

Outline for December 2, 2024

Reading: *none*

Due: Homework 5, due December 6; Completed project, due December 12

All work except the completed project *must* be submitted by 11:59pm on December 6. Anything submitted after that will not be graded.

1. Writing a program with objects [*war.py*]
2. Turtle graphics
 - (a) What turtle is; `import turtle`
3. Drawing a figure: a box with a hat [*tbox.py*]
 - (a) Set up the window to draw in: `Screen()`
 - (b) Create the turtle: `Turtle()`
 - (c) Cursor for drawing
 - (d) Move cursor: `forward()`, `backward()`, `left()`, `right()`
 - (e) Wait for the window to close: `mainloop()`
4. Titles, background, and such [*tfancybox.py*]
 - (a) Window
 - i. Color of the window background: `background()`
 - ii. Title of the window: `title()`
 - (b) Turtle, more properly called “pen”
 - i. Shape of the turtle: `shape()`
 - ii. Speed of the drawing: `speed()`
 - iii. Color of the drawn line: `color()`
 - iv. Thickness of the line (pixels): `pensize()`
 - v. Hide the turtle: `hideturtle()`
5. Plotting points and graphing
 - (a) Drawing lines: `penup()`, `pendown()`
 - (b) Move turtle: `setpos()`
 - (c) Write text: `write()`
 - (d) Draw a dot at the current position: `dot()` [*tchaosdots.py*]
 - (e) Draw a line from the current position to another: `goto()` [*tchaosline.py*]
6. Curves in turtle
 - (a) Drawing parts of a circle [*tcircle.py*]
 - (b) Drawing a curve [*tcurve.py*]
7. Turtle race [*turtlerace.py*]
 - (a) Create turtles
 - (b) Create goals
 - (c) Create die
 - (d) Program structure:
 - i. Check to see if either turtle has reached its goal; if so, that turtle wins

- ii. If not, ask the player whose turn it is to roll the die (ie, press ENTER)
- iii. Select random number from die list
- iv. Advance turtle appropriately (multiply by LENGTH_OF_STEP)
- v. Loop until someone wins

A very good tutorial (and the turtle race) is <https://realpython.com/beginners-guide-python-turtle>