Name:



BOOTSTRAP: REACTIVE

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Class:



Workbook v0.9

Brought to you by the Bootstrap team:

- Emma Youndtsmith
- Emmanuel Schanzer
- Kathi Fisler
- Joe Politz
- Shriram Krishnamurthi

Visual Design: Colleen Murphy

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	Unit ¹	
	Racket Code	Pyret Code
	(define AGE 14)	AGE = 14
	(define A-NUMBER 0.6)	A-NUMBER = 0.6
S	(define SPEED -90)	SPEED = -90
Numbers		Two of your own:
Ž		
	(define CLASS "Bootstrap")	CLASS = "Bootstrap"
	(define PHRASE "Coding is fun!")	PHRASE = "Coding is fun!"
	(define A-STRING "2500")	A-STRING = "2500"
ngs		Two of your own:
Strings		

```
(define SHAPE
                                          SHAPE =
     (triangle 40 "outline" "red"))
                                            triangle(40, "outline", "red")
   (define OUTLINE
                                          OUTLINE =
                                           star(80, "solid", "green")
     (star 80 "solid" "green"))
   (define SQUARE
                                          SQUARE =
     (rectangle 50 50 "solid" "blue"))
                                           rectangle(50, 50, "solid", "blue")
                                                    One of your own:
   (define BOOL true)
                                          BOOL = true
Booleans
   (define BOOL2 false)
                                                    One of your own:
                                          # double : Number -> Number
   ; double : Number -> Number
                                          # Given a number, multiply by
   ; Given a number, multiply by
   ; 2 to double it
                                          # 2 to double it
   (EXAMPLE (double 5) (*
                                  5)
                                          examples:
Functions
   (EXAMPLE (double 7) (*
                                              double(5) is 2 * 5
                                  7))
                                              double(7) is 2 * 7
   (define (double n) (*
                                          end
                                  n))
                                          fun double(n):
                                              2 * n
                                          end
```

Fast Functions!

Fill out the contract for each function, then try to write two examples and the definition by yourself.

# <u>double</u> :	Number →	Number
double (5	n is 2 * 5 n 2 * 7	1
fun <u>double</u> (_	n):
2 * n		
end		
#:	domain ->	range
examples:		
() is	
end (() is	
fun(_):
end		

Fast Functions!

Fill out the contract for each function, then try to write two examples and the definition by yourself.

#name	:	domain	>range	
examples:				
	() is		
	() is		
end				
fun	():	
end				
#	:	domain	->range	
examples:				
	() is		
end	() is		
end fun	(():	
	((((() is):	

Fast Functions!

Fill out the contract for each function, then try to write two examples and the definition by yourself.

#	:			
name		domain	ran	ge
examples:				
	() is		
	() is		
end				
fun	():	
end				
#	:	domain	->ran	
examples:				
	() is		
	() is		
end				
fun	():	
end				

Bug Hunting: Pyret Edition SECONDS = (7)#1 STRING = my string SHAPE1 = circle(50 "solid" "blue") #2 SHAPE2 = triangle(75, outline, yellow) # triple : Number -> Number # Multiply a given number by # 3 to triple it #3 examples: triple(5) = 3 * 5triple(7) = 3 * 7end fun triple(n): 3 * n #4 # ys : Number -> Number # Given a number, create a solid # yellow star of the given size examples: ys(99) is star(99, "solid", "yellow") ys(33) is star(99, "solid", "yellow") #5 ys(size): star(size "solid" "yellow") end

Unit 2

Word Problem: double-radius

Write a function double-radius, which takes in a radius and a color. It produces an outlined circle of whatever color was passed in, whose radius is twice as big as the input.

		
name	Domain	Range
	What does the function do?	
kamples examples of your fur		
mples:	ichorri denorr	
mprob.		
	() is
the user ty	nes.	
the user typ	Jes	
	which should become	
	(_) is
the user type	·s	
	which should become	
on ne changes in the exc	amples, and name the variables.	
	rything that isn't circled, and using names w	vhere you find variables!
	() :

Word Problem: double-width

Write a function double-width, which takes in a number (the length of a rectangle) and produces a rectangle whose width is twice the given length.

