

Math

The image shows a screenshot of a programming environment's menu system. At the top, there is a toolbar with buttons for 'this.pig', 'move', 'FORWARD', a value of '1.0', and 'add detail'. Below this, a menu is open, showing a list of options under the heading 'amount:'. The options are: '1.0 (current value)', '0.0', '0.25', '0.5', '1.0', '2.0', and '10.0'. Below these are 'Random', 'Whole to Decimal Number', 'Math', and 'Custom DecimalNumber...'. The 'Math' option is selected, and a sub-menu is displayed to its right. This sub-menu contains several mathematical operations, each with a '1.0' value and a '???' placeholder: '1.0 + ???', '1.0 - ???', '1.0 * ???', and '1.0 / ???'. Below these are four generic operation templates: '??? + ???', '??? - ???', '??? * ???', and '??? / ???'. At the bottom of the sub-menu, there are several function categories, each with a right-pointing arrow: 'min, max', 'absolute value, round, ceiling, floor', 'sqrt, pow', 'sin, cos, tan, asin, acos, atan, atan2, PI', and 'exp, log, E'.

Given below are the condition possibilities for an if statement

The image shows the 'if' statement menu in Scratch. The menu is titled 'if true is true then'. It lists various options for the condition, including 'true (current value)', 'true', 'false', 'nextRandomBoolean', 'NOT true', 'NOT ???', 'BOTH true AND ???', 'EITHER true OR ???', 'BOTH ??? AND ???', and 'EITHER ??? OR ???'. Below these are several 'Relational' options for different data types: DecimalNumber, WholeNumber, SThing, MoveDirection, TurnDirection, RollDirection, Key, Color, and Paint. The last option is 'TextString Comparison'. Three arrows point from the right side of the menu to three separate panels of expanded options:

- The top panel shows relational operators: $???$ < $???$, $???$ ≤ $???$, $???$ > $???$, $???$ ≥ $???$, $???$ == $???$, and $???$ ≠ $???$.
- The middle panel shows equality and inequality operators: $???$ == $???$ and $???$ ≠ $???$.
- The bottom panel shows text string comparison operators: $???$ contentEquals $???$, $???$ equalsIgnoreCase $???$, $???$ startsWith $???$, $???$ endsWith $???$, and $???$ contains $???$.

Below are the tiles at the bottom of a **procedure**

The image shows the bottom of a Scratch procedure menu. It contains the following tiles: 'do in order', 'count _', 'while _', 'for each in _', 'if _', 'do together', 'each in _ together', 'variable...', 'assign', and '//comment'.

Below are the tiles at the bottom of a **function**

The image shows the bottom of a Scratch function menu. It contains the following tiles: 'do in order', 'count _', 'while _', 'for each in _', 'if _', 'do together', 'each in _ together', 'variable...', 'assign', '//comment', and 'return _'.

Given below are the panda procedures and panda Properties on the bottom right.

The screenshot shows the 'this.panda' procedures menu. At the top, there is a dropdown menu with a panda icon and the text 'this.panda'. Below this, there are two tabs: 'Procedures' and 'Functions', with 'Functions' being the active tab. A 'group by category' dropdown is also visible. The main area lists several categories of procedures:

- Panda's Editable Procedures (3)**
 - edit **this.panda standingPose**
 - edit **this.panda sleepingPose**
 - edit **this.panda crawlingPose**
- Biped's Editable Procedures (0)**

Below these are several other procedure blocks, each with a 'this.panda' icon and a function name followed by input fields:

- say, think**
 - this.panda say** text: [???]
 - this.panda think** text: [???]
- position**
 - this.panda move** direction: [???], amount: [???]
 - this.panda moveToward** target: [???], amount: [???]
 - this.panda moveAwayFrom** target: [???], amount: [???]
 - this.panda moveTo** target: [???]
 - this.panda place** spatialRelation: [???], target: [???]
- orientation**
 - this.panda turn** direction: [???], amount: [???]
 - this.panda roll** direction: [???], amount: [???]
 - this.panda turnToFace** target: [???]
 - this.panda orientTo** target: [???]
 - this.panda orientToUpright**
 - this.panda pointAt** target: [???]
- position & orientation**
 - this.panda moveAndOrientTo** target: [???]

