	GridWorld Role Play
	<b>Guidelines for Teachers</b>
I.	"Actors" Needed
	1. RolePlayBugRunner
	2. Grid**
	3. ActorWorld
	4. Bug1
	5. Flower1 (added after Bug1 acts)
	6. Bug2
	7. Flower2 (added after Bug2 acts)
	8. Flower
	9. Rock
	10. Critter (for second simulation)
II.	Use GridWorld Simulation for display
III.	Use nerfball to throw around room to show "active" object. Post-its may be
	posted to the ball to pass parameters.
TX7	DC Colo! Domonton for 2D Among the classests are reformed to in
IV.	RC Cola! Remember for 2D Arrays, the elements are referred to in
	[row][column] (aka 'row-major" or left-right and top-down) notation.

45	V.	Sche	ule
46		a.	Day 1
47			i. GW Overview
48			ii. GW Role Play is an approximation to code, not exactno
49			getters/setters.
50			iii. Follow GW Role Play rules (be the computer!)
51			iv. Use visible grid (Excel, whiteboard, GridWorld Simulation,
52			etc.) and choose strategic placement of Actors to investigate
53			"special cases."
54			v. Require students to say line they are on when entering a new
55			method.
56			vi. Assign appropriate roles. Use understudies for large class size
57			vii. Object construction – get through constructing all object on
58			Day 1
59		b.	Day 2/3
60			i. Run through 1 ActorWorld "step" method
61		c.	Day 4
62			i. Add Critters to role play
63		d.	Code Walkthrough
64			i. Review syntax
65			ii. Discuss design decisions
66			iii. Solicit ideas of modifications to GW ("toral" world, new
67			creatures
68			
69			
70	This	versio	of the GridWorld role play has been edited with input from
71	parti	cipant	from the AP Summer Institute at Cal State San Marcos 2007, 2008,
72	and 2	2009; t	e Silver State AP Summer Institute at Las Vegas 2007 and 2008; and
73	Loyo	la Hig	School AP Computer Science students spring 2008 and 2009.

Run	
When th	ne role play is set to begin
1)	<u>Construct</u> an ActorWorld by picking the pre-selected person in the room and saying, <person name="">, "Construct yourself as an ActorWorld"</person>
2)	Construct a Bug by picking the pre-selected person in the room and saying, <pre></pre>
3)	Ask your Bug to set its direction to East. (This is not in the role play scriptBug, you can just change your direction)
4) 5)	Ask your ActorWorld to add Bug <person name=""> at position (3,3)</person>
5)	Construct a Bug by picking pre-selected person in the room and saying, <person name="">, "Construct yourself as an Bug; your color is "Blue"</person>
6)	Ask your Bug to set its direction to North. (This is not in the role play
7)	scriptBug, you can just change your direction) <u>Ask</u> your ActorWorld to <b>add</b> Bug <person name=""> at position (0,0)</person>
8)	Construct a Flower by picking the pre-selected person in the room and saying,
,	<pre><person name="">, "Construct yourself as an Flower"</person></pre>
9)	Ask your ActorWorld to add Flower <person name=""> at position (5,4)</person>
10)	<u>Construct</u> a Rock by picking the pre-selected in the room and saying, <person name="">, "Construct yourself as an Rock"</person>
11)	Ask your ActorWorld to add Rock <person name=""> at position (2,3)</person>
12)	Have a commercialInterruption
13)	Ask your ActorWorld to step.
14)	Have a commercialInterruption
15)	Ask your ActorWorld to step.

119	commercialInterruption
120	
121	To process a commercialInterruption
122	
123	1) Narrate "We now interrupt this role play for a commercial interruption. The
124	sponsors hope that you will pay attention to the display during this break."
125	2) For each Actor (e.g. Bug, Flower, Rock, Critter - NOT ActorWorld or Grid) who
126	is currently involved in the role play, do the following:
127	a) Ask the actor if their Grid is null
128	i) If the actor says, "yes", then skip to the next actor.
129	b) Ask the actor for his/her location.
130	c) Ask the actor for his/her color.
131	d) Ask the actor for his/her direction.
132	e) Update whatever display your instructor has provided (e.g. blackboard,
133	whiteboard, poster, etc.) to reflect this actor's status in the world.
134	3) Narrate "No more actors. We now resume our regularly scheduled program."
135	(Feel free to emphasize the last word)
136	

