Week 9, Lecture 2

Today we look at a few more examples using objects from graphics.py

Programs 1 and 2 have to do with a month-by-month diet table that Matilda needs. The table has two columns. The first column prints the months of the year, and the second column prints the food group that she will focus on. The entire table is a rectangle. Each month-food pair appears in a separate colored rectangle, so the entire table can be seen to be made up of one sub-rectangle placed on top of another. In Program 1 we use slicing to pick off the months (Jan, Feb, Mar etc) from one long string, and the same sort of slicing to pick of 5-character substrings from one long string of food-groups. You'll see that things become easier in Program 2 because we use lists instead of strings.

Program 3 simply prints an x-axis and a y-axis, with tick-marks and number labels on each tick-mark. If you have data you can use this to generate your own values for labels and also graph the data values.

To process Program 4 (estimation of pi) we first have to understand a simple Monte-Carlo algorithm based on the hit-or-miss method. The first part of the second video takes some time to set this up and explain the idea (along with a 1-page pdf). Then Program 4 shows you how to do the estimation without graphics. And Program 4.1 throws in the graphics too.

In Program 5 we see how to enable the graphical window to wait until you click on some point. That is, the window can recognize and capture mouse clicks …. So it knows the coordinates of the clicked point. We use this to connect a sequence of points with straight lines.

In Program 6 we go a step further and construct a graphical window that accepts mouse clicks as well as textual input. This is the first step In the construction of a graphical user interface where you can type all input numbers in boxes displayed by some application, and you can start and even stop an application using such an input method.

Program 7 is a simple animation program. The details in here are not important, but you can play with things like this if you have time.