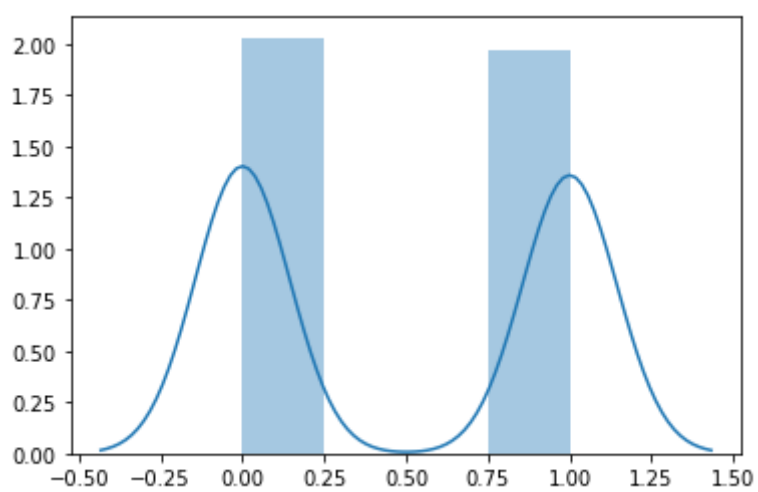
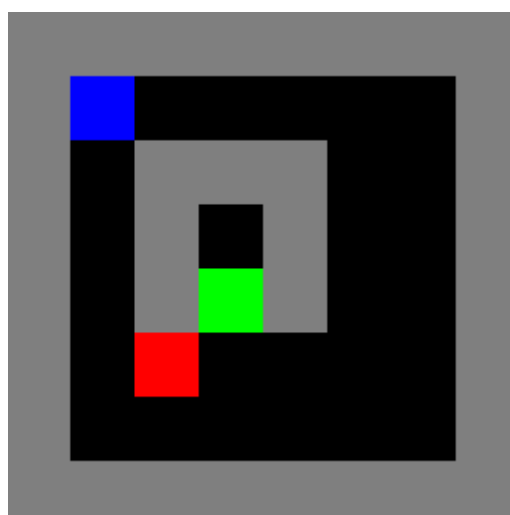
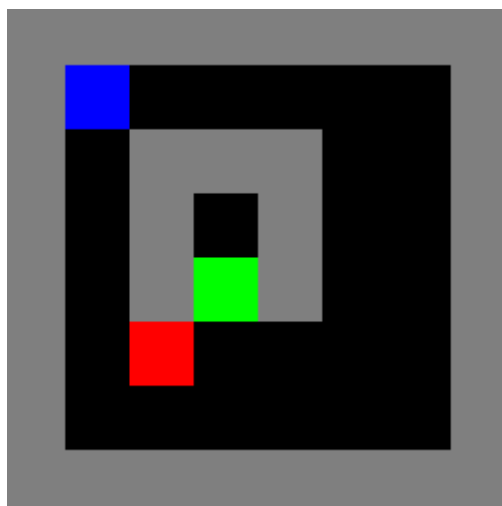
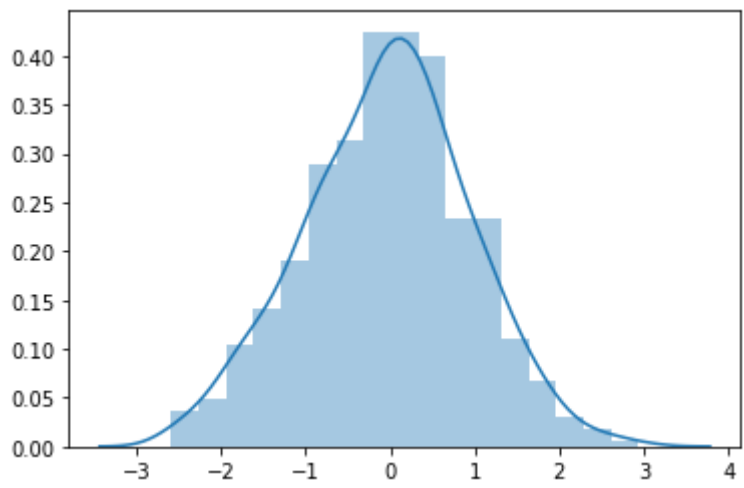
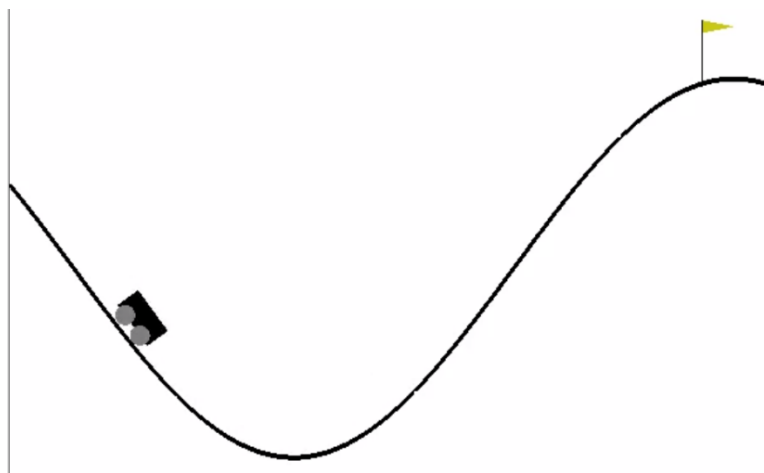
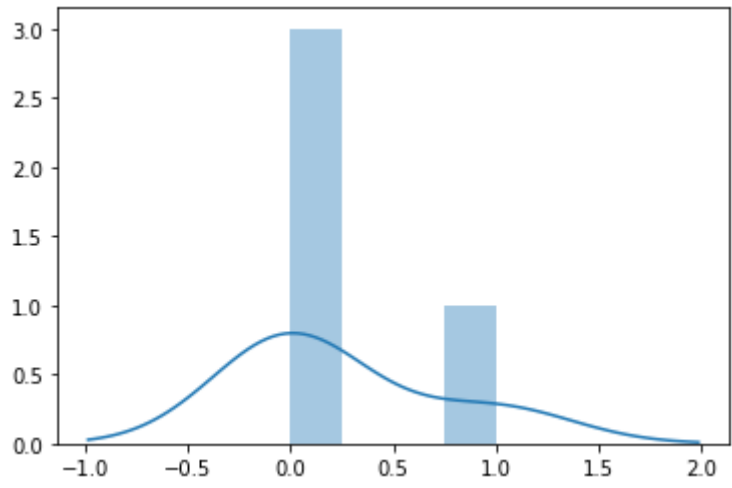
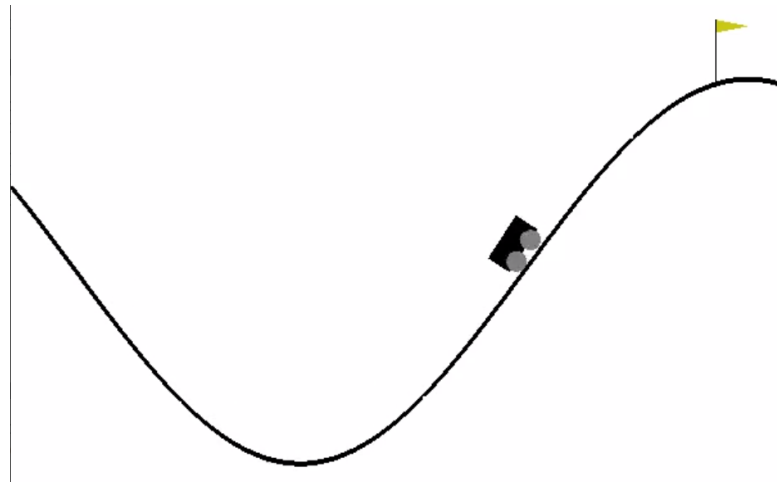
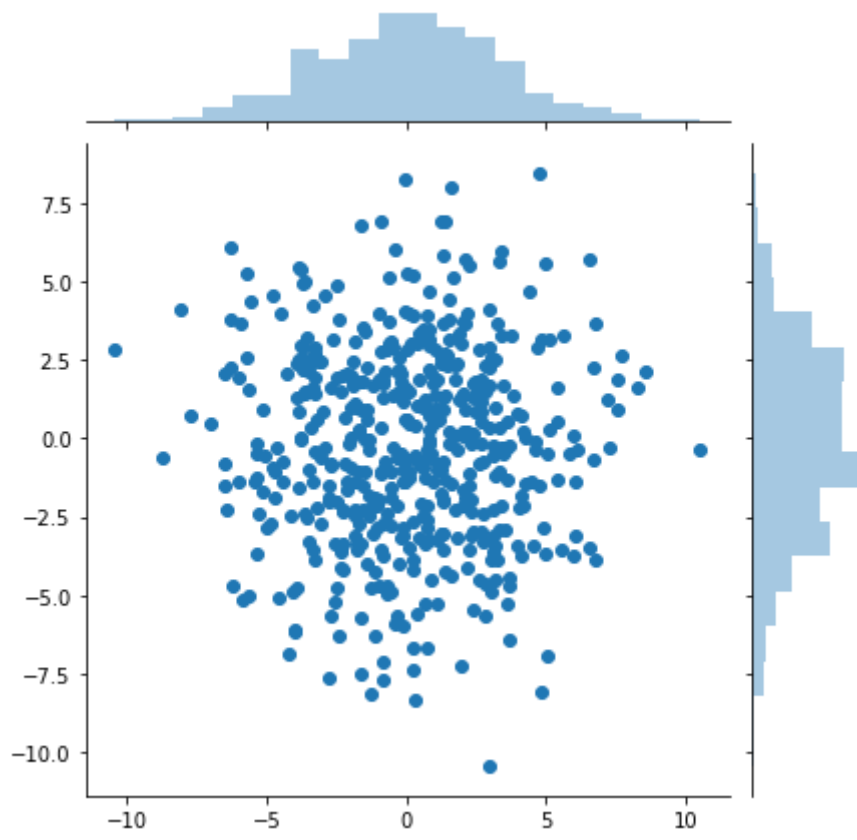


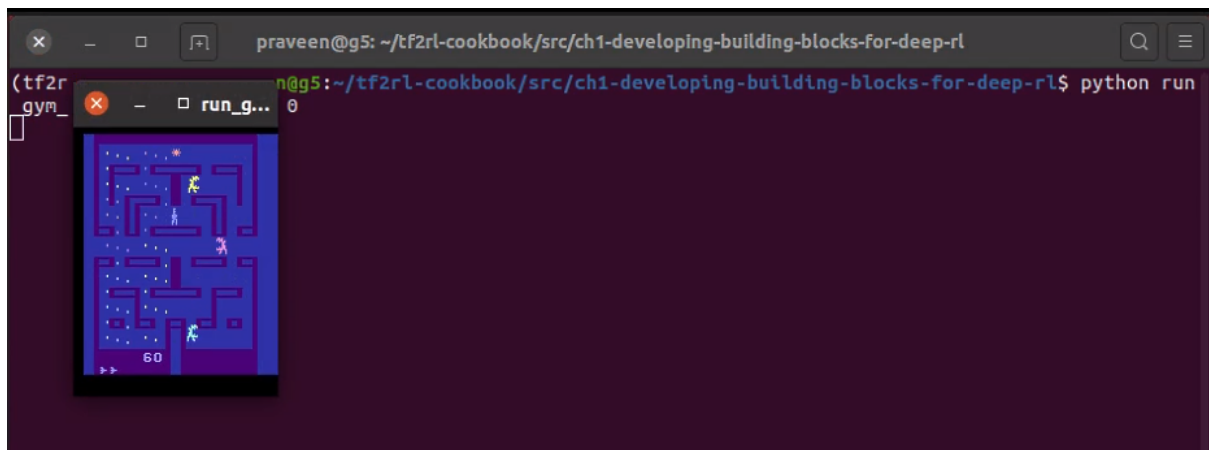