The screenshot shows the 'this.panda' properties menu. At the top, there is a dropdown menu with a panda icon and the text 'this.panda'. Below this, there are several categories of properties, each with a 'this.panda' icon and a function name followed by input fields:

- size**
 - this.panda setWidth** width: [???]
 - this.panda setHeight** height: [???]
 - this.panda setDepth** depth: [???]
 - this.panda resize** factor: [???]
 - this.panda resizeWidth** factor: [???]
 - this.panda resizeHeight** factor: [???]
 - this.panda resizeDepth** factor: [???]
- appearance**
 - this.panda setPaint** paint: [???]
 - this.panda setOpacity** opacity: [???]
- vehicle**
 - this.panda setVehicle** vehicle: [???]
- audio**
 - this.panda playAudio** audioSource: [???]
- timing**
 - this.panda delay** duration: [???]
- other**
 - this.panda straightenOutJoints**

The screenshot shows the 'this.panda's Properties' panel. At the top, there is a dropdown menu with a panda icon and the text 'this.panda'. Below this, there is a 'one shots' dropdown. The main area is titled 'this.panda's Properties' and contains several property settings:

- Panda** panda ← new Panda
- Paint** = WHITE
- Opacity** = [1.0]
- Vehicle** = [this]
- Position** = (x: [-1.00], y: [1.73], z: [-0.10])
- Size**
 - Width: [0.75]
 - Height: [1.15]
 - Depth: [0.53]
- Show Joints:**

A 'Reset' button is located next to the size inputs.

Given below are the panda functions.

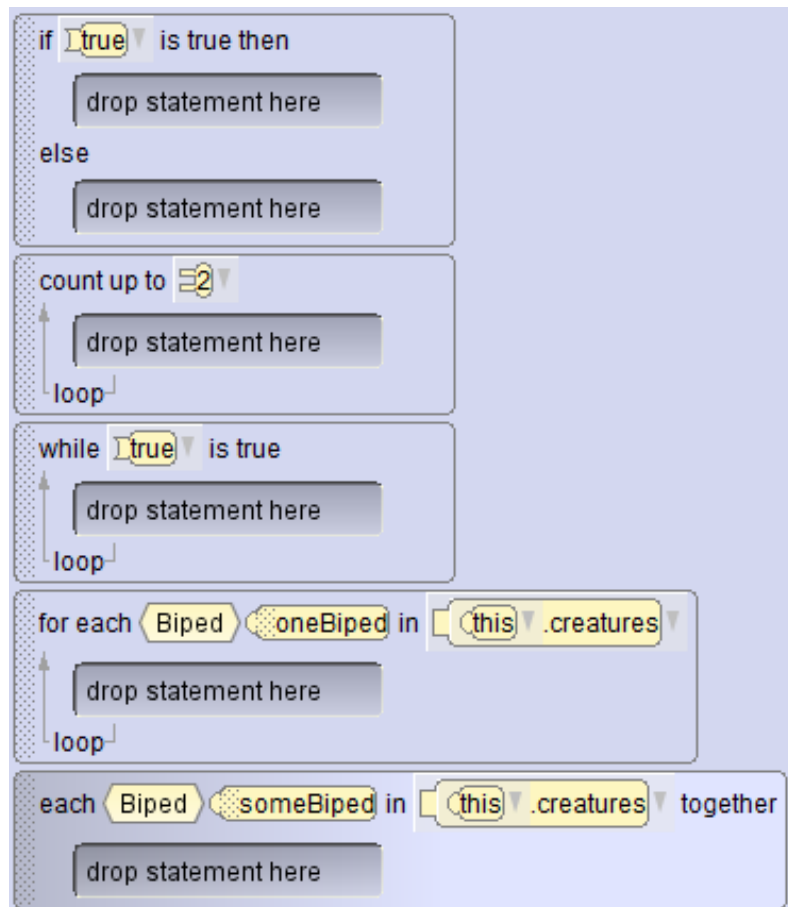
The screenshot shows a software interface for the 'this.panda' object. At the top, there is a search bar containing 'this.panda' and a dropdown arrow. Below this, there are two tabs: 'Procedures' and 'Functions', with 'Functions' being the active tab. A 'group by category' dropdown menu is visible. The main content area is divided into several sections:

- Panda**: 's Editable Functions (3)'
 - edit this.panda getLeftEar
 - edit this.panda getRightEar
 - edit this.panda creatureAbove friend1: ???, friend2: ???
- Biped**: 's Editable Functions (0)'
- appearance**
 - this.panda getPaint
 - this.panda getOpacity
- size**
 - this.panda getWidth
 - this.panda getHeight
 - this.panda getDepth
- prompt user**
 - this.panda getBooleanFromUser message: \$\$\$
 - this.panda getStringFromUser message: \$\$\$
 - this.panda getDoubleFromUser message: \$\$\$
 - this.panda getIntegerFromUser message: \$\$\$
- other**
 - this.panda getDistanceAbove other: ???
 - this.panda getDistanceBehind other: ???
 - this.panda getDistanceBelow other: ???
 - this.panda getDistanceInFrontOf other: ???
 - this.panda getDistanceTo other: ???
 - this.panda getDistanceToTheLeftOf other: ???
 - this.panda getDistanceToTheRightOf other: ???
 - this.panda getVantagePoint entity: ???
 - this.panda getVehicle
 - this.panda isAbove other: ???
 - this.panda isBehind other: ???
 - this.panda isBelow other: ???
 - this.panda isCollidingWith other: ???
 - this.panda isFacing other: ???
 - this.panda isInFrontOf other: ???
 - this.panda isToTheLeftOf other: ???
 - this.panda isToTheRightOf other: ???
 - this.panda toString