136	ActorWorld	(your name here)
137		
138		
139	Private information	
140		
141	your Grid:	
142		
143		
144	Actors List (in order of app	<u>earance)</u>
145	-	
146	ActorWorld:	_
147	Grid:	_
148	Bug:	_
149	Flower:	_
150	Rock:	_
151		

#### You are an ActorWorld. ("The Director") 151 152 153 **Constructing Yourself** 154 155 When you are constructed you may be given: 156 • Your Grid 157 158 1) If you are not given this information: a) Construct a Grid by picking an unused person in the room and saying, 159 160 <person name>, "Construct yourself as a Grid" 2) Remember the name of your Grid by recording it in the appropriate place on your 161 162 Private Data sheet. 163 3) Say "Done constructing ActorWorld < your name>." 164 165 166 add 167 168 When asked to **add**, you will be given an Actor and a Location 169 170 1) Ask <the actor you are given> to putSelfInGrid <your grid> at <the location you 171 were given> 172 2) Say "<name of the actor> inserted from perspective of ActorWorld." 173 174 175 step 176 177 When asked to **step** 178 179 1) Ask <your Grid> to **getOccupiedLocations** and place the occupied locations into 180 a list (use row, column format) 181 2) For each Location in the List: a) Ask the Grid for **nameOfActorAt** each location in the list passed you from 182 183 Grid. (there is not script for this, Grid will simpley return the list of names. b) Add that name to your < listOfNames> 184 **listOfNames** 3) For each name in your < listOfNames> 185 a) Ask that person for the name of their Grid 186 187 b) If they do not say, "blank" (meaning null) 188 i) Ask that person to act 189 4) Say "Done stepping." 190 191

**Grid** \_\_\_\_\_ (your name here)

Private information (aka "who is where")

	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										

Const	ructing Yourself
	Verify that the table you have (on paper) is currently empty. Say "Done constructing Grid <your name="">."</your>
isAVa	lidLocation
When	asked isAValidLocation, you will be given a Location
1)	If the value of row in that location is between 0 and 9 inclusive AND the value of the column in that location is also between 0 and 9 inclusive.  a) Say "Yes"  Otherwise  a) Say "No"
get	
When	asked to <b>get</b> , you will be given a Location
1)	If there is nothing in that cell in your current, private table a) Say "null" Otherwise:
	a) Say " <the at="" in="" location="" name="" object="" of="" private="" table="" that="" the="" your="">."</the>
put	
When	asked to <b>put</b> , you will be given an Actor and Location
	Write the name of the Actor you were given into the specified location in your current, private table. Erase any name that was there before this operation.  Say, " <name actor="" of=""> has been placed in location <given location="">."</given></name>

remov	ve — — — — — — — — — — — — — — — — — — —
When	asked to <b>remove</b> , you will be given a Location
1)	If there is no Actor at the given Location, then <b>Say</b> "There is no Actor to remove, done removing".
2)	Erase the name of the Actor you were given into the specified location in your current, private table, remembering the name erased for just a moment.
3)	Say, " <name actor="" erased="" of=""> has been removed from location &lt; given location&gt;."</name>
getOc	cupiedLocations
When	asked to getOccupiedLocations
1)	On your Post-it note, <u>write down</u> all of the locations (coordinate pairs, not names) that are not null according to your current, private table.
2)	Give that Post-it note to the person who made the request, while Saying, "Here is the list of occupied locations."

## You are a Grid.

262

261

## 263 getNeighbors

264

When asked to getNeighbors, you will be given a Location

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1) <u>Narrate</u>, "I will begin by getting a list of *occupied* adjacent locations by calling my helper method **getOccupiedAdjacentLocations**."

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2) <u>Do getOccupiedAdjacentLocations</u> – this method is located below.

270

3) Take a blank piece of paper (call it the Actors List sheet.)

271

4) Narrate, "I will now get the name of the actor associated with each location."

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5) On your new Actors List sheet, <u>write down</u> the *name* of each actor that is associated with a location on the sheet from Step 2 as indicated by your private table.

274275

6) <u>Crumple up</u> the sheet from Step 2.

276277

7) Narrate, "I have now constructed the list of neighbors." and Hold the sheet from Step 5 up for the audience to see.

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8) If the request for this list came from someone else, give that person the list.

280

## getOccupiedAdjacentLocations

done!

