COMP1005/5005 - Practical Test 3

Download the Assignment base code from the PracTest3 area on Blackboard, then complete the four tasks below - one mark/program for each task:

1. **Copy beeworld.py to task1.py then modify to create/plot Bees:**
   a. Read through both python scripts to see how they interact
   b. Create five bees and append them to the blist
   c. Note that we are working in (x,y), so imshow() sets the origin and flips ccords.
   d. Plot the bees as yellow circles using plt,scatter() – most of the code is given
   e. Update the plot title, xlabel and ylabel to describe the plot.
   f. Use fig.savefig("task1.png") to save the plot

2. **Copy task1.py to task2.py then modify to plot a more complex hive:**
   a. Update the colour map to use "YlOrBr"
   b. 10 = not ready for honey, 0 = empty comb/hexagon cells for the honey, and 1-5 will represent increasing amounts of honey in the cells
   c. Update the hive array to put a stripe of comb in the centre, and then some alternating cells full of honey – the rest is "not ready"
   d. Update the subplot code to have two columns in the subplot
   e. Plot a duplicate of the plot in the second column and add a supertitle.
   f. Use fig.savefig("task2.png") to save the plot

3. **Copy task2.py to task3.py then modify to create the Bee World:**
   a. Follow the approach used for the hive array to create a world array
   b. Create a function plot_world to plot the world array
   c. Put data into the world array to have colours as in the example, when plotted with the "tab20" colour map
   d. Add a variable to hold the hive position, pass it to world_plot to plot a square
   e. Update the plot title to describe the plot, and save it with savefig()

4. **Copy task3.py to task4.py and make the bees move!**
   a. Change the simlength to 10 – include the timestep in the supertitle
   b. When you run the program, it should now show ten plot windows
   c. Automatically update the plot in-place using the commented code plt.ion(), plt.pause(1) & plt.clf()
   d. In the Bee, update the valid moves to include all 9 Moore neighbourhood cells
   e. Add code in step_change to update the Bee's position with the chosen move

README - Update README file to include info on your code and images

Ask your tutor to assess your work when complete, then upload to BB

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zip PracTest3_ID *
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