General Marking Instructions:

- Please provide reasoning for your marking decisions in the form of full sentences.

- Be polite in giving feedback.

- If you do not understand something or are unsure what something does, please state it.

- You should be able to run the code they provided yourself, so you should be able to check if the result is correct.

- Continuation errors only count once. (Sometimes this is tricky, yes.)

- If in doubt state your uncertainty.

- If you really can not figure out what is happening and you can not grade the work send me an email f.riegler@herts.ac.uk and we see how to proceed. (I expect you put in some work before doing this.)

We are again building on last weeks design introducing simple perception and simple hierarchical planning. You are more than welcome to adapt your previous solution.
Alternatively you may use the example solutions to built upon. If you do, please declare it.
All the worlds below be implemented with bouncing borders.

Grid World with things

1. (3 marks) Start with the 5x5 world from last week. (The one with the agent and one leaf.)
   Now add to each field one of these five labels: {"north", "south", "east", "west", "goal"}
   The goal label should only be added once, to one of the corners. The other labels should be added in a way that if we use them as directions we will get to the goal, if we start in the middle.
   Furthermore, give the agent class a function that allows the agent to perceive the label of its current field.

   1M including all the labels in some form into the world design.
   1M for a path to the goal being possible and the goal being in a corner
   1M for the agent having a function that reads the label the agent is on.

Using the labels

2. (2 marks) Write a mini controller that does the following:

1. The agent perceives the label.
2. If the label is the goal, the agent stops.
3. If the label is not the goal, the agent moves in the direction given by the label.

> 1M for the agent perceiving the label
> 1M for the agent acting on the label.

3. (2 marks) For this task we split the labels into two classes. Direction labels and goal labels. Make sure each field holds both.
   Now, implement a hierarchical controller by first checking if the goal is reached. If (and only if) this is not the case follow the directions as before.
   You might want to introduce a second perception function for the agent. Your choice.

> 1M for the changes to the world, that each field holds an extra piece of information. It does not matter if this is "goal"/"not goal" or a boolean or some other clever (but probably over-engineered) solution.
> 1M for using two loops, one checking for a goal, one following the directions.

Random walk to the goal

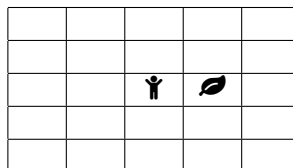4. (3 marks) This task does not have to build on top of task 1, 2 or 3. But it may.
   In this task the world needs only the label goal, no directions. Just as before the goal should be in on of the corners.
   Implement a movement function wherein a random direction is chosen. This functions gets executed until the goal is reached.
   Hint: "random.choice(mylist)" gives you one element out of a list randomly. (Remember to add "import random")

> 1M for the changes to the world
> 1M for the a structural idea, some form of loop in which movement happens based on conditions
> 1M if this works

Example World:

Have a wonderful day :)