281 282 283

When asked to **getOccupiedAdjacentLocations**, you will be given a Location

284 285

1) <u>Narrate</u>, "I will begin by getting a list of *valid* adjacent locations by calling my helper method **getValidAdjacentLocations**"

286287

2) <u>Do getValidAdjacentLocations</u> (below).

288 289 3) Take a blank Location List sheet.4) Narrate, "I will now copy over only those locations that are occupied."

290 291 5) On your new Location List sheet, <u>write down</u> all of the locations (coordinate pairs, not names) from the valid locations sheet that are currently occupied according to your private table.

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6) <u>Crumple up</u> the sheet from Step 2 (the first sheet that you made)

295 296 7) Narrate, "I have now constructed the list of occupied adjacent locations." and Hold the sheet from Step 5 up for the audience to see.
 8) If the request for this list came from someone else, give that person the list. I am

297298

#### You are a Grid. 299 300 301 getValidAdjacentLocations 302 303 When asked to **getValidAdjacentLocations**, you will be given a Location 304 305 1) Take a blank Location List sheet. 306 2) On that sheet, write down all of the locations (coordinate pairs, not names) from 307 your table that are adjacent to the given location. DO NOT include any locations 308 that are outside your table due to coordinate values being too low or too high. 3) Narrate, "I have now constructed the list of valid adjacent locations." and Hold it 309 up for the audience to see. 310 4) If the request for this list came from someone else, give that person the list. 311 312 313 314 getEmptyAdjacentLocations 315 When asked to getEmptyAdjacentLocations, you will be given a Location 316 317 318 1) Narrate, "I will begin by getting a list of *valid* adjacent locations by calling my 319 helper method getValidAdjacentLocations()" 320 2) <u>Do getValidAdjacentLocations()</u> – this is located above 321 3) Take a blank Location List sheet. 322 4) Narrate, "I will now copy over only those locations that are empty." 323 5) On your new Location List sheet, write down all of the locations (coordinate 324 pairs, not names) from the valid locations sheet that are currently empty according 325 to your private table. 6) <u>Crumple up</u> the sheet from Step 2. 326 327 7) Narrate, "I have now constructed the list of empty adjacent locations." and Hold 328 the sheet from Step 5 up for the audience to see. 329 8) If the request for this list came from someone else, give that person the list. 330 331 **Location List sheet** 332

332	Bug	(your name here)
333		
334		
335	Private information	
336	<u> </u>	
337		
338	yourGrid:	
339		
340	yourDirection:	
341		
342	yourColor:	
343		
344	yourLocation:	( , )
345		
346		

Const	ructing Yourself					
	When you are <b>constructed</b> you will be given:					
•	Your Color					
1)	Remember your color by recording it in the appropriate places on your <b>Private</b>					
	Data sheet. (Note: if you were not given your color, then assume that your color					
2)	is "Red" and your direction is "North".) Leave other data blank for now.					
2)	Say "Done constructing Bug <your name="">."</your>					
Are yo	ou a?					
	When asked if you are a <b>Bug</b> or an <b>Actor</b> :					
	1) Say "true".					
	When asked if you are anything else (i.e., anything other than a <b>Bug</b> or an <b>Actor</b> )  1) <u>Say</u> "false".					
act						
	asked to <b>act</b> :					
When						
1)	asked to act:  Narrate "Hmm I must determine if I can move."  Ask yourself if you canMove (this script is on the next page).					
When 1) 2)	Narrate "Hmm I must determine if I can move."  Ask yourself if you canMove (this script is on the next page).  If the answer was that you can move					
When 1) 2)	Narrate "Hmm I must determine if I can move."  Ask yourself if you canMove (this script is on the next page).  If the answer was that you can move  a) then move (this script is on the next page)					
When 1) 2)	Narrate "Hmm I must determine if I can move."  Ask yourself if you canMove (this script is on the next page).  If the answer was that you can move  a) then move (this script is on the next page)  Otherwise					
When 1) 2) 3)	Narrate "Hmm I must determine if I can move."  Ask yourself if you canMove (this script is on the next page).  If the answer was that you can move  a) then move (this script is on the next page)  Otherwise  a) turn (skip two pages to find this script)					
When 1) 2) 3)	Narrate "Hmm I must determine if I can move."  Ask yourself if you canMove (this script is on the next page).  If the answer was that you can move  a) then move (this script is on the next page)  Otherwise					

