (14) , 'http://img.dk/1' (15)
	14 - 400 ( <i>string length</i> )	400	'http://img.dk/uploads/' + 'x'*377 (399) , 'http://img.dk/uploads/' + 'x'*378 (400) , 'http://img.dk/uploads/' + 'x'*379 (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
<b>email</b>	URI – :mailto	null , plainaddress , @missinguser.com , user@.com , user@com,com , user@exa mple.com
<b>first_name</b>	UTF-8 encoded Unicode string	wrong data types
<b>last_name</b>	UTF-8 encoded Unicode string	wrong data types
<b>bio</b>	UTF-8 encoded Unicode string	wrong data types
<b>uid</b>	UTF-8 encoded Unicode string	wrong data types
<b>provider</b>	UTF-8 encoded Unicode string	wrong data types
<b>password</b>	UTF-8 encoded Unicode string	wrong data types
<b>image_src</b>	URI – :http/https	a.com , invalid_url , http://a.co , http://site.com/uploads/x.jpg

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## 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
<b>Conditions</b>								
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?	/	/	/	/	/	/	/	/
<b>Expected Validation Context</b>	Manual signup	Manual signup	Manual signup	Manual signup	OAuth signup	OAuth signup	OAuth signup	OAuth signup
<b>Actions</b>								
User created (valid)?	F	F	F	T	F	F	F	T