	_ •		→ _	
name		Domain		Range
	What do	es the function do	?	
Examples				
	our function in action	1		
amples:				
	() is	
the u	ser types			
tile u	ser types			
	which should be	ecome		
	1) is	
	() IS	
the use	er types			
 i		which should become		
•				
on				
	he examples, and nar			
	ng everything that isn't	_	ames where you fir	nd variabl
				١ .

Word Problem: next-position
Write a function next-position, which takes in two numbers (an x and ycoordinate) and returns a JumperState, increasing the x-coordinate by 5 and decreasing the y-coordinate by 5.

	•	·····	-
name		Domain	Range
		es the function do?	
ive Examples rite examples of your	function in action		
examples:	Torremon in denon		
examples.	1	1	is
	\)	15
the user	types		
	which should bec		
	() is
the use	er types		
end		which should become	
ena			
unction Circle the changes in the			ore you find variables!
ircle the changes in the		ne the variables. circled, and using names wh (•

Data Structure

A CakeType is a flavor, layers, & is-iceCream data CakeType: cake(____ end To make instances of this structure, I would write: cake1 = ____ cake2 = _____ To access the fields of cake2, I would write:

Word Problem: taller-than

Write a function called *taller-than*, which consumes two CakeTypes, and produces true if the number of layers in the first CakeType is greater than the number of layers in the second.

Contract+P	urpose Statement	
#	:	→
#		
Give Examp		
	oles of your function in action	
exampl	es:	
	() is
	the user types	
	which should become	 ne
	() is
	the user types	
end	V	which should become
Eunotion		
	anges in the examples, and name	
fun		rcled, and using names where you find variables!
Luli _		_():
,		
end		

Word Problem: will-melt

Write a function called *will-melt*, which takes in a CakeType and a temperature, and returns true if the temperature is greater than 32 degrees, AND the CakeType is an ice cream cake.

Contrac	t+Purpose Statement	
#	:	→
#		
Give Exc	amples	
	amples of your function in action	
exam	ples:	
	() is
	the user types	
	which should become	
	() is
	the user types	
end	which	should become
- "		
Function Circle the	n e changes in the examples, and name the v	variables
	code, copying everything that isn't circled,	
fun	() :
_		
end		

Vocabulary Practice

Below is a new structure definition:

```
data MediaType:
   book (
      title :: String,
      author :: String,
      pubyear :: Number)
end
# an example book:
book1 = book("1984", "Orwell", 1949)
Fill in the blanks below with the vocabulary term that applies to each
name. Here are the terms to choose from:
          - contract - example
          - header
                   - field
          - datatype - instance
          - constructor - data block
          - name
                    - purpose
  author is a _____
  book is a ____
  MediaType is a _____
  book1 is a _____
  title is a
  data ... end is a
```

Unit 3

Identifying Animation Data Worksheet: Sunset

Draw a sketch for three distinct moments of the animation				
Sketch A	Sketch B	Sketch C		

What things are cha	inging?
Thing	Describe how it changes

What fields do you need to represent the things that change?			
Field name (dangerX, score, playerIMG)	Datatype (Number, String, Image, Boolean)		

(worksheet continues on the next page)

Define the Data Structure

# a	State is	_
data	State:	
[(
		_)
end		
Make a sample insta	nce for each sketch from the previous page:	
Make a sample instal	ice for each sketch from the previous page.	
=		
=	:	

Word Problem: draw-state

Write a function called *draw-state*, which takes in a SunsetState and returns an image In which the sun (a circle) appears at the position given in the SunsetState. The sun should be behind the horizon (the ground) once it is low in the sky.