#### You are a Bug. 380 381 382 canMove 383 When asked if you canMove 384 1) <u>Say</u> "My location is *<yourlocation>* (row, column) 385 2) Say "My direction is <vour direction> 386 3) Say "Therefore, my next location (row, column) would be <the result of moving forward>" 387 nextLocation 4) Name this new Location < nextLocation >. 388 5) Ask your grid if <nextLocation> isAValidLocation 389 390 6) If the grid says, "No", then say, "I cannot move" (and return to your act script 391 on the previous page.) 392 7) Ask your grid to get the name of the object (if not null) at location 393 <nextLocation>. 394 8) If the grid says, "Null", then Say, "I can move" (and return to your act script) 9) Otherwise Ask that person, "Are you a Flower?" 395 396 10) If that person says, "Yes", then Say, "I can move" (and return to your act 397 script on the previous page) 398 11) If that person says, "No", then Say, "I cannot move" (and return to your act script on the previous page) 399 400 Return to act method script, line 3 401 402 move currentLocation nextLocation 403 When asked to **move**: 404 1) If your grid is null 405 a) Say "Done Moving." (...and return to directions for act) 406 Otherwise: 407 a) Make a copy of *<yourLocation>* and name it *<currentLocation>*Write this 408 in the box above. 409 b) <u>Determine</u> the Location in front of you as described below: i) Say "My location is <vour location> 410 ii) Say "My direction is <your direction> 411 412 iii) Say "Therefore, my next location (row, column) would be <the result 413 of moving forward>" Why are we asking the Grid iv) Name this next Location < nextLocation >. 414 "isAValidLocation()" again? Didn't c) Ask your Grid if < nextLocation> is AValidLocation. 415 we just do that? 416 d) If the Grid replies positively 417 i) **moveTo** the location < nextLocation > (script on next page) 418 Otherwise 419 i) removeYourself from the grid. 420 e) Pick a person not currently involved in the role play and tell them to construct 421 themselves as a Flower with color <*yourColor*>. How does f) Tell that person to **putSelfInGrid** into **<your grid>** at location 422 **ActorWorld** 423 <currentLocation>. know that a new 424 g) Narrate "I am done moving." (return to act script above) Flower is now in 425

the Grid?

#### You are a Bug. 425 426 427 moveTo nextLocation 428 429 430 When asked to **move**, you will be given a *nextLocation*. (If not, complain.) 431 432 1) Tell your grid to **remove** the object at *<currentLocation>*. That object may stand 433 up and step out of the grid to simulate being removed from the grid. 434 2) Tell the object at <*nextLocation*> (if any) to **removeYourself** (see script below). 435 This object may also stand up and step out of the grid to simulate being removed 436 from the grid. 437 3) Set < your location > to < nextLocation > , remembering to write it on your private 438 data sheet. I am setting my location to <nextLocation>. 439 4) Tell your grid to **put** <*your name*> at <*your location*> 440 441 Return to move method script, line 1di 442 443 turn 444 When asked to **turn**: 445 1) Narrate "My current direction is <your current direction>." 446 2) Narrate "The direction 45 degrees clockwise from that is *<the appropriate* 447 direction>." 448 3) Set your direction to that direction, remembering to write it on your private data 449 sheet. 450 4) Say, "I am done turning." 451 452 **Return to the method that called turn()** 453 454 putSelfInGrid 455 When asked to putSelfInGrid, you will be a given a grid and location. Write these on 456 your private data sheet. 457 1) Narrate "I need to be placed into the grid" 458 459 2) Ask <your grid> to "put" <your name> at location <the location you were given> 460 3) Say "Done putting myself into the grid." 461 462 removeYourself 463 When asked to removeYourself 464 1) Narrate "I need to get out of the grid, but I can't do this alone." 465 466 2) Ask your grid to **remove** < your name> 3) <u>Set</u> your grid to null 467 4) Set your location to null 468 469 5) Say "Done removing myself from the grid."

