Installing MuJoCo 1.3.1 on Windows

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0 A Short Cut

In this assignment, we will use environments based on a physics simulation engine called MuJoCo to test our agent. However, the installation of MuJoCo itself can sometimes be tricky. Therefore, we provide a basic tutorial for installing MuJoCo on Windows[1].

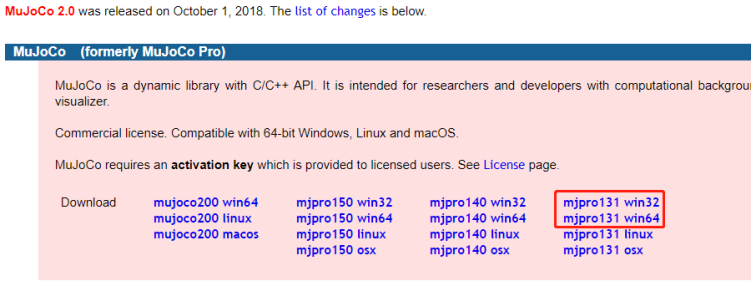
If you are familiar with Windows system and its environment variables, you can finish the following short summary of basic steps and then jump to Section 3; otherwise, please go to Section 1.

Short Summary: Before addressing library problems, you should first download MuJoCo 1.3.1 at `https://www.roboti.us/index.html`, then put unzipped folder `mjpro131` together with `mjkey.txt` (please refer to `mujoco_instructions.txt` in starter code for how to get this) in `.mujoco` under your user folder and finally add MuJoCo's `bin` folder into `Path` environment variable.

Before moving forward, it is worth to mention that **if nothing works, you can also try to install MuJoCo and run assignment 3 on the Azure instance you have used for assignment 2 before by following `mujoco_instructions.txt`, which may actually be an easier alternative.**

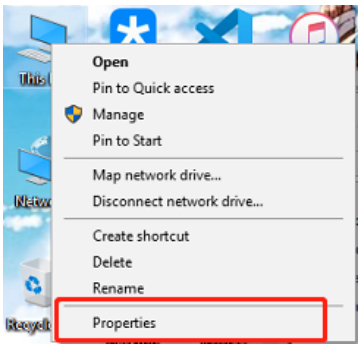
1 Downloading MuJoCo

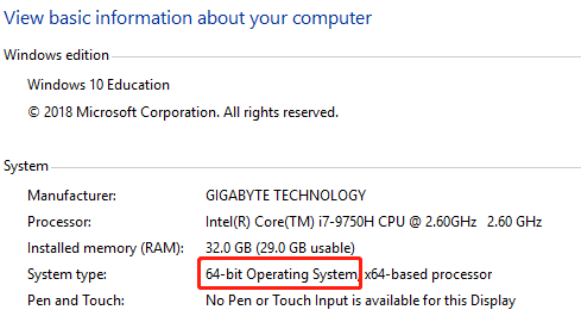
First, you need to download the MuJoCo 1.3.1 for Windows at this website: `https://www.roboti.us/index.html`.



There are two versions of MuJoCo 1.3.1 for Windows, `win32` and `win64`. For most current PCs, `win64` should be the right version. However, to check which one you should download, you can right click the icon "This PC" and then click "Properties" as the following:

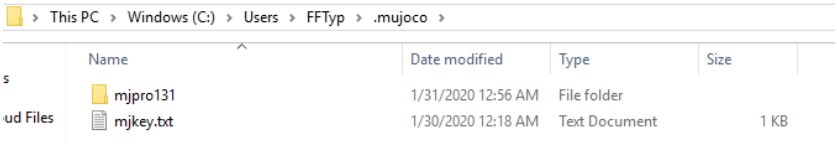
[1]This tutorial has been tested only on Windows 10.





As indicated in the right screenshot above, if you computer says "`64-bit Operarting System`", then you should download `win64` version; otherwise, you should download `win32` version.

