NEW OBJECTS AND MAPS IN THE NEW PLMAN VERSION : PLMAN 2020-1

Last week, we published in Moodle an update of PLMan with new example mapas (mainly in f1) to practice. These maps help to understand 3 NEW OBJECTS that are in the maps:

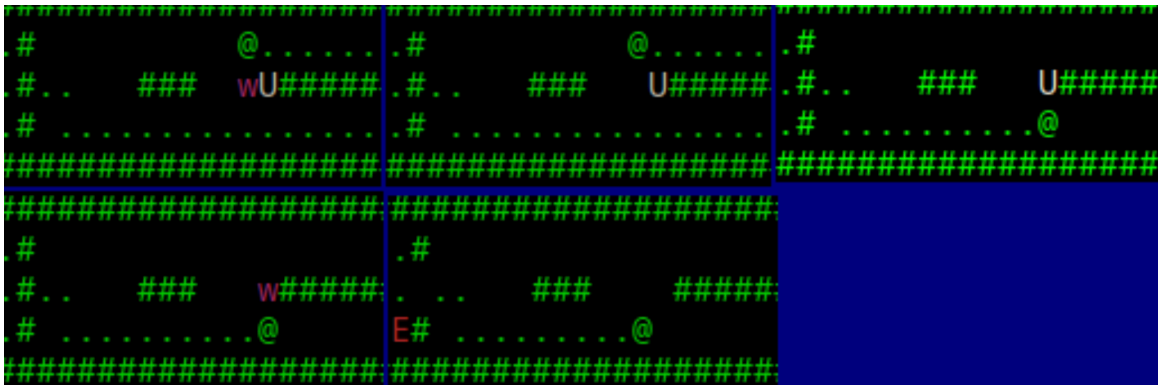
- **Magic wand**: Allows to make incantations. These incantations trigger several actions (push, kill, créate an object). All the maps carry clues about what incantations you must use. The synthaxis is as follows:
  `do(use(incantation, direction)).`
  incantantation is usually a word from Harry Potter (Flipendo, Alohomora, Avada_Kedabra...) using uppe and lower case that must match exactly. It is usually written in the maps.

  In the maps of phase 3, there are also DYNAMIC INCANTATIONS: they change from one execution to the following. They are written within the map and they must be readed before using them.

  In the map of the figure below, you can see the use of the incantation ***flIpEnDO*** to push a block. The incantation Works at distance, but as we are in phase 1 we cannot see at distance so we approach to the block and each we see it we push it with the incantation. See the code:

- **Pot and Ingredients**: The pot allows to créate magic potions by puting ingredients inside. Simply, you must put ingredients using usando `do(drop(direction))`. The potions are ORDER DEPENDENT with respect to the ingredients: they only work if you follow the correct order. The easiest maps have a clear clue that indicates the order to follow. The most dificult maps have natural deductions with some spaces that indicates the letter of the ingredients. You must solve the deduction to know what ingredients

you must use. In the image below, you can see how we get the ingredient **w** and throw it in the pot **U**: then the potion is complete, the pot dissapears and this trigger an action (a wall dissapears):



- **<u>Digits and Passwords</u>**: Digits that appear in the map so that you can create a password. To cretate it you must change these digits until they form a correct password. Each digit has associated a position in the map from which it can be changed (usually in front the digit). When PLMan or any other entity is placed there, the digit changes.

  In these maps, the password is usually obvious, be written at a given place, sometimes there are clues to know it or you can try easily. In the image below you can see the cells associated to each digit and you can see how they change as PLMan moves (complete the password to open the door):

All these objects (valid ingredients, valid incantations or passwords) are hashed with SHA, so they hve to be inferred from the clues in the map.