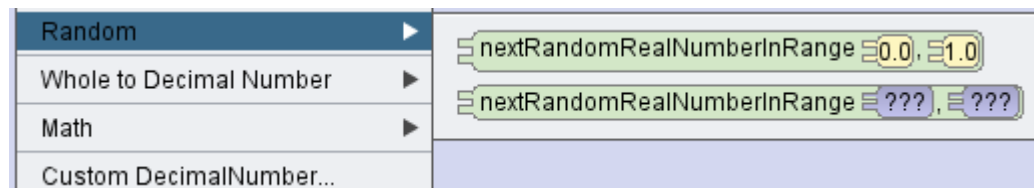
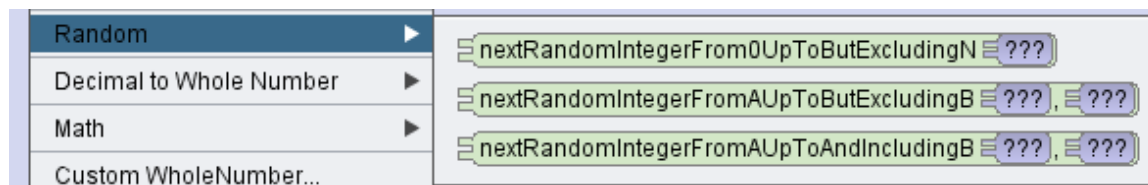
The screenshot shows a vertical list of functions categorized under 'joints'. The list includes the following methods:

- this.panda getHead
- this.panda getLeftAnkle
- this.panda getLeftClavicle
- this.panda getLeftElbow
- this.panda getLeftEye
- this.panda getLeftEyelid
- this.panda getLeftFoot
- this.panda getLeftHand
- this.panda getLeftHip
- this.panda getLeftIndexFinger
- this.panda getLeftIndexFingerKnuckle
- this.panda getLeftKnee
- this.panda getLeftMiddleFinger
- this.panda getLeftMiddleFingerKnuckle
- this.panda getLeftPinkyFinger
- this.panda getLeftPinkyFingerKnuckle
- this.panda getLeftShoulder
- this.panda getLeftThumb
- this.panda getLeftThumbKnuckle
- this.panda getLeftWrist
- this.panda getMouth
- this.panda getNeck
- this.panda getPelvis
- this.panda getRightAnkle
- this.panda getRightClavicle
- this.panda getRightElbow
- this.panda getRightEye
- this.panda getRightEyelid
- this.panda getRightFoot
- this.panda getRightHand
- this.panda getRightHip
- this.panda getRightIndexFinger
- this.panda getRightIndexFingerKnuckle
- this.panda getRightKnee
- this.panda getRightMiddleFinger
- this.panda getRightMiddleFingerKnuckle
- this.panda getRightPinkyFinger
- this.panda getRightPinkyFingerKnuckle
- this.panda getRightShoulder
- this.panda getRightThumb
- this.panda getRightThumbKnuckle
- this.panda getRightWrist
- this.panda getSpineBase
- this.panda getSpineMiddle
- this.panda getSpineUpper

If, loops, and creating an array element.



Random Integer and Decimal Numbers



Events

this addSceneActivationListener

declare procedure **sceneActivated**

do in order

this myFirstMethod

this addTimeListener 1.0 add detail

declare procedure **timeElapsed** event getTimeSinceLastFire

do in order

drop statement here

this addKeyPressListener add detail

declare procedure **keyPressed** event isLetter event isDigit event getKey event isKey key:

do in order

if event isKey S is true then

drop statement here

else

drop statement here

this addMouseClickedOnObjectListener, setOfVisuals new Visual[] { this.bunny, this.panda, this.panda2, this.panda3 } add detail

declare procedure **mouseClicked** event getScreenDistanceFromLeft event getScreenDistanceFromBottom event getModelAt

do in order

if event getModelAtMouseLocation == this.panda is true then

drop statement here

else

drop statement here

this addCollisionStartListener new SThing[] { this.bunny }, new SThing[] { this.panda, this.panda2, this.panda3 } add detail

declare procedure **collisionStarted** event getSThingFromSetA event getSThingFromSetB

do in order

drop statement here

this addDefaultModelManipulation