Contract+Purpose Statem		-\ Tmaga
# draw-state :		→ Image
Vrite an expression for ea	ch piece of your final image	
SUN =		
GROUND =		
SKY =		
Vrite the draw-state tunct	ion, using put-image to combine your	pieces
C	,	,
fun	() :

Word Problem: next-state-tick

Write a function called *next-state-tick*, which takes in a SunsetState and returns a SunsetState in which the new x-coordinate is 8 pixels larger than in the given SunsetState and the y-coordinate is 4 pixels smaller than in the given SunsetState.

Contract+Pu	rpose Statement	
#	·	→
#		
Give Example	es	
	les of your function in action	
example	es:	
	() is
	the user types	
	which should become	
	() is
	the user types	
end	which s	should become
Function		
Circle the cha	inges in the examples, and name the v	
	e, copying everything that isn't circled,	and using names where you find variables!
fun _	() :
end		

Identifying Animation Data Worksheet

Sketch A	Sketch B	Sketch C
t things are changing? Thing		ow it changes
A Sintale along the second and the		2
eld name (dangerX, score	represent the things that choese, playerIMG) Datatype	e (Number, String, Image, Boolean
	1	

(worksheet continues on the next page)

Define the Data Structure

# a	State is	
data	State:	
l	(
)
end		,

Make a sample instance for each sketch from the previous page					
	Make a cample	inctance	tor aach skats	h trom the	pravious page.
	Make a sallible		IOI CACII INCIC		DIEVIOUS DAGE.

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Identifying Animation Data Worksheet

w a sketch for three	distinct moments of	the animation	
Cl l . l . A	CI	- I - I- D	CL - L-L- C
Sketch A	2K6	etch B	Sketch C
ıt things are chang	ing?		
Thing		Describe how it ch	nanges
at fields de vou	ol to represent the a their	n an the art also are a 2	
at tielas do you nee leld name (dangerX,	d to represent the thi		nber, String, Image, Boolean)
(0.0.1.9017)		20.0.760 (1001	

(worksheet continues on the next page)

Define the Data Structure

Identifying Animation Data Worksheet

v a sketch for thre	ee distinct moment	s of the animation	
Sketch A		Sketch B	Sketch C
at things are char	iging?	Describe how it c	hanges
at fields de vou se	and to represent th	o things that obango	
	x, score, playerIMG	e things that change? .) Datatype (Nur	mber, String, Image, Boolean)

(worksheet continues on the next page)

Define the Data Structure

# a	State is	_
data	State:	
	(_
		_)
end		
Make a sample ins	stance for each sketch from the previous page:	
	=	
	=	

Identifying Animation Data Worksheet

w a sketch for three	e distinct moments of	the animation	
-			
Sketch A	 Sk	etch B	Sketch C
		CICIID	3KGTCTT C
at things are chang	ging?	Danasila a la consila al	
Thing		Describe how it ch	anges
at fields do you <u>ne</u> c	ed to represent the th	ings that change?	
	score, playerIMG)		nber, String, Image, Boolean)

(worksheet continues on the next page)

Define the Data Structure

# a	State is	
data	State:	
l	(
)	
end	·	
Make a sample ins	ance for each sketch from the previous page:	
:	=	
	=	

Unit 4

Word Problem: location

Write a function called *location*, which consumes a JumperState, and produces a String representing the jumper's location: either "cliff", "beach", "water", or "air".