470	Rock	(your name here)
471		
472		
473	Private information	
474		
475	your Grid:	
476		
477	your Color:	
478		
479	your Location:	( , )
480		

Com	structing Yourself
	n you are <b>constructed</b> you might be given your color. If not given your color, me that it is black.
	• Your Color
	<ul> <li><u>Remember</u> your color by recording it in the appropriate places on your <b>Private Data</b> sheet. (Note: if you were not given your color, then assume that your colo is "Black" and direction "North"). Leave other data blank for now.</li> <li>2) <u>Say</u> "Done constructing Rock &lt; your name&gt;."</li> </ul>
Are	you a?
	When asked if you are a <b>Rock</b> or an <b>Actor</b> :  1) Say "true".
	When asked if you are anything else (i.e., anything other than a <b>Rock</b> or an <b>Actor</b> ):
	1) <u>Say</u> "false".
act	
Whe	n asked to <b>act</b>
1	) <u>Say</u> "< <i>Your name</i> > is done acting."

You	are a Rock.
putSe	lfInGrid
	asked to <b>putSelfInGrid</b> , you will be a given a grid and location. Write these on private data sheet.
	Narrate "I need to be placed into the grid"
	Ask your grid to "put" <your name=""> at location <the given="" location="" were="" you=""> Say "Done putting myself into the grid."</the></your>
remov	veYourself
When	asked to removeYourself
1)	Narrate "I need to get out of the grid, but I can't do this alone."
2)	Ask your grid to <b>remove</b> < <i>your name</i> >
3)	Set your grid to null
4)	<del></del> ,
5)	<u>Say</u> "Done removing myself from the grid."

531	Flower		(your name here
532			
533			
534	Private information		
535			
536	your Grid:		
537			
538	your Color:		
539			
540	your Location:	( ,	)
541			
542			

#### You are a Flower. 542 543 544 **Constructing Yourself** 545 546 When you are **constructed** you will be given: 547 • Your Color 548 549 1) Remember your color by recording it in the appropriate places on your **Private** 550 Data sheet. (Note: if you were not given your color, then assume that your color 551 is "Pink" and direction "North"). Leave other data blank for now. 552 2) Say "Done constructing Flower <your name>." 553 554 555 Are you a \_\_\_\_\_? 556 557 When asked if you are a **Flower** or an **Actor**: 1) Say "true". 558 559 When asked if you are anything else (i.e., anything other than a **Flower** or an 560 Actor): 561 1) Say "false". 562 563 act 564 565 When asked to act: 566 567 1) Narrate "Hmm... I must darken myself." 2) Using the table below, set your color to the next darkest color. If you are already 568 at "Black" just stay there. 569 570 3) Narrate "My new color is <your color>. 4) <u>Say</u> "<*Your name*> is done acting." 571 572 573 Darkening table: Assumes you start at "red" 574 Pink Red Deep red Slightly dark red Pretty dark red Dark red Very dark red Reddish black Black with a hint of red Essentially black

Black

#### You are a Flower. 575 576 577 putSelfInGrid 578 579 When asked to putSelfInGrid, you will be a given a grid and location. Write these on 580 your private data sheet. 581 582 1) Narrate "I need to be placed into the grid" 583 2) Ask your grid to "put" <your name> at location <the location you were given> 584 3) Say "Done putting myself into the grid." 585 586 587 588 removeYourself 589 590 When asked to removeYourself 591 592 1) Narrate "I need to get out of the grid, but I can't do this alone." 593 2) Ask your grid to **remove** < your name> at location < your location>. 594 3) Set your grid to null 595 4) <u>Set</u> your location to null 5) Say "Done removing myself from the grid." 596 597

# You are the RolePlayCritterRunner

Run	
When yo	ou the role play is set to begin
1)	<u>Construct</u> an ActorWorld by picking a pre-selected person in the room and saying, <person name="">, "Construct yourself as an ActorWorld"</person>
2)	Construct a Critter by picking a pre-selected person in the room and saying, <pre><pre><pre><pre><pre><pre><pre></pre></pre></pre> <pre><pre><pre>Construct</pre></pre> <pre>yourself</pre> as an Critter</pre></pre></pre></pre></pre>
3)	Ask your ActorWorld to <b>add</b> the Critter <person name=""> at position (0,0)</person>
4)	Construct a Rock by picking a pre-selected person in the room and saying,
	<pre><person name="">, "Construct yourself as an Rock"</person></pre>
5)	Ask your ActorWorld to add your Rock <person name=""> at position (1,0)</person>
6)	Construct a Bug by picking a pre-selected person in the room and saying,
	<pre><person name="">, "Construct yourself as an Bug; your color is Blue"</person></pre>
7)	Ask your ActorWorld to <b>add</b> your Bug <person name=""> at position (0,1)</person>
8)	Construct a Bug by picking a pre-selected person in the room and saying,
	<pre><person name="">, "Construct yourself as an Bug; your color is Yellow"</person></pre>
9)	Ask your ActorWorld to <b>add</b> your Bug <person name=""> at position (1,2)</person>
10)	Construct a Critter by picking a pre-selected person in the room and saying,
	<pre><person name="">, "Construct yourself as an Critter"</person></pre>
11)	Ask your ActorWorld to <b>add</b> your Critter <person name=""> at position (2,2)</person>
12)	Construct a Bug by picking a pre-selected person in the room and saying,
	<pre><person name="">, "Construct yourself as a Bug"</person></pre>
13)	Ask your ActorWorld to <b>add</b> your Bug <person name=""> at position (3,2)</person>
14)	Have a commercialInterruption
15)	Ask your ActorWorld to step.
16)	Have a commercialInterruption
17)	Ask your ActorWorld to step.

