COMP1021 Basic Turtle Command Summary

`turtle.up()`
Pulls the pen up, after this the turtle doesn't draw when it moves.

`turtle.down()`
Puts the pen down, after this the turtle will draw when moving.

`turtle.goto( X, Y )`
Moves turtle to the position (*X, Y*) e.g. `0,0`

`turtle.forward( DISTANCE )`
Moves the turtle forward by *DISTANCE* using the current direction e.g. `100`

`turtle.backward( DISTANCE )`
Moves the turtle backward by *DISTANCE* e.g. `100`
Does not change the direction of the turtle.

`turtle.left( ANGLE )`
Turns turtle left by *ANGLE* degrees e.g. `45`

`turtle.right( ANGLE )`
Turns turtle right by *ANGLE* degrees e.g. `45`

`turtle.width( WIDTH )`
Sets the line thickness to *WIDTH* e.g. `5`

`turtle.dot( SIZE )`
Draws a filled circle with diameter *SIZE* e.g. `50`
The center is at the current position of the turtle. The circle is always filled. Works even if the pen is off the page.

`turtle.circle( RADIUS, EXTENT )`
Draws a circle with given *RADIUS*. If *RADIUS* is positive the circle is drawn to the left of the turtle. If it is negative it is drawn to the right. *EXTENT* is optional. *EXTENT* is an angle that determines how many degrees are drawn.
An example pair of numbers: `200,90`

`turtle.pencolor( PENCOLOR )`
Sets the pen color to *PENCOLOR* e.g. `"red"`

`turtle.fillcolor( FILLCOLOR )`
Sets the fill color to *FILLCOLOR* e.g. `"blue"`

`turtle.color( COLOR )`
Both the pen color and fill color are set to *COLOR* e.g. `turtle.color("red")`

`turtle.color( PENCOLOR, FILLCOLOR )`
Sets the pen color to *PENCOLOR* and set the fill color to *FILLCOLOR* e.g. `"red","blue"`

`turtle.begin_fill()`
Begins the color filling. Put this before the code which draws the shape you want to fill.

`turtle.end_fill()`
Ends the color filling. Put this after the code which draws the shape you want to fill.

`turtle.speed( SPEED )`
Sets the turtle's animation speed to *SPEED* e.g. `5`
1 is slow, 10 is fast. 0 means very fast.

`turtle.undo()`
Undoes the last turtle action.

`turtle.done()`
Tells Python your code has finished drawing. This command is written at the end of your program. However, you probably don't need to use this until we do cleverer things later in the semester (after the midterm).

`turtle.clear()`
Deletes everything the turtle has drawn.

`turtle.write( "TEXT", font=("FONTYPE", FONTSIZE, "FONTSTYLE") )`
Writes *TEXT* using the style information, for example:
```
turtle.write("Hello", font=("Arial", 20, "bold") )
```
You can also make the text appear centered at the turtle position, for example:
```
turtle.write("Hello", font=("Arial", 20, "bold"), align="center" )
```