

# Homework 4 - RL

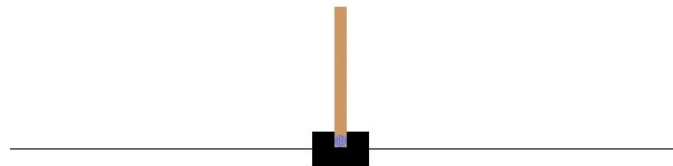
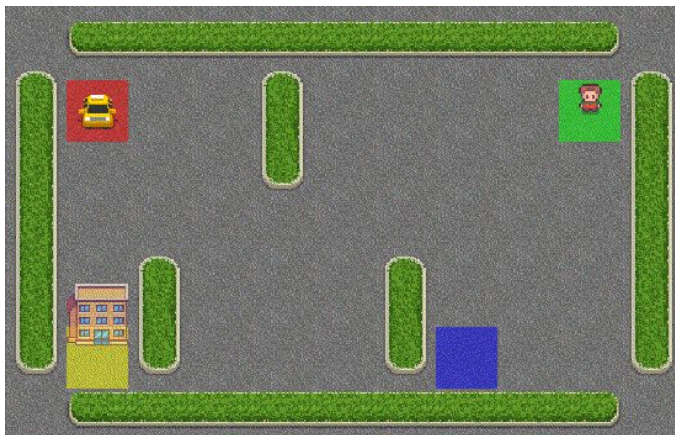
Due Date: 5/12 (Friday) 23:59



# Introduction

In this assignment, you will implement basic RL algorithm, Q learning and its variants in OpenAI Gym environments i.e.,

- Taxi-v3
- CartPole-v0



# Setup

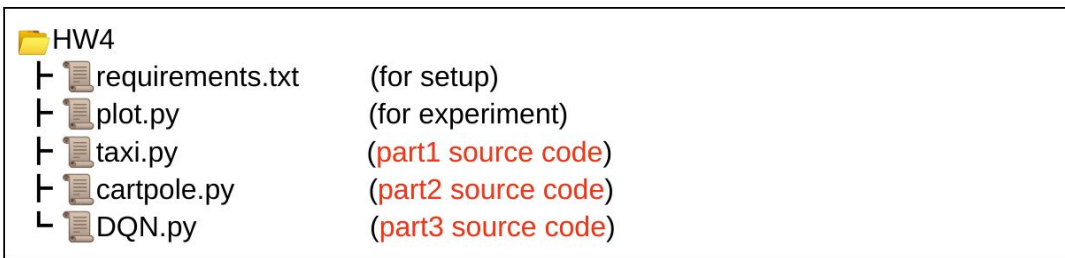
We recommend you to use python **3.7** and all the packages you need are listed in the requirements.txt. Please run the command to install the packages:

```
pip install -r requirements.txt
```

# Implementation (50%)

The sections you need to implement are specified with **# Begin your code** and **# End your code**. Please read all the comments to comprehend the source code before implementation. **Do not modify** the rest of the code

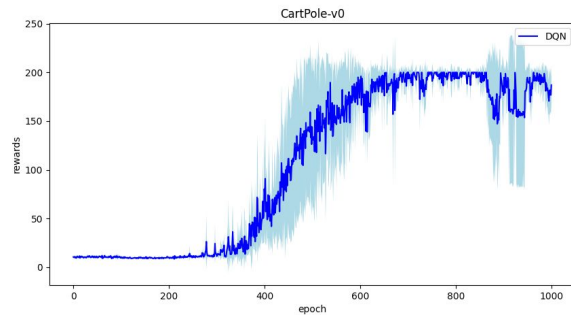
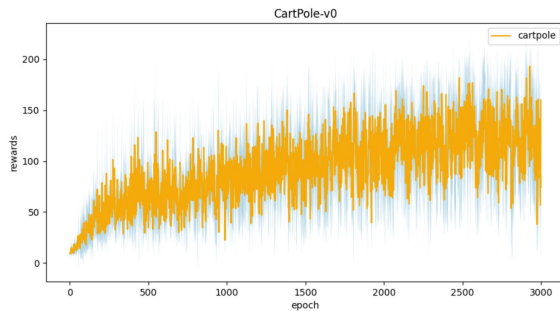
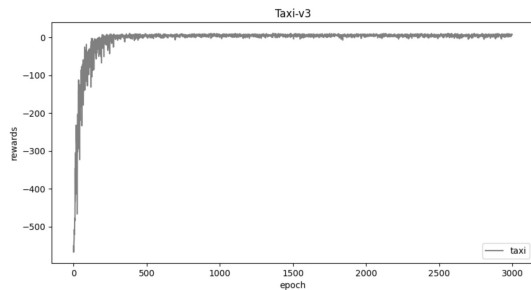
- Part 1: Q learning in Taxi-v3 (10%)
- Part 2: Q learning in CartPole-v0 (15%)
- Part 3: DQN in CartPole-v0 (25%)



# Experiment

```
python plot.py [-h] [--taxi] [--cartpole] [--DQN] [--compare]
```

You can use plot.py to plot the learning curves, this will help you verify if you train the model correctly.



# Report (50%)

- You should write your report following the report template
- The report should be written in **English**.
- Please save the report as a **.pdf** file. (font size: 12)
- Answer the questions in the report template **in detail**.

# Submission

**Due Date: 2023/5/12 23:59**

Please compress your [source code](#), [results](#) and [report \(.pdf\)](#) into `STUDENTID_hw4.zip`.

The file structure should look like:

```
{student_id}_hw4.zip
├── Plots
│   ├── taxi.png
│   ├── cartpole.png
│   ├── DQN.png
│   └── compare.png
├── Rewards
│   ├── taxi_rewards.npy
│   ├── cartpole_rewards.npy
│   └── DQN_rewards.npy
├── Tables
│   ├── taxi_table.npy
│   ├── cartpole_table.npy
│   └── DQN.pt
├── taxi.py
├── cartpole.py
├── DQN.py
└── report.pdf
```

**Wrong submission format leads to -10 point.**

**Late Submission Policy**

**20% off per late day**

Please check out the spec  
for more details!