Contract+Purpose St	atement		
#	:	 	-
#		 	
Give Examples			
examples:			
	() is	
	() is	
	_() is	_
	() is	
	. `	<u> </u>	
•			

end

(worksheet continues next page)

Functi	on				
fun		(_) :	;
	if				:
	else if				_
	else if				:
	else: _				_
end	end				

Piecewise Bug-Hunting **Buggy Code** Correct Code / Explanation fun piecewisefun(n): if (n > 0): n else: 0 fun cost(topping): if string-equal(topping, "pepperoni"): 10.50 else string-equal(topping, "cheese"): 9.00 else string-equal(topping, "chicken"): 11.25 else string-equal(topping, "broccoli"): 10.25 else: "That's not on the menu!" end end fun absolute-value(a b): **if** a > b: a - b b - a end end fun best-function(f): if string-equal(f, "blue"): "you win!" else if string-equal(f, "blue"): "you lose!" else if string-equal(f, "red"): "Try again!" else: "Invalid entry!" end end

Animation Extension Worksheet

Describe the goal of your change: what new feature or behavior will it add to your animation?

Draw a sketch	for three distinc	ct moments of the animation		
Draw a skeren	for infee distinc	r moments of the animation		
Sket	ch A	Sketch B Sketch	С	
What things are	o ob an ain a?			
What things are Thing	e changing e	Describe how it changes		
What fields do	you need to re	present the things that change?		
	dangerX, score, p		olean.)
Mako a Io Do	list and shock	off each as "Done" when you finish each one.		
Component		·	To-Do	Done
Data Structure	If any new field	(s) were added, changed or removed		
draw-state	If something is a	something is displayed in a new way or position		
next-state-tick	If the Data Struc	cture changed, or the animation happens automatically		
next-state-key	If the Data Struc	cture changed, or a keypress triggers the animation		
reactor	If either next-stc	ate function is new		

Make a sample ins	stance for each sk	etch from the p	evious page:		
		·			
=	=				
:	=				
:	=				
Write at least one I	NEW example for	one of the funct	ions on your To-D	o list	
			,		
		· · ·			
If you have anothe	er function on you	ir Io-Do list , write	at least one NEV	W example	

Word Problem: draw-sun

Write a function called *draw-sun*, which consumes a SunsetState, and produces an image of a sun (a solid, 25 pixel circle), whose color is "yellow", when the sun's y-coordinate is greater than 225, "orange", when its y-coordinate is between 150 and 225, and "red" otherwise.

Contract+Purpose	e Statement		
#	:	>	
#			
Give Examples			
examples:			
	() is	
_			

end

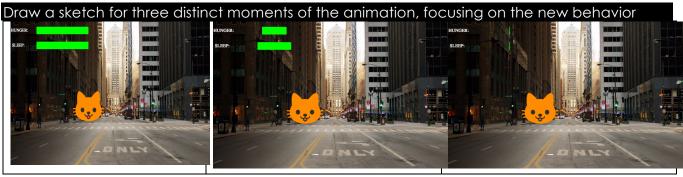
(worksheet continues next page)

Function	on					
fun	<u> </u>		() :	
	if					,
	else if	£				
	else if				:	
	else: _					
end	end					

Unit 5

Describe the goal of your change: what new feature or behavior will it add to your animation?

Decrease the cat's hunger level by 2 and sleep level by 1 on each tick.



Sketch A Sketch B Sketch C

What things are changing?						
Thing	Describe how it changes					

What fields do you need to represent the things that change?					
Field name (dangerX, score, playerIMG) Datatype (Number, String, Image, Boolean)					

Make a To-Do List, and check off each as "Done" when you finish each one.							
Component	When is there work to be done?	To-Do	Done				
Data Structure	If any new field(s) were added, changed or removed						
draw-state	If something is displayed in a new way or position	V					
next-state-tick	If the Data Structure changed, or the animation happens automatically	V					
next-state-key	If the Data Structure changed, or a keypress triggers the animation	V					
reactor	If either next-state function is new						

Make a samp	ole instance for each sketch from the previous page:
FULLPET =	pet(100, 100)
MIDPET =	pet(50, 75)
LOSEPET =	=pet(0, 0)
Write at least	one NEW example for one of the functions on your To-Do list
n <u>ext-state-</u>	tick(FULLPET) is pet(FULLPET.hunger - 2, FULLPET.sleep - 1
next-state	e-tick(MIDPET) is pet(MIDPET.hunger - 2, MIDPET.sleep - 1)
next-state	e-tick(LOSEPET) is LOSEPET
If you have a	nother function on your To-Do list , write at least one NEW example

