Name: _____



Student Workbook





Workbook v0.9

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

```
(define SHAPE
                                         SHAPE =
     (triangle 40 "outline" "red"))
                                           triangle(40, "outline", "red")
   (define OUTLINE
                                         OUTLINE =
     (star 80 "solid" "green"))
                                           star(80, "solid", "green")
                                         SQUARE =
   (define 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:
   (EXAMPLE (double 7) (*
                                 7))
                                             double(5) is 2 * 5
                                             double(7) is 2 * 7
   (define (double n) (* 2 n))
                                         end
                                         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.

#	double	::	Numbe	er →	Number range
exar	mples: double (5 n 7 n	±5 <u> </u>	2 * 5 n 2 * 7 n	
fun	double 2 * n	(<u>n</u>):	
end					
#	name	::	domain	->	range
exar	mples:				
		_(_) 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.

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

Fast Functions!

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

#		••			
	name		domain		range
examp.	les:				
		1	\ i.a		
		_() IS		
		_() is		
end					
fun		():	
		\		/ `	
end					
#		• •		_<	
#	name	::	domain	>	range
#	name	::	domain	>	range
	name	::			
	name	::		->	
	name	::) is		
	name	::) is		
examp:	name) is		
examp:	name) is		
examp:	name) is		
examp:	name) is		

Syntax and Style Bug Hunting: Pyret Edition

	SECONDS = (7)	
#1	STRING = my string	
" 0	SHAPE1 = circle(50 "solid" "blue")	
#2	<pre>SHAPE2 = triangle(75, outline, yellow)</pre>	
#3	<pre># triple :: Number -> Number # Multiply a given number by # 3 to triple it examples: triple(5) = 3 * 5 triple(7) = 3 * 7 end</pre>	
#4	<pre>fun triple(n): 3 * n</pre>	
#5	<pre># 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") ys(size): star(size "solid" "yellow") end</pre>	

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.

: :	Domain	>
name	Domain	Range
	What does the function do?	
xamples		
examples of your func	tion in action	
mples:		
	_()
the user types		
the user types	•••	
is		
•••	which should become	
	1	\
the user types	_(/
the user types		
is		
	which should become	
on		
	nples, and name the variables. thing that isn't circled, and using name:	s where 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.

	::	 Domain		→
name		Domain		Range
	What do	oes the function do	٦°	
ve Examples				
ite examples	of your function in action	n		
examples	:			
	()	
	the user types			
	the user types			
is				
	which should become			
	1		1	
	the user types		/	
	.ne user types			
is				
nd		which should become	2	
nction				
	es in the examples, and na opying everything that isn't		names where vo	u find variables
		(•	
un		,		, •

Word Problem: next-position

Write a function *next-position*, which takes in two numbers (an x and y-coordinate) and returns a DeliveryState, increasing the x-coordinate by 5 and decreasing the y-coordinate by 5.

	: :			·
name		Domain		Range
		oes the function do	?	
ve Examples	of your function in actio	an.		
examples:		711		
:xampres	,		`	
	()	
	the user types			
•				
is	which should b			
	willen should b	ecome		
	()	
	the user types			
<u>.</u>				
_		which should become		
end				
unction				
rcle the change	s in the examples, and no			
	pying everything that isn'	,	•	
_				\ •

Data Structure

# A CakeTy	pe is a flavor, layers, & is-iceCream	
data Cake	lype:	
cake	; (
)
end		
To make ins	tances of this structure, I would write:	
cake1 =		
cake2 =		
To access th	ne 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.

Eive Examples Write examples of your examples:	ur function in action	
ive Examples Trite examples of your examples:	our function in action	
/rite examples of yoe examples:	,	
examples:	,	
	(
)
the u	ser types	·
is	which should become	
	which should become	
	()
the	user types	
is		
end	which should become	
	he examples, and name the variab	
• •		using names where you find variables!
fun	() :

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.

→
)
)
)
)
,
)
pecome
es. sing names where you find variables!
