CompSci 94 Variables and Array Indexing October 29, 2024



Prof. Susan Rodger

CompSci 94 Fall 2024

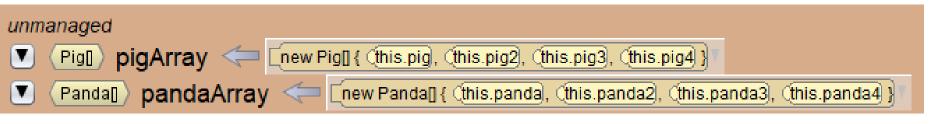
Announcements

- Assignment 4 due tonight!
- Videos and online quiz for next class

Pig and Panda arrays

• Two arrays, animals are in the arrays from left to right as seen



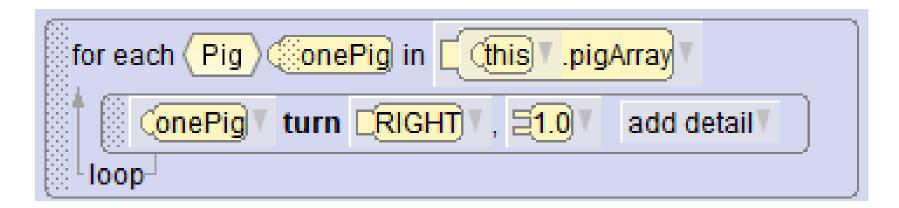


Review1 - What is the code for?

• Code for Pigs to turn right one pig at a time?

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- Code for Pigs to turn right one pig at a time?
 - Use a "for each in" loop
 - Name a loop variable I chose **onePig**

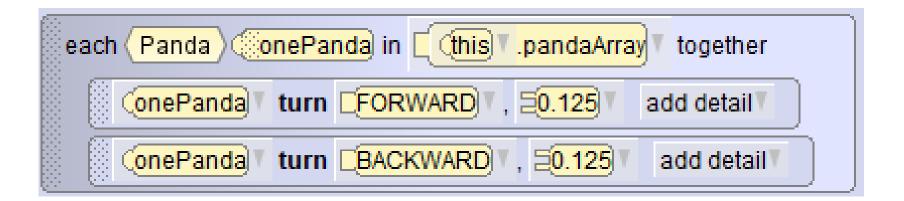


Review2 – What is the code for?

• Code for Pandas to bow **at the same time** (turn forward a little, then turn backward)?

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Q1 – Questions about variables

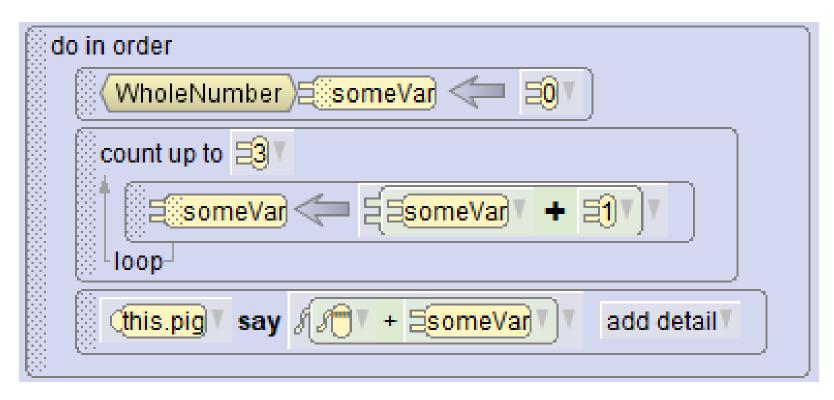
• What is the difference between a const variable and a variable?

• Which Alice construct do you use to change a variable?

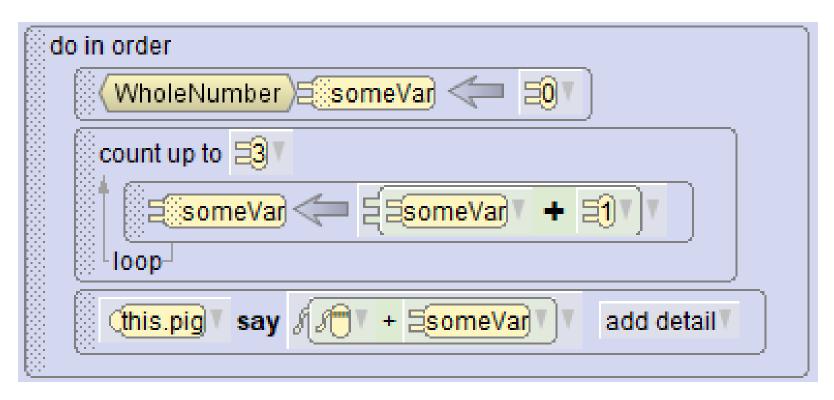
Q1 – Questions about variables

- What is the difference between a const variable and a variable?
 - Const variable can only store one value when it is created
 - Variable can store a value that can change
- Which Alice construct do you use to change a variable?
 - Assign tile

Q2 - What is the output of this code?