#### You are the RolePlayCritterRunner 626 627 628 commercialInterruption 629 630 To process a commercialInterruption 631 632 1) Narrate "We now interrupt this role play for a commercial interruption. The 633 sponsors hope that you will pay attention to the display during this break." 634 2) For each Actor (e.g. Bug, Flower, Rock, Critter – NOT ActorWorld or Grid) who 635 is currently involved in the role play, do the following: 636 a) Ask the actor if their Grid is null i) If the actor says, "yes", then skip to the next actor. 637 638 b) Ask the actor for his/her location. 639 c) Ask the actor for his/her color. 640 d) Ask the actor for his/her direction. e) Update whatever display your instructor has provided (e.g. blackboard, 641 642 whiteboard, poster, etc.) to reflect this actor's status in the world. 643 3) Narrate "No more actors. We now resume our regularly scheduled program." 644 (Feel free to emphasize the last word...)

645	Critter	(your name here)
646		
647		
648	<b>Private information</b>	
649		
650	your Grid:	
651		
652	your Direction:	
653		
654	your Color:	
655		
656	your Location:	()
657		

Const	ructing Yourself
When	<b>constructed</b> , assume that your color is "Blue" and your direction is "North."
1)	Remember your color and direction by recording it in the appropriate places of your <b>Private Data</b> sheet.
2)	Say "Done constructing Critter <your name="">."</your>
Are yo	ou a?
	When asked if you are a <b>Critter</b> or an <b>Actor</b> :
	1) <u>Say</u> "true". When asked if you are anything else (i.e., anything other than a <b>Critter</b> or an
	Actor):
	1) Say "false".
	2)
putSe	lfInGrid
-	
When	
When your p	asked to <b>putSelfInGrid</b> , you will be a given a grid and location. Write these or rivate data sheet.
When your p	asked to <b>putSelfInGrid</b> , you will be a given a grid and location. Write these or rivate data sheet.  Narrate "I need to be placed into the grid"
When your p  1) 2)	asked to <b>putSelfInGrid</b> , you will be a given a grid and location. Write these or rivate data sheet.  Narrate "I need to be placed into the grid"  Ask your grid to " <b>put</b> " <your name=""> at location <the given<="" location="" td="" were="" you=""></the></your>
When your p  1) 2) 3)	asked to <b>putSelfInGrid</b> , you will be a given a grid and location. Write these or rivate data sheet.  Narrate "I need to be placed into the grid"  Ask your grid to " <b>put</b> " <your name=""> at location <the "done="" given="" grid."<="" into="" location="" myself="" putting="" say="" td="" the="" were="" you=""></the></your>
When your p  1) 2) 3)	asked to <b>putSelfInGrid</b> , you will be a given a grid and location. Write these or rivate data sheet.  Narrate "I need to be placed into the grid"  Ask your grid to " <b>put</b> " <your name=""> at location <the given<="" location="" td="" were="" you=""></the></your>
When your p  1) 2) 3) remov	asked to <b>putSelfInGrid</b> , you will be a given a grid and location. Write these or rivate data sheet.  Narrate "I need to be placed into the grid"  Ask your grid to " <b>put</b> " < your name> at location < the location you were given Say "Done putting myself into the grid."
When your p  1) 2) 3) remov	asked to <b>putSelfInGrid</b> , you will be a given a grid and location. Write these or rivate data sheet.  Narrate "I need to be placed into the grid"  Ask your grid to " <b>put"</b> < your name> at location < the location you were given Say "Done putting myself into the grid."  YeYourself
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## You are a Critter.