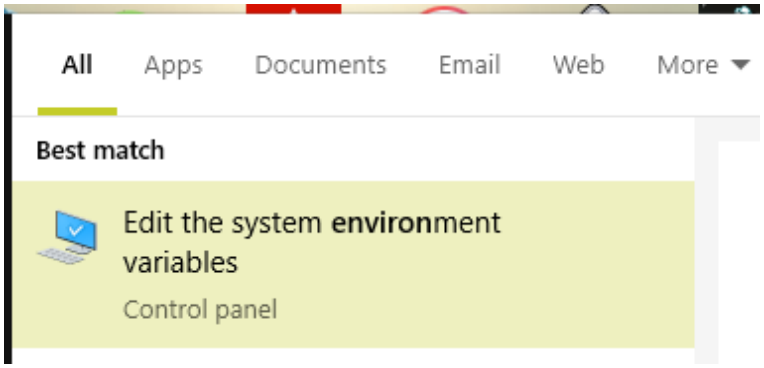
After downloading the MuJoCo, you can unzip it and put it under `C:/Users/user_name/.mujoco/` together with `mjkey.txt` (please refer to `mujoco_instructions.txt` in starter code for how to acquire `mjkey.txt`) as the following:



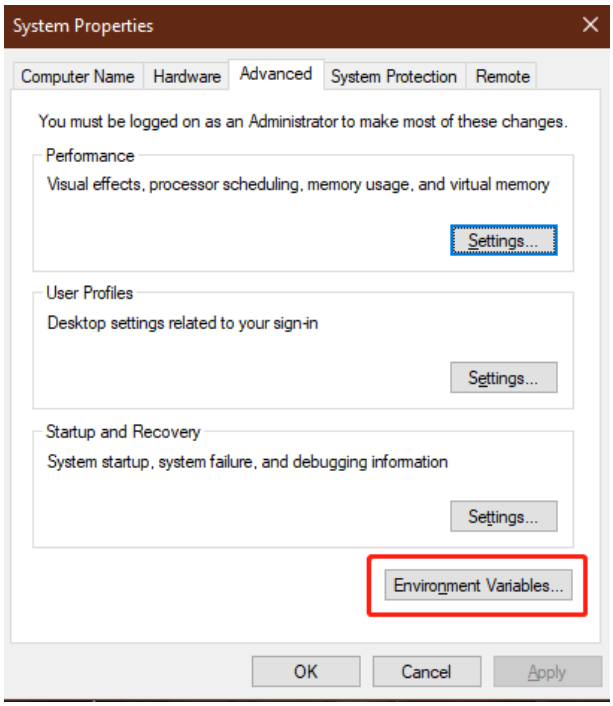
Here, `FFTyp` is my `user_name`. (Note: you may need command `mkdir` in PowerShell to create the folder `.mujoco`).

2 Setting Environment Variables

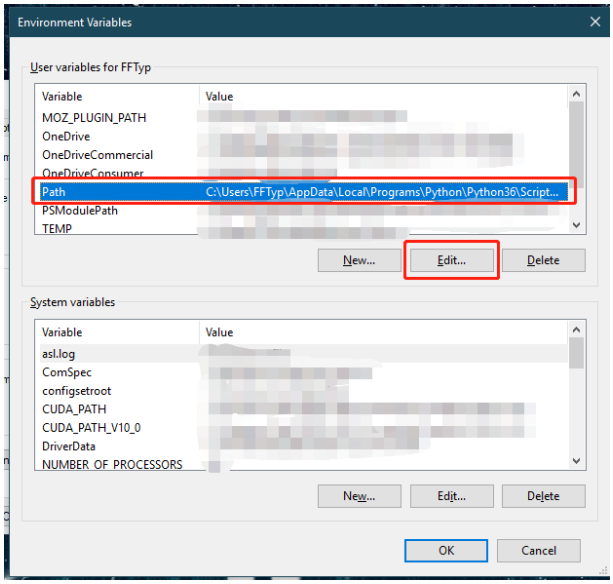
After finishing downloading MuJoCo, we need to add its location into the `Path` environment variable so that the system can call it when necessary. Specifically, first type `environment variables` into the system search bar (press the Windows button to use system search bar) and you should be able to see the following:



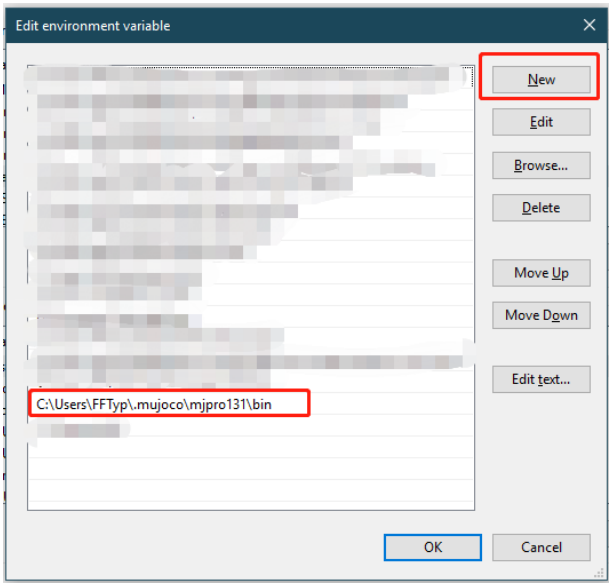
After opening the `Edit the system environment variables`, click the following red block:



Then, select the `Path` (or `PATH`) user variable and then click `Edit`.



Finally, click `New` and copy the full directory path of `mjpro131/bin` into the newly created path as the following:



3 Library Problems

After finish setting up the environment variables, please first install all required packages in `requirements.txt` including `mujoco-py==0.5.7`. Then, before moving forward, please try running the following code:

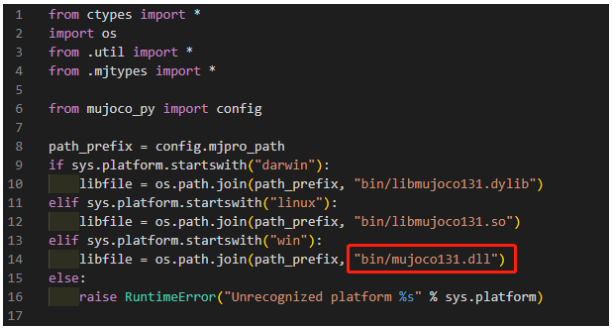
```
import gym

env = gym.make("HalfCheetah-v1")
```

If everything works fine, you can then simply leave this tutorial and start the 3rd assignment or go to have some fun.

Otherwise, if you receive the following error message (which should be likely): `OSError: [WinError 193] %1 is not a valid Win32 application`, please then do the following:

1. In 14th line of `path/to/Lib/site-packages/mujoco_py/mjlib.py`, change ".lib" to ".dll".



```
from ctypes import *
import os
from .util import *
from .mjtypes import *

from mujoco_py import config

path_prefix = config.mjpro_path
if sys.platform.startswith("darwin"):
    libfile = os.path.join(path_prefix, "bin/libmujoco131.dylib")
elif sys.platform.startswith("linux"):
    libfile = os.path.join(path_prefix, "bin/libmujoco131.so")
elif sys.platform.startswith("win"):
    libfile = os.path.join(path_prefix, "bin/mujoco131.dll")
else:
    raise RuntimeError("Unrecognized platform %s" % sys.platform)

```

2. In 6th line of `path/to/Lib/site-packages/mujoco_py/platname_targdir.py`, change "windows" to "win".

```
import sys
if sys.platform.startswith("darwin"):
    platname = "osx"
elif sys.platform.startswith("linux"):
    platname = "linux"
elif sys.platform.startswith("win"):
    platname = "win"
targdir = "mujoco_%s"%platname
```

It should be noted that `path/to/Lib` will be different depending on what environment of Python you are using. There are roughly three cases:

- System Python: `C:/Users/FFTyp/AppData/Local/Programs/Python/Python36/Lib`, where `FFTyp` is the account name on my PC.
- Anaconda environment: `C:/Users/FFTyp/Anaconda3/envs/cs234hw3/Lib`, where `cs234hw3` is the environment name.
- `virtualenv` environment: `cs234hw3/Lib`, where `cs234hw3` is the environment name.

If you receive any message that asks you to instal visual C++, you can download it here: https://support.microsoft.com/en-us/help/2977003/the-latest-supported-visual-c-downloads

Finally, MuJoCo is a somewhat complicated engine and this tutorial can by no means address all possible problems. If you meet any errors that are not mentioned in this tutorial, you are very welcomed to come to our office hours or directly reach out to zxiong9@stanford.edu for help.