COMP1005/5005 - Practical Test 3

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

1. **Copy snoo.py to task1.py then modify to plot / move four puppies:**
   a. Use a loop to add seven Puppies to the **creature** list**,** then another loop to plot them, use fig.savefig("task1.png") to save the plot
   b. Add in a **simulation** loop to move and plot the puppies for ten timesteps (use the **stepChange** method as-is).
   c. Update the plot title to include the timestep number.

2. **Make and test a Cat class – using a test harness**
   a. Update **creatures.py** to have a **Cat** class, based on the Puppy class (you can change the patch for the shape)
   b. Add the name as an **annotation** above the cat's head in plot_me()
   c. Copy the **task1.py** code to **testCat.py**
   d. Reduce the size of the test map to 3**0x30** rows/columns
   e. Create one **grey Cat** and update its **stepChange** function to go North/South/East/West (von Neumann neighbourhood)

3. **Add a map of the yard as task3.py simulation:**
   a. Copy task1.py to task3.py and add four cats to the creature list, move and plot them with the puppies
   b. Add the annotation to the Puppy class
   c. Increase the yard size to **120x90** rows/columns
   d. Set values for the yard in **build_yard(size),** based on sample plot
   e. Use slicing so grass = 5, fences = 0, house = 7 & path = 10
   f. Change the **colour map** to "**nipy_spectral"**

4. **Make a smell map and plot it next to the yard map – task4.py**
   a. Modify the call to plt.subplots to give one row with two plots
   b. Plot the empty **smells** array in the right-hand subplot
   c. Use **update_smells(smells, creatures)** on each timestep to set smells to 10 wherever there is a creature
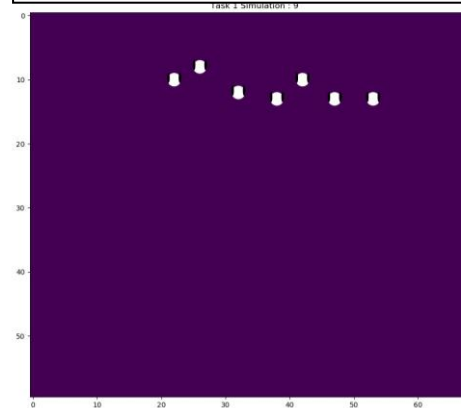   d. Use **plot_smells(ax, smells)** to plot the smell map with a "**hot**" colormap

README - Update README file to include info on your code and images
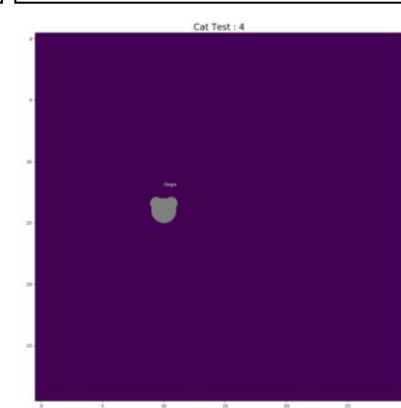
1. **Submission and Assessment**
   Ask your tutor to assess your work when complete, then upload to BB
   `zip PracTest3_ID *`

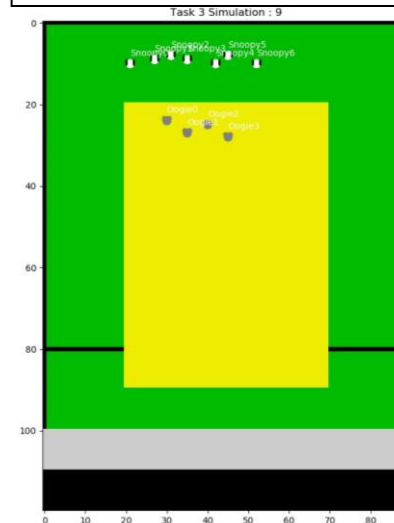**Example plot for Task 1**

Example plot for Task 2

(Cat ears redrawn as circles – not required)

Example plot for Task 3

Example plot for Task 4