Draw a sketch	for three distinc	ct moments of the animation		
Sket	ch A	Sketch B Sketch	<u>C.</u>	
		OKOTOTI D		
What things are Thing	e changing ?	Describe how it changes		
		present the things that change?		
rieia name (C	langerX, score, p	Datatype (Number, String, Image, Bo	oolean.	••)
Make a To-Do Component		off each as "Done" when you finish each one. work to be done?	To-Do	Done
Data Structure		(s) were added, changed or removed		
		<u> </u>		
draw-state	ii someining is c	displayed in a new way or position		
next-state-tick	If the Data Struc	cture changed, or the animation happens automatically		
next-state-key	If the Data Struc	cture changed, or a keypress triggers the animation		
reactor	If either next-sto	ate function is new		

Make a sample insta	ance for each sketc	h from the previo	us page:	
•		•	, 0	
= _				
=				
=				
Write at least one NE	-W example for one	of the functions	on vour Io-Do list	
Wille at least offe NE	.w example for one	Of the folichors		
If you have another t	tunction on your to-	-Do list , write at le	east one NEW exa	mple

Draw a sketch	for three distinc	t moments of the	e animation			
Clast	- I- A	Cl - I	- I- D	Cl - l - l		
Sket		Sket	CU R	Sketch	C	
What things are	e changing?					
Thing			Describe how it ch	anges		
		oresent the thing				
Field name (c	langerX, score, p	layerIMG)	Datatype (Num	ber, String, Image, Bo	oolean.)
Make a To-Do I	ist, and check	off each as "Do	ne" when you fin	nish each one.		
Component	When is there	work to be done	?		To-Do	Done
Data Structure	If any new field	(s) were added, c	hanged or remove	ed		
draw-state	If something is a	lisplayed in a new	way or position			
next-state-tick	If the Data Struc	cture changed, or	the animation ha	ppens automatically		
next-state-key	If the Data Struc	cture changed, or	a keypress trigger	s the animation		
reactor	If either next-sto	ite function is new	,			

Make a sample	instance for ec	ach sketch from	n the previous p	oage:	
	=				
					-
	=				
					_
	=				
					_
Write at least on	ne NEW exampl	e for one of the	e functions on	vour To-Do list	
				,	
					-
If you have ano	ther function or	n your To-Do list	t , write at leas	t one NEW examp	le

Build Your Own Animation

Draw a sketch	for three distinc	t moments of the animation		
Sket	ch A	Sketch B Ske	tch C	
What things are	e changing?			
Thing		Describe how it changes		
What fields do	vou need to re	oresent the things that change?		
	dangerX, score, p		ge, Boolear)
		off each as "Done" when you finish each one. work to be done?		Done
Component Data Structure			10-00	Done
Data Structure	ii any new neid	(s) were added, changed or removed		
draw-state	If something is a	lisplayed in a new way or position		
next-state-tick	If the Data Stru	ically \Box		
next-state-key	If the Data Stru	cture changed, or a keypress triggers the animation		
reactor	If either next-sto	ite function is new		

a	State is	
ata	State:	
	(
_)
ıd		
	e instance for each sketch from the previous pag	
	_ =	
	_ =	
	_ =	
	ple for one of the functions on the previous pag	e:
	ple for one of the functions on the previous pag	e:
	ple for one of the functions on the previous pag	e:

Collision

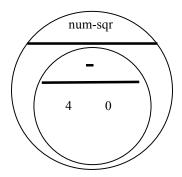
Distance:

The Player is at (4, 2) and the Target is at (0, 5). Distance takes in the player's x, player's y, character's x and character's y.

