

# CompSci 94 Fall 2022 - TEST 2 REFERENCE SHEET

## Math

The screenshot shows a programming environment with a menu for the variable 'amount'. The menu is open, displaying various options. At the top, there are buttons for 'this.pig', 'move', 'FORWARD', and '1.0', along with an 'add detail' button. The menu itself is divided into several sections:

- amount:** A list of values: 1.0 (current value), 0.0, 0.25, 0.5, 1.0, 2.0, and 10.0.
- Random**: A button with a right-pointing arrow.
- Whole to Decimal Number**: A button with a right-pointing arrow.
- Math**: A button with a right-pointing arrow, which is currently selected. It opens a sub-menu with the following options:
  - 1.0 + ???
  - 1.0 - ???
  - 1.0 \* ???
  - 1.0 / ???
  - ??? + ???
  - ??? - ???
  - ??? \* ???
  - ??? / ???
- Custom DecimalNumber...**: A button with a right-pointing arrow.

Below the 'Math' sub-menu, there are several categories of mathematical functions, each with a right-pointing arrow:

- min, max
- absolute value, round, ceiling, floor
- sqrt, pow
- sin, cos, tan, asin, acos, atan, atan2, PI
- exp, log, E

Given below are the condition possibilities for an if statement

The image shows the 'if' block menu in Scratch. The menu is titled 'if true is true then' and lists several options for the condition. The options are:

- true (current value)
- el true
- false
- nextRandomBoolean
- NOT true
- NOT ???
- BOTH true AND ???
- EITHER true OR ???
- BOTH ??? AND ???
- EITHER ??? OR ???
- Relational (DecimalNumber) { ==, !=, <, <=, >=, > }
- Relational (WholeNumber) { ==, !=, <, <=, >=, > }
- Relational (SThing) { ==, != }
- Relational (MoveDirection) { ==, != }
- Relational (TurnDirection) { ==, != }
- Relational (RollDirection) { ==, != }
- Relational (Key) { ==, != }
- Relational (Color) { ==, != }
- Relational (Paint) { ==, != }
- TextString Comparison

Arrows point from the menu to three separate panels of Scratch blocks:

- The first panel shows comparison blocks: <???, <=???, >???, >=???, ==???, and !=???
- The second panel shows equality and inequality blocks: ==???, !=???
- The third panel shows text string comparison blocks: contentEquals???, equalsIgnoreCase???, startsWith???, endsWith???, and contains???

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

The image shows the tiles at the bottom of a procedure in Scratch. The tiles are:

- do in order
- count \_
- while \_
- for each in \_
- if \_
- do together
- each in \_ together
- variable...
- assign
- //comment

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

The screenshot shows the 'this.panda' menu with a dropdown arrow. Below the menu, there are two tabs: 'Procedures' and 'Functions'. A 'group by category' dropdown is visible. The 'Panda' category contains three 'Editable Procedures': 'standingPose', 'sleepingPose', and 'crawlingPose', each with an 'edit' button. The 'Biped' category contains zero 'Editable Procedures'. Below these, there are sections for 'say, think', 'position', 'orientation', and 'position & orientation', each containing several procedure blocks with input fields for parameters like 'text', 'direction', 'amount', 'target', and 'spatialRelation'.

The screenshot shows the 'this.panda' menu with a dropdown arrow. Below the menu, there are several categories of properties: 'size' (setWidth, setHeight, setDepth, resize, resizeWidth, resizeHeight, resizeDepth), 'appearance' (setPaint, setOpacity), 'vehicle' (setVehicle), 'audio' (playAudio), 'timing' (delay), and 'other' (straightenOutJoints). Each property block includes a 'this.panda' icon and a parameter input field.

The screenshot shows the 'this.panda's Properties' panel. It features a 'one shots' dropdown, a 'Panda panda' label with a 'new Panda' button, and several property controls: 'Paint' (WHITE), 'Opacity' (1.0), 'Vehicle' (this), and 'Position' (x: -1.00, y: 1.73, z: -0.10). The 'Size' section includes 'Width' (0.75), 'Height' (1.15), and 'Depth' (0.53) with a 'Reset' button. A 'Show Joints' checkbox is at the bottom.

Given below are the panda functions.

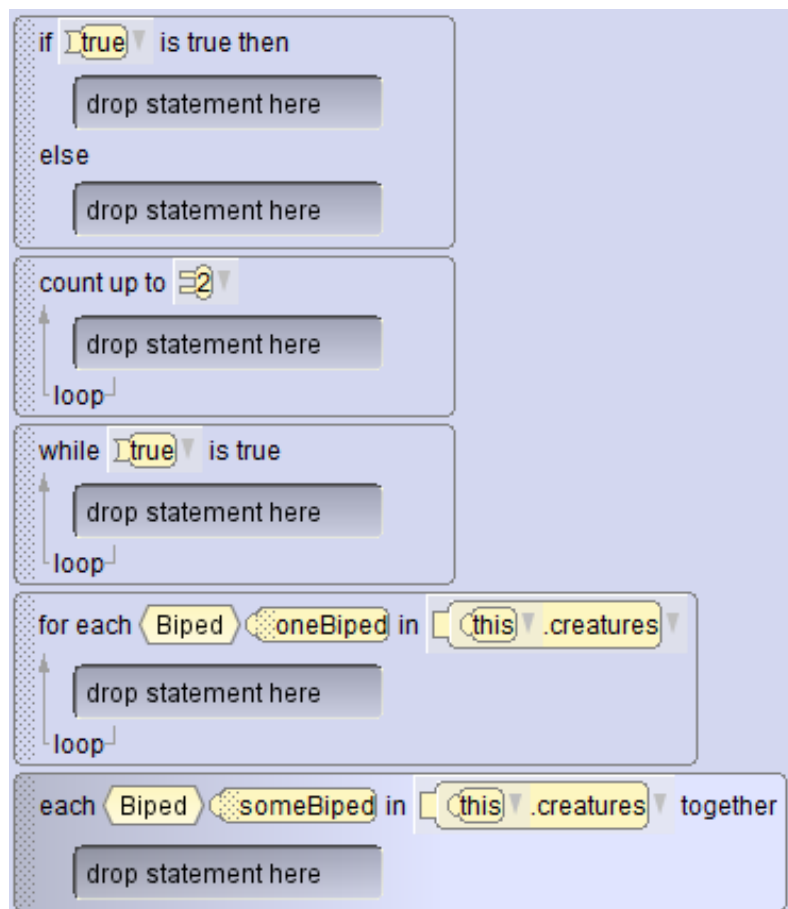
The screenshot shows a software interface for the 'this.panda' object. At the top, there is a search bar containing 'this.panda'. Below it, there are tabs for 'Procedures' and 'Functions', with 'Functions' selected. A 'group by category' dropdown menu is visible. The main area is divided into several 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 functions are listed as follows:

- 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

