Report on AOS Assignment

- **Topic:** To record tasks which are repetitive and redundant in nature while working on a desktop and to automate the same.

- **Software dependencies:** Python 3.4 or above, pip (python package installer).

- **Compatibility:** The program is currently only developed for Linux systems and hence is not recommended for windows as it may not work properly.

- **Interface:** Purely command line based.

- **Documentation:**

1. Part A: Recording tasks:

The python library used for this purpose was pynput. Here, the main function of the program is the simply capture any action that the user performs and record it. In order to save the tasks, I have used a dictionary that saves the time at which the action was performed as *key* and stores the exact information of the action performed as it's *value.* This dictionary is then stored as a pickled file to which I named an extension *.task file*. We'll see more on the significance of the *.task* file in the next part.

Every value in the dictionary stores the action recorded in a specific fashion as below:

1) The action is stored as a list.
2) The first element of the list specifies what type of action is performed.
    a. If it's a keyboard input, the element is *kp* or *kr*. *kp* for Keyboard press and *kr* for keyboard release.
    b. If it's a mouse input, the element is *mp* or *mr*. *mp* for Keyboard press and *mr* for keyboard release.
    c. If it's a mouse scroll, the element is *ms* for mouse scroll.
3) The second element depends on the first element.
    a. If it's a keyboard input, the second element is the letter or key that was pressed or released.
    b. If it's a mouse input, the following elements are the x and y coordinates of the point on the screen where the mouse was clicked.
    c. If it's a mouse scroll, the elements following are the screen coordinates and integer value specifying how much was the window scrolled.

This dictionary is then stored as a pickle file with extension *.task* and saved to the local file directory.

2. Part B: Executing recorded tasks.

This program asks for the *.task* filename firstly and then finds and opens the same from the local file directory. It then *unpickles* the file thereby obtaining the original dictionary in which we had originally recorded our actions from. Based on the time as the key it calculates when which event has to be executed and the value of the list specifies what action has to be performed. The python library used for this purpose is *pyautogui.*

- **Source code.**

The source codes and many other useful programs can be found on my GitHub repository for this particular project:

https://github.com/hanspres1999/OSAutomation

- **References:**

1. Automate the Boring Stuff with python, by Al Sweigart. https://automatetheboringstuff.com/
2. Pynput documentation. https://pythonhosted.org/pynput/
3. Pickling documentation. https://docs.python.org/3/library/pickle.html
4. Miscellanea references. https://www.geeksforgeeks.org/python-programming-language/ https://stackoverflow.com/questions/tagged/python