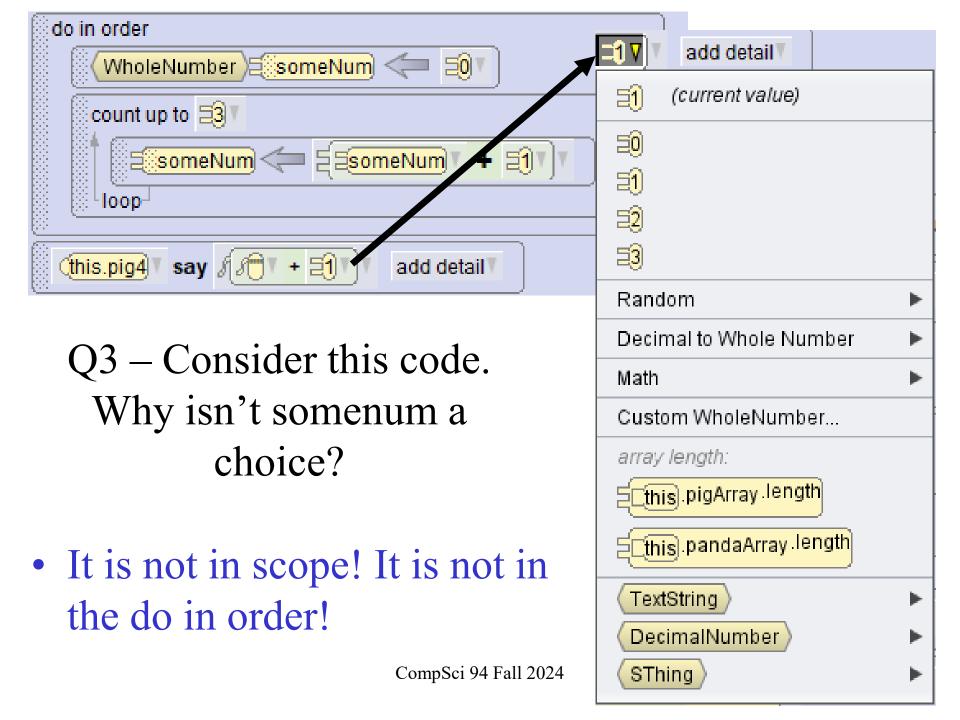


Q2 - What is the output of this code?



• Pig says: 3

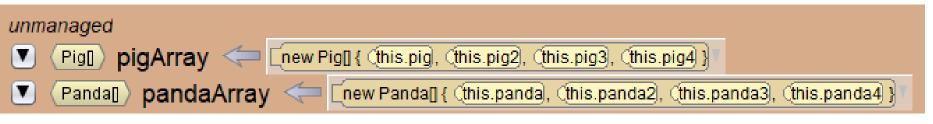
do in order					
WholeNumber 🗐 someNum < = 🗐 🗸 🗾	=1∇ add detail▼				
Count up to 31	⊟1 (current value)				
	≡0				
	±0				
loop-	≡2				
this.pig4 say sign + E1 I add detail	≡3				
	Random	•			
02 Consider this and	Decimal to Whole Number				
Q3 Consider this code.	Math 🕨				
Why isn't somenum a	Custom WholeNumber				
choice?	array length:				
	Ethis pigArray length				
	Ethis.pandaArray.length				
	TextString	►			
	(DecimalNumber)	►			
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Pig and Panda arrays again

• Two arrays, animals are in the arrays from left to right as seen





• *Fill in the missing code:*

do in order
WholeNumber Eindex 🗢 501
count up to E this .pigArray .length
loop
loop

- Use a count loop
 - Create a variable set to 0
 - Use the variable to index in the array
 - Update the variable by 1 in the loop

do in order	
WholeNumber)=index <= =01	
count up to E this I .pigArray I .length	
turn CRIGHTY, E1.07 add detail	
Eindex E Eindex F T	
loop-	

- Or could use a for each in loop
 - Create a variable set to 0
 - Use the variable to index in the array
 - Update the variable by 1 in the loop

do in order
WholeNumber)=(index2 <= =01
for each (Pig) (somePig) in (this r.pigArray)
turn CRIGHTY, E1.0 V add detail
Eindex2 = Eindex2 + EIV
lioop-l

- OR could use a while loop
 - Create a variable set to 0
 - Use the variable to index in the array
 - Update the variable by 1 in the loop

do in order
WholeNumber Eindex3 <= E01
while Eindex31 < E this I.pigArray I.length I is true
turn CRIGHTY, E1.07 add detail
Eindex3 = Eindex3 + E1V
le loop-

Q5 – How do I write code to have each pig turn right once one at a time, with one of the pandas turning with each pig?

• Fill in missing code:

.len	ength T	7	 	 	 	 	
Jeng	Ingui						
- 2	=1)						
• Ξ	2) v)v						

Q5 – How do I write code to have each pig turn right once one at a time, with one of the pandas turning with each pig?