Use the formula below to fill in the EXAMPLE:

$$\sqrt{(4-0)^2+(2-5)^2}$$

Convert it into a Circle of Evaluation. (We've already gotten you started!)



Convert it into Pyret code:

Word Problem: distance Write a function distance, which takes FOUR inputs: px: The x-coordinate of the player py: The y-coordinate of the player

□ cx: The x-coordinate of another game character
 □ cy: The y-coordinate of another game character

It should return the distance between the two, using the Distance formula:

Contro	Dis act+Purpose Statement	tance ² = (px -	$(cx)^2 + (py - cy)^2$	
#	·		:	>
#				
Give Ex Write e	xamples examples of your function	n in action		
	mples: ()	is	
-)	is	
end Function	on			
fun		():	

end

Word Problem: is-collision Write a function is-collision, which takes FOUR inputs:

	px: The x-coordinate of the player py: The y-coordinate of the player cx: The x-coordinate of another game cy: The y-coordinate of another game It should return true if the coordinates of coordinates of the other character.	character If the player are within 50 Itherwise, false.	pixels of the)
Contro	act+Purpose Statement			
#	:	->	·	
#				
Give E	xamples			
	examples of your function in action			
exa	mples:		•	
			_)	is
	(_)	is
end				
Functi	on			
fun	():		
end				

DESIGN RECIPE

Cont	ract+Purpose Statemer	nt		
Every	contract has three pa	rts:		
,,				
#	·			>
	name		Domain	Range
#				
<i>''</i>		What does the fur	nction do?	
	Examples			
Write	examples of your func	tion in action		
037	mmlog•			
exc	amples:	,		
	()	is	
	the user types.	·•		
	••	which should become		
	()	is	
	the user types	·		
		which should bec		
enc	1	willen snouta bet	.ome	
Funct				
	the changes in the exam	ples, and name the	variables.	
fur	l	():	
enc	k			

DESIGN RECIPE

Contract+Purpose	e Statement				
Every contract ho	as three parts:				
.,					
#	•			>	_
name		Dom	nain	Range	
#					
π		at does the function	 on do?		_
Give Examples					
Write examples o	f your function in a	ıction			
1 - •					
examples:					
	()	is		
t	he user types				
	which sho	ould become			
	()	is		
the	user types		_~		
and	W	hich should become	e		
end					
Function Circle the changes	in the examples, an	d name the var	iables		
circle frie changes	in the examples, an	a name me var	Idolos.		
fun	():		
end					

Draw a sketch	for three distinc	t moments of the animation			
Sket	ch A	Sketch B Sk	cetch (С	
What things are	e changing?				
Thing		Describe how it changes			
What fields do	vou pood to ro	oresent the things that change?			
	dangerX, score, p		age, Bo	olean.)
		off each as "Done" when you finish each on			
Component	When is there	work to be done?	1	To-Do	Done
Data Structure	If any new field	(s) were added, changed or removed			
draw-state	If something is a	lisplayed in a new way or position			
next-state-tick	If the Data Stru	cture changed, or the animation happens autom	atically		
next-state-key	If the Data Stru	cture changed, or a keypress triggers the animatic	on		
reactor	If either next-sto	Ite function is new			

a	State is	
ata	State:	
	(
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ıd		
	e instance for each sketch from the previous pag	
	_ =	
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	ple for one of the functions on the previous pag	e:
	ple for one of the functions on the previous pag	e:
	ple for one of the functions on the previous pag	e:

