

CompSci 94

Random Numbers

September 21, 2021

Prof. Susan Rodger



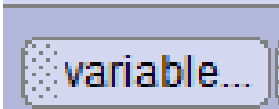
Announcements

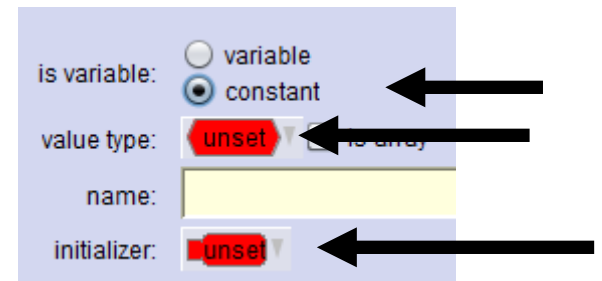
- Exam 1 is Sept 28
- Review on Thursday
- Assignment 3 due Sept 30
 - Best to complete before the exam!
- NO QZ for Thursday
 - QZ09 due Thursday Sept 30 – 10:15am
- Don't get behind, be sure to check your grades on Sakai for Classwork

Q1 Constant Variable

- What is a constant variable?
- How do you create a constant variable in Alice?
- How do you use a constant variable?

Q1 Constant Variable

- What is a constant variable?
 - Storage location
 - Can only store one value there
- How do you create a constant variable in Alice?
 - Drag in **variable** tile 
 - Be sure to select **constant**
 - Give it a **type** and **initial value**
- How do you use a constant variable?
 - Use it in place of anything of the same type



Q2 Random Numbers

- What is a random number?
- In Alice, how does one get the random number in this instruction?

```
this.panda move FORWARD , nextRandomRealNumberInRange 0.5 , 2.0
```

- Give examples of numbers in this range?

```
this.panda move FORWARD , nextRandomRealNumberInRange 0.5 , 2.0
```

Q2 Random Numbers

- What is a random number?
 - Some number from a range of numbers
 - Don't know which number until it is generated
- In Alice, how does one get the random number in this instruction?

```
this.panda move FORWARD , nextRandomRealNumberInRange 0.5 , 2.0
```

- Put in a number first, then can select “random”
- Give examples of numbers in this range?

```
this.panda move FORWARD , nextRandomRealNumberInRange 0.5 , 2.0
```

– 0.5, 0.79, 1.3, 1.98

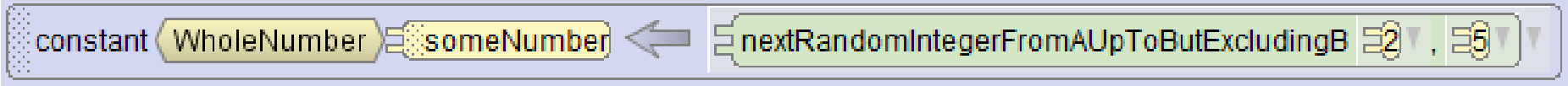
Q3 Random Integers

- How many different integers are a possibility with this statement?

```
constant WholeNumber ← someNumber ← nextRandomIntegerFromAUpToButExcludingB 2, 5
```

Q3 Random Integers

- How many different integers are a possibility with this statement?



A screenshot of a programming environment showing a variable assignment. On the left, a light blue box contains the text 'constant'. To its right is a yellow box labeled 'WholeNumber'. Further right is another yellow box labeled 'someNumber'. An arrow points from 'someNumber' to a green box containing the text 'nextIntRandomIntegerFromAUpToButExcludingB'. To the right of this green box are two input fields: the first contains the number '2' and the second contains the number '5'. Both input fields have small downward-pointing triangles next to them, indicating they are dropdown menus.

- 3 possible numbers. They are: 2, 3, 4
- Note this says ...UpToButExcluding

Q4 Code with Random

- After this code runs, is the Panda in the same place it started in?



```
do in order
  this.panda move FORWARD , nextRandomRealNumberInRange 2.0 , 5.0
  this.panda move BACKWARD , nextRandomRealNumberInRange 2.0 , 5.0
```

Q4 Code with Random

- After this code runs, is the Panda in the same place it started in?
- Probably not. Those are two DIFFERENT random numbers



```
do in order
  this.panda move FORWARD , nextRandomRealNumberInRange 2.0 , 5.0
  this.panda move BACKWARD , nextRandomRealNumberInRange 2.0 , 5.0
```

Q4 Code with Random

- To randomly move forward and then come back to the same place, generate one random number, store it in a variable, and use it twice!



```
constant DecimalNumber value ← nextRandomRealNumberInRange 2.0 5.0
this.panda move FORWARD value add detail
this.panda move BACKWARD value add detail
```

Class Today

- Working with random numbers