) :

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

    purpose

          - name
  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 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				

Define the Data	itructure	
# a	State is	
data	State:	
	(
end)
ena		
Make a sample i	nstance 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.

# draw-state :	:	→ Image
araw beace .		
rite an expression for eac	ch piece of your final image	
SUN =		
GROUND =		
SKY =		
te the draw-state funct	ion, using put-image to combine yc	our pieces
fun	() :
-	· · · · · · · · · · · · · · · · · · ·	/
<u> </u>		

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.

‡	::			→
Sive Examples				
	f your function in acti	ion		
examples:	,		,	
-	()	
t	he user types			
is	which should	L bacama		
	wnich should	i become		
	()	
	the user types			
•				
1S		which should bec	rome	
end		willen should bee	ome	
- unction				
Circle the changes	in the examples, and r			
	pying everything that is			
fun		() :
end				

Draw a sketch for t	hree distinct	t moments of th	e animation		
Sketch .	A	Sket	ch B	Sketch C	
What things are ch	anging?				
Thing			Describe how it c	hanges	
What fields do you	need to rep	present the thing	gs that change?		
Field name (dang				nber, String, Image, Boolear	า)

Deline the Data 31	TOCTORE	
# a	State is	
data	State:	
l	(
a d)
end		
Make a sample in:	stance for each sketch from the previous pag	ge:
	=	
	=	
	=	
	=	

Draw a sketch for the	ree distinct i	moments of	the animation		
Sketch A	<u> </u>	Ske	etch B		Sketch C
What things are cha Thing	nging?		Describe how	it chang	Δ\$
9			Describe now	ii chang	
What fields do you n	eed to repr	esent the thi	ngs that chang	ge ș	
Field name (dange	rX, score, pla	yerlMG)	Datatype (1	Number,	String, Image, Boolean)

Define the Data St	ructure	
# a	State is	
data	State:	
	(
end)
Ciid		
Make a sample ins	tance for each sketch from the previous page:	
	=	
	=	
	=	

Draw a sketch for th	hree distinc [.]	t moments of	the animatic	on	
Sketch	A	Ske	etch B		Sketch C
What things are ch	anaina?				
Thing	arigirig y		Describe ho	w it cha	nges
	1				
What fields do you	need to rep	present the thi	ngs that cho	inge?	
Field name (dang	erX, score, pl	ayerIMG)	Datatype	e (Numb	er, String, Image, Boolean)

Define the Data shock		
# a	_State is	
data	State:	
)	
end		
Make a sample instanc	ce for each sketch from the previous page:	
=_		
_		
=		

Draw a sketch for thre	ee distinct moments of	the animation	
Sketch A	Sk	etch B	Sketch C
What things are chan Thing	ging?	Describe how it cl	nanaes
Timing		Describe now ii ei	idiige3
<u> </u>			
What fields do you ne	ed to represent the th	ings that change?	
Field name (danger)	(, score, playerIMG)	Datatype (Nun	nber, String, Image, Boolean)

Define the Data St	ructure	
# a	State is	
data	State:	
	(
end)
Ciid		
Make a sample ins	tance for each sketch from the previous page:	
	=	
	=	
	=	

Unit 4

Word Problem: location

Write a function called *location*, which consumes a DeliveryState, and produces a String representing the location of a box: either "road", "delivery zone", "house", or "air".

Contract+Purpose S	tatement		
#	::		-
#			
Give Examples			
examples:	,	. .	
	_() 1S	
	_() is	
	_() is	
	_() is	
1			

end

(worksheet continues next page)

Function	on		
fun	l	 () :
	if		:
	else if		:
	else if		:
	else: _		
end	end		

S	Syntax and Style Bug Hunting: Piecewise Edition					
	Buggy Code	Correct Code / Explanation				
Round 1	<pre>fun piecewisefun(n): if (n > 0): n else: 0</pre>					
Round 2	<pre>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</pre>					
Round 3	<pre>fun absolute-value(a b): if a > b: a - b b - a end end</pre>					
Round 4	<pre>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</pre>					

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	t moments of	the animation			
Sketo	∽h A	Ska	etch B	Sketch	\overline{C}	
		JKC	SICIID	3801011		
What things are	e changing?					