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act

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When asked to act:

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- 1) Narrate "Ahh, to act... First I will begin by getting a list of the objects with whom I might interact."
- 2) Narrate "Ahh, I must ask myself to **getActors** by calling my helper method **getActors**." (Jump to that script on the next page)
- 3) Narrate "Behold my list of actors!! Now to continue action. Since I have the list of actors, I must now process it."
- 4) Narrate "Ahh, I must ask myself to **processActors** by calling my helper method **processActors**. (Jump to that script on the next page)
- 5) Narrate "Now that I am done processing everyone, I can think about moving. I will start by getting list of possible locations.
- 6) Narrate "Ahh, I must ask myself to **getMoveLocations** by calling my helper method **getMoveLocations**. (Jump to that script on the next page)
- 7) Narrate "Ahh, the list of locations...now I must choose one..."
- 8) <u>Narrate</u> "Ahh, I must ask myself to **selectMoveLocation** by calling my helper method **selectMoveLocation**. (Jump to that script on the next page)
- 9) Narrate "I have chosen < the chosen location> and will now make my move"
- 10) <u>Narrate</u> "Ahh, I must ask myself to **makeMove** to *<the chosen location>* by calling my helper method **makeMove**. (Jump to that script on the next page)
- 11) Narrate "At long, last, I am done acting."

#### You are a Critter. 721 722 723 getActors 724 725 When asked to **getActors** 726 727 1) Narrate "Hmmm... With whom do I act? With my neighbors, of course. I'd 728 better ask the grid who they are." 729 2) Ask <your grid> to **getNeighbors** of <your location> 730 3) Wave the list given to you by the grid and narrate "Behold my list of actors!" 731 732 [Return to Step 3 of act.] 733 734 735 processActors 736 737 When asked to **processActors**, you should already have a list of actors... 738 739 1) Narrate "Time to eat... Who is near by that is edible?" 740 2) For each actor in your list 741 a) Ask <that actor> if it is a Rock. i) If it says, "Yes", dramatically cross it off the list and move to the next 742 743 actor in the list. 744 b) Ask <that actor> if it is a Critter. 745 i) If it says, "Yes", dramatically cross it off the list and move to the next 746 actor in the list. 747 c) Ask <that actor> to removeYourself 748 d) Dramatically <u>cross</u> < that actor > off the list and move to the next actor in the 749 list. 750 3) Narrate "That's the whole list!" 751 752 [Return to Step 5 of act.] 753

### You are a Critter. getMoveLocations When asked to **getMoveLocations** 1) Narrate "Hmmm... Where can I move? To any adjacent empty space. I'd better ask the grid which ones those are." 2) Ask <your grid> to getEmptyAdjacentLocations of <your location> 3) Wave the list given to you by the grid and <u>narrate</u> "Behold my list of possible destinations!" [Return to Step 7 of act.] selectMoveLocation When asked to **selectMoveLocation**, you should already have a list of locations... 1) Narrate "Time to move...There are < number of items in your list > possibilities." 2) Ask < The Random Number Generator > for a number up to < number of items in your list> 3) Narrate "Let's see. The <number you were given>th item in my list is <that location>. I'll move there!" [Return to Step 9 of act.]

Why is there a separate makeMove method? Why not just call moveTo?

#### 799 800 When asked to **makeMove**, you will be given a location. 801 802 1) Narrate "Time to move...my choice is to move to *<that location>*." 803 2) Narrate "Actually, I do this the same way any actor does..." 804 3) Ask yourself to **moveTo** < that location>. (see script below) 805 806 [Return to Step 11 of act.] 807 808 809 moveTo 810 811 When asked to **moveTo**, you will be given a **newLocation**. (If not, complain.) 812 813 1) Tell *<vour grid>* to **remove** the object at *<vour current location>*. 814 2) Tell the object at *nextLocation*> (if any) to **removeYourself** (see script below). 815 This object may also stand up and step out of the grid to simulate being removed 816 from the grid. 817 3) <u>Set <your location></u> to <newLocation>, remembering to write it on your private 818 data sheet.

4) Tell your grid to **put** <your name> at <your location>

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makeMove

g) Say "I have completed my move and will return to my **makeMove** script.