• Use any type of array index loop

do in order
count up to E this I .pigArray I .length
do together
(this) I.pigArray T [index T] T turn [RIGHT] , E1.0 T add detail T
(this I .pandaArray I [index I] I turn [RIGHT] , E1.0 I add detail I
do together (this T.pigArray T [index T] T turn [RIGHT T, 51.0 T add detail (this T.pandaArray T [index T] T turn [RIGHT T, 51.0 T add detail (this T.pandaArray T [index T] T turn [RIGHT T, 51.0 T add detail (this T.pandaArray T [index T] T turn [RIGHT T, 51.0 T add detail (this T.pandaArray T [index T] T turn [RIGHT T, 51.0 T add detail (this T.pandaArray T [index T] T turn [RIGHT T, 51.0 T add detail (this T.pandaArray T [index T] T turn [RIGHT T, 51.0 T add detail (this T.pandaArray T [index T] T turn [RIGHT T, 51.0 T add detail (this T.pandaArray T [index T] T turn [RIGHT T, 51.0 T add detail]
in and the second se

Q5 continued

• Notice the pigs and pandas arrays must be the same size for this to work!

Q6 – What does this code do?

do in order
while findex < finis .pigArray .length) is true (this .pigArray [index] * say / move up 7 + findex] * add detail (this .pigArray [index] * move UP *, finew DecimalNumber findex] *, duration fo.25 * add (this .pigArray [index] * move DOWN *, finew DecimalNumber findex] *, duration fo.25 * add (this .pigArray [index] * move DOWN *, finew DecimalNumber findex] *, duration fo.25 * index = findex * + fit *
(this r.pigArray T [index T] T say / move up T + Endex T] add detail (this r.pigArray T [index T] T move CUP T , Enew DecimalNumber Endex T , duration E0.25 T additional content of the second
(this T.pigArray T [index T] T move CUP T, Enew DecimalNumber Endex T , duration 20.25 T ac
(this T.pigArray T [index T] T move COWN T, Enew DecimalNumber Endex T , duration E0.25 T
V.

Q6 – What does this code do?

• each pig moves up and down one at a time with the next pig moving one unit more. That is, the first pig 0 units, second pig 1 unit, third pig 2 units, etc.

do in order
while while Sindex V < Sindex V <
(<u>this</u> v.pigArray v [index v] v say ((move up v + Eindex v) add detail v
<pre>(this '.pigArray '[index '] ' say / move up ' + Endex '] add detail (this '.pigArray '[index '] ' move CUP', Enew DecimalNumber Endex ', duration E0.25 '] ad (this '.pigArray '[index '] ' move CDOWN ', Enew DecimalNumber Endex ', duration E0.25 '] (this '.pigArray '[index '] ' move CDOWN ', Enew DecimalNumber Endex ', duration E0.25 '] (this '.pigArray '[index '] ' move CDOWN ', Enew DecimalNumber Endex ', duration E0.25 ']</pre>
(this T.pigArray T [index T] T move COWN T, Enew (DecimalNumber) Eindex T , duration E0.25 T

Q6 – What does this code do?

NOTE: Use an array index loop in two places
 One for index, one for how far to move up/down

do in order
while while Sindex T < (this T .pigArray T .length T) T is true
this T.pigArray T [index T] T say frove up T + Eindex T add detail T
Image: this T.pigArray T [index T] T say Image: this T.pigArray T [index T] T move Image: thi
(this T.pigArray T [index T] T move COWNT, Enew (DecimalNumber) Eindex T , duration E0.25 T

Q7 – How do you write code to color every other panda green in array?

• Start with no color



• Color every other green (1st one, 3rd one, etc.)



Q7 – How do you write code to color every other panda green in array?

• What is the missing line of code?

 Number)E(sor	melndex < 🗐	V		
EsomeIndex	< E (this , pan	daArray .length	▼ is true	
(this) .pandaAr	rray 🖲 [someIndex	setPaint	GREEN	add detail

Q7 – How do you write code to color every other panda green in array?

- One way, use array index, increment by 2
- Must use while loop, doesn't work w/count loop

do in order
WholeNumber EsomeIndex = E01
while [=someIndex] < [(this] .pandaArray T .length] I is true
this .pandaArray [someIndex] setPaint GREEN add detail
EsomeIndex ← EsomeIndex + E21)
⊗ loop- S

Another possible way?

How do you write code to color every other panda green in array?Another way? Does this work?

lo in orde	۶C
Who	oleNumber)EisomeIndex 🦛 🗐
while	EsomeIndex
if if	f [====================================
	//index is even
	(this I pandaArray I someIndex I) setPaint CGREEN add
e	else
	drop statement here
loop	

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How do you write code to color every other panda green in array? • Another way? Does this work?

w	vhile zeromelndex < etc. pandaArray .length v is true	
	if IEsomeIndex INTEGER_REMAINDER 21 = 201 is true the	n
	//index is even	
	(this I pandaArray I someIndex I) setPaint CGREEN a	d
	else	
	drop statement here	
	loop_	

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How do you write code to color every other panda green in array? Correct Code – update someIndex

(Vale te realize
🔯 do in order
WholeNumber) EsomeIndex - E01
while EsomeIndex < E this .pandaArray .length I is true
is true then
//index is even
(This T. pandaArray T [someIndex T] T setPaint GREEN T add
else
drop statement here
Sector Se

Class Today

• Array of penguins

That is every other penguin in the array