Draw a skatab	for throo distinc	at mamants of the animation		
Draw a sketch	tor three distinc	ct moments of the animation		
Skot	ch A			
3KG1	CITA	Skeich B Skeich	10	
What things ar	e changing?			
Thing		Describe how it changes		
Alle ark Callelanda				
	dangerX, score, p	present the things that change? Datatype (Number, String, Image, B	oolean.)
	- 3 - 7 7	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Make a To-Do	List, and check	off each as "Done" when you finish each one.		
Component		work to be done?	To-Do	Done
Data Structure	If any new field	(s) were added, changed or removed		
draw-state	If something is a	displayed in a new way or position		
next-state-tick	If the Data Stru	cture changed, or the animation happens automaticall	У	
next-state-key	If the Data Stru	cture changed, or a keypress triggers the animation		
reactor	If either next-sto	ate function is new		

a	State is	
ata	State:	
	(
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	e instance for each sketch from the previous page	
	_ =	
	_ =	
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e an exam	ple for one of the functions on the previous page:	•
e an exam	ple for one of the functions on the previous pages	
e an exam	ple for one of the functions on the previous page:	

Draw a sketch	for three distinc	t moments of the animation			
Sket	ch A	Sketch B Sk	ketch	С	
What things are	e changing?				
Thing		Describe how it changes			
What fields do	vou need to re	present the things that change?			
	dangerX, score, p		nage, Bo	olean.)
		off each as "Done" when you finish each on			
Component	When is there	work to be done?		To-Do	Done
Data Structure	If any new field	(s) were added, changed or removed			
draw-state	If something is a	lisplayed in a new way or position			
next-state-tick	If the Data Struc	ture changed, or the animation happens autom	natically		
next-state-key	If the Data Struc	ture changed, or a keypress triggers the animati	on		
reactor	If either next-sto	te function is new			

	Structure	
a	State is	
ata	State:	
	(
nd)
ce a sample	instance for each sketch from the previous page	ə:
	=	
	=	
	=	
e an examp	le for one of the functions on the previous page:	
		

Sket	ch A	Sketch B Sketch	С			
What things are	e changing?	Describe how it changes				
What fields do	you need to re	oresent the things that change?				
Field name (c	langerX, score, p	Datatype (Number, String, Image, Bo	oolean.)		
Make a To-Do l Component		off each as "Done" when you finish each one. work to be done?	To-Do	Done		
Data Structure	ture If any new field(s) were added, changed or removed					
draw-state	If something is o					
next-state-tick	If the Data Struc					
next-state-key	ate-key If the Data Structure changed, or a keypress triggers the animation					
reactor	If either next-sto	ate function is new				

Make a sample insta	ance for each sketch	n from the previou	us page:	
•		•		
= _				_
=				
=				
Write at least one NE	-W example for one	of the functions	on vour Io-Do list	
Wille at least offer NE	w example for one	of the folicitors (
If you have another t	tunction on your Io-	Do list , write at le	east one NEW exam	ple

Sketa		Sketch B Sketch	<u></u>				
SKEIC		Skeich B Skeich	<u> </u>				
What things are	e changing?	Describe how it shares					
Thing		Describe how it changes					
What fields do	you need to re	oresent the things that change?					
	angerX, score, p		oolean.)			
Make a Io-Do L Component		off each as "Done" when you finish each one. work to be done?	To-Do	Done			
•		(s) were added, changed or removed	10-00	Dolle			
Data Structure	it any new tiela						
draw-state	If something is c						
next-state-tick	If the Data Struc						
next-state-key	ey If the Data Structure changed, or a keypress triggers the animation						
reactor	If either next-state function is new						

Make a sample insta	nce for each sketch fro	m the previous pag	e:
		, ,	
=			
=			
=			
Write at least one NE	EW example for one of the	ne functions on your	r Io-Do list
wille at least offe M	w example for one of the	TE TOTICTIONS OF YOUR	
It you have another	function on your To-Do I	ist , write at least on	e NEW example

Contracts

Name	Domain	Range	example
#	:	→	
#	:	^	
#	:	→	
#		→	
#	:	^	
#	:	→	
#	:	→	
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Contracts

example																		
Range	•	•	•	•	•	•	•	^	•	•	•	•	^	•	^	•	•	←
Domain								•					•		•			
Name	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#