Thing			Describe how it ch	anges		
What fields do	you need to re	present the thi	ngs that change?			
	langerX, score, p			ber, String, Image, Bo	olean.)
Make a To-Do I	ist, and check	off each as "[Done'' when you fir	nish each one.		
Component	When is there	work to be do	ne?		To-Do	Done
Data Structure	If any new field	(s) were added	, changed or remov	ed		
draw-state	If something is a	displayed in a n	ew 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 trigge	rs the animation		
reactor	If either next-sto	ate function is n	ew			

Marka a agrapala ir	antara a far a a a b alco	tob from the provi		
Make a sample if	nstance for each ske	ich irom the previo	ous page:	
	=			
	=			
	=			
147 the 147 the 1		C 11 C 11	T D 11 1	
Write at least one	e NEW example for or	ne of the functions	s on your to-Do list	
				· · · · · · · · · · · · · · · · · · ·
				
				
It you have anoth	ner function on your T	o-Do list , write at	least one NEW exam	ple
				

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 S	tatement		
#	::		_
#			
Give Examples			
examples:			
	_() is	
	_() is	
	_() is	
o m al			

end

(worksheet continues next page)

Funct	ion			
fur	n	 ()	:
	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.

Draw	a sketch fo	r three dist	inct mome	ents of the ar	nimation, fo	cusing or	n the new	behavior	
HUNGER:			HUNGER:			HUNGER:			
SLEEP:	usangan i B		SLEEP:			SLEEP:			
16 100									
ek (N)									
B F		Can telliament		A THE STATE OF THE	M-los beautiful			- Stradilland	
	1-01	Tri l		A-BNI				MLY	
	16 - 1			A STATE OF THE STA			A second		

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						
next-state-key	If the Data Structure changed, or a keypress triggers the animation						
reactor	If either next-state function is new						

Make a s	sample instance for each sketch from the previous page:
FULLPE1	T = pet(100, 100)
MIDPET	$r = \underline{\text{pet}(50, 75)}$
LOSEPE	pet(0,0)
Write at I	least one NEW example for one of the functions on your To-Do list
ext-sta	ate-tick(FULLPET) is pet(FULLPET.hunger - 2, FULLPET.sleep -
next-st	tate-tick(MIDPET) is pet(MIDPET.hunger - 2, MIDPET.sleep - 1)
next-s	state-tick(LOSEPET) is LOSEPET
If you ha	ave another function on your To-Do list , write at least one NEW example

Draw a sketch	for three distinc	t moments of	the animation			
Sketo	sh A	Sko	etch B	Sketch	\overline{C}	
3600		3//	FICITO	SKEICH	C	
What things are	e changing?					
Thing			Describe how it ch	anges		
	-					
What fields do	you need to re	oresent the thi	ngs that change?			
	dangerX, score, p			ber, String, Image, Bo	olean.)
Make a To-Do l	ist, and check	off each as "D	Oone'' when you fir	nish each one.		
Component	When is there	work to be do	ne?		To-Do	Done
Data Structure	If any new field	(s) were added	, changed or remove	ed		
draw-state	If something is displayed in a new way or position					
next-state-tick	If the Data Structure changed, or the animation happens automatically					
next-state-key	If the Data Struc	cture changed,	or a keypress trigger	rs the animation		

reactor	If either next-state function is new		
Make a sam	ple instance for each sketch from the previous page:		
	=		
	=		
	_	-	
		-	
Write at leas	t one NEW example for one of the functions on your To-Do list		
If you have	another function on your To-Do list , write at least one NEW exampl		
ii yoo nave t	anomer fonction on your to-bo list , write at least one NEW exampl	C	

Draw a sketch	for three distinc	t moments of the animation			
Sketo	ch A	Sketch B Sketch	С		
What things are	e changing?				
Thing		Describe how it changes			
	you need to re dangerX, score, p	present the things that change? Datatype (Number, String, Image, Bo	oolean.)	
,		7 7 7 6 6		,	
Mako a To Do I	ist 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 o	something is displayed in a new way or position			
next-state-tick	If the Data Struc	a Structure 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 ske	tch from the pre	vious page:	
Triante a sarripre inste	arroo for oderrano	тотт потт пто ргс	мөөө радо.	
_				
=				
=				
Write at least one NE	FW example for o	ne of the functio	ons on vour To-Do l	list
Willo al loasi one it.			713 OTT YOU TO DO I	1131
		· · · · · · · · · · · · · · · · · · ·		
If you have another	function on your	To-Do list , write (at least one NEW 6	example

Build Your Own Animation

Draw a sketch	for three distinc	moments of the animatic	on		
Cleat	ala A	Cleatab D			
3Ket	ch A	Sketch B	Sketch	C	
What things are	e changing?	Describe how	th abanana		
Thing		Describe how	ir changes		
		resent the things that cho			
Field name (d	dangerX, score, p	ayerIMG) Datatyp o	e (Number, String, Image, Bo	oolean.)
Make a To-Do	List, and check	off each as "Done" when	you finish each one.		
Component	When is there	vork to be done?		To-Do	Done
Data Structure	If any new field	s) were added, changed or	removed		
draw-state	If something is a	isplayed in a new way or po	psition		
next-state-tick	If the Data Stru	ture changed, or the anima	ation happens automatically		
next-state-key	If the Data Stru	ture changed, or a keypress	s triggers the animation		
reactor	If either next-sto	te function is new			

Define the Data St	ructure	
# a	State is	
data	State:	
I	(
end)
Ciid		
Make a sample in:	stance for each sketch from the previous po	age:
=	=	
	=	
	=	
Write an example	for one of the functions on the previous pag	ge:

Collision	

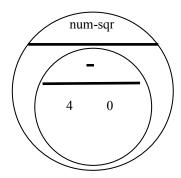
Distance:

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:

□ py: The □ cx: The	e x-coordinate of the player e y-coordinate of the player e x-coordinate of another game cha e y-coordinate of another game cha	
-	rn the distance between the two, u	
Contract+Pu	prose Statement	$- cx)^2 + (py - cy)^2$
#	···	->
Give Example		
	les of your function in action	
example	es:	
is		
)	
is		
end		
Function		
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 character □ cy: The y-coordinate of another game character It should return true if the coordinates of the player are within 50 pixels of the coordinates of the other character. Otherwise, false. Contract+Purpose Statement #_____->____ #_____ Give Examples Write examples of your function in action examples: is ______ Function

end

fun _____(___):

end

DESIGN RECIPE

Contract+Pu	rpose Statement		
Every contrac	ct has three parts:		
#	::		->
name	• •	Domain	Range
#			
π	What	does the function do?	
Give Example			
Write exampl	es of your function in acti	on	
example	2g•		
_		1	
	the user types	<i>)</i>	
is_			
	which should	become	
	,	,	
-	the user types)	
	the user types		
is_			
	which	n should become	
end			
Function			
Circle the cha	nges in the examples, and r	name the variables.	
fun	() •	
	()·	
end ——			

DESIGN RECIPE

Contract+Purpose Sta	tement			
Every contract has thre				
#	• •			
#	• •	Domain	>	Range
				Range
#				
	What doe	s the function do?		
Give Examples Write examples of you	r function in action)		
ville examples of year				
examples:				
	()		
the use	r types			
ic				
TP				
	which should be	ecome		
	()		
the user ty	pes			
is				
±5				
on d	which sh	nould become		
end				
Function Circle the changes in the	e examples, and nar	me the variables.		
_	·			
fun	():	
end				

Draw a sketch	for three distinc	t moments of t	he animation			
Sket	ch A	Ske	etch B	Sketch	С	
What things are	e changing?	-				
Thing		L	Describe how it char	iges		
What fields do	vou need to rei	oresent the thir	ngs that change?			
	dangerX, score, p			ber, String, Image, Bo	olean.)
Make a To-Do l		off each as "D work to be dor	one" when you fir		To-Do	Dono
Data Structure			changed or remove			Done
draw-state			ew 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	rs the animation		
reactor	If either next-sto	ite function is ne				

Define the Data Stru	cture	
# a	State is	
data	State:	
	(
end)
Make a sample insto	ance for each sketch from the previous pag	e:
=		
=		
Write an example fo	r one of the functions on the previous page	:
	 	

Draw a sketch	for three distinc	t moments of the animation		
Sket	ch A	Sketch B Sketch	С	
What things are	e changing?			
Thing		Describe how it changes		
	you need to re dangerX, score, p	oresent the things that change? 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		
draw-state	If something 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	П	П

Define the Data St	ructure	
# a	State is	
data	State:	
I	(
end)
Ciid		
Make a sample in:	stance for each sketch from the previous po	age:
=	=	
	=	
	=	
Write an example	for one of the functions on the previous pag	ge:

Draw a sketch	tor three distinc	t moments of	the animation			
Sket	ch A	Ske	etch B	Sketch	С	
What things are	e changing?					
Thing			Describe how it char	nges .		
What fields do	you need to re	present the thi	ngs that change?			
	dangerX, score, p			ber, String, Image, Bo	olean.)
Make a To-Do I	List, and check	off each as "E	Done" when you fir	nish each one.		
Component	When is there	work to be do	ne?		To-Do	Done
Data Structure	If any new field	(s) were added	, changed or remove	ed		
draw-state	If something is a	displayed in a ne	ew way or position			
next-state-tick	If the Data Stru	cture changed,	or the animation ha	ppens automatically		
next-state-key	If the Data Stru	cture changed,	or a keypress trigger	rs the animation		
reactor	If either next-sto	ate function is ne	ew			

Define the Data S	tructure	
# a	State is	
data	State:	
	(
end)
ena		
Make a sample in	stance for each sketch from the previous po	age:
:	=	
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Write an example	for one of the functions on the previous pag	ge:

Draw a sketch	for three distinc	t moments of	the animation							
Cleat	- l- A	Clea	tala D	Cleatala						
Sket	Ch A	SKE	etch B	Sketch	C					
What things are	e changing?		Describe how it sh							
Thing			Describe how it cho	unges						
			ngs that change?	la ar Ctrin a langua Da		1				
rieia name (C	langerX, score, p	nayenMG)	Datatype (NOTT)	ber, String, Image, Bo	olean.	•••)				
			one" when you fir							
Component		work to be do			To-Do	Done				
Data Structure	If any new field	any new field(s) were added, changed or removed								
draw-state	If something is displayed 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-state function is new	
Make a sample	e instance for each sketch from the previous page:	
	=	
	_ =	
	_ =	
Write at least c	one NEW example for one of the functions on your To-Do list	
If you have an	other function on your To-Do list , write at least one NEW example	
ii , comarc an		
		

Draw a sketch	for three distinc	t moments of t	the animation							
Cleat	- l- A	Clea	tala D	Cleatala						
Sket	Cn A	2KE	etch B	Sketch	C					
What things are	e changing?		Describe how it sh	angos						
Thing			Describe how it cho	unges						
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Component		work to be doi			To-Do	Done				
Data Structure	If any new field	any new field(s) were added, changed or removed								
draw-state	If something is displayed 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-state function is new		
Make a sample	e instance for each sketch from the previous page:		
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Write at least c	one NEW example for one of the functions on your To-Do list		
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Contracts

example																		
Range	^	^	^	•	•	•	^	^	•	^	^	^	•	•	^	•	^	•
Domain	:		:	:	:	:	:		:	:	:	:	:	:	:	:	:	
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Contracts

example																		
Range	↑	^	↑	^	^	↑	^	↑	^	↑	^	^	↑	^	^	↑	^	^
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