# Chapter 1: Developing Building Blocks for Deep Reinforcement Learning Using TensorFlow 2.x







```
Acrobot-v1
AirRaid-ram-v0
AirRaid-ram-v4
AirRaid-ramDeterministic-v0
AirRaid-ramDeterministic-v4
AirRaid-ramNoFrameskip-v0
AirRaid-ramNoFrameskip-v4
AirRaid-v0
AirRaid-v4
AirRaidDeterministic-v0
AirRaidDeterministic-v4
AirRaidNoFrameskip-v0
AirRaidNoFrameskip-v4
Alien-ram-v0
Alien-ram-v4
Alien-ramDeterministic-v0
Alien-ramDeterministic-v4
Alien-ramNoFrameskip-v0
Alien-ramNoFrameskip-v4
Alien-v0
Alien-v4
AlienDeterministic-v0
AlienDeterministic-v4
AlienNoFrameskip-v0
AlienNoFrameskip-v4
Amidar-ram-v0
Amidar-ram-v4
Amidar-ramDeterministic-v0
Amidar-ramDeterministic-v4
Amidar-ramNoFrameskip-v0
Amidar-ramNoFrameskip-v4
Amidar-v0
Amidar-v4
AmidarDeterministic-v0
```



```

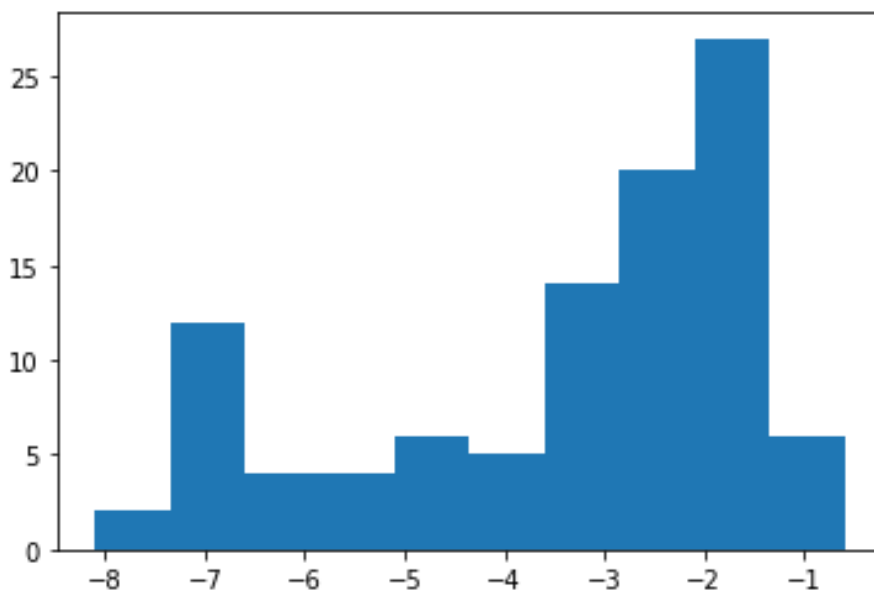
praveen@g5: ~/tf2rl-cookbook/src/ch1-developing-building-blocks-for-deep-rl
(tf2rl) neural_agent.py | 0/10 [00:00<?, ?it/s]
orflow/stream_executor/platform/default/dso_loader.cc:55] Could not l
; dlerror: libcuda.so.1: cannot open shared object file: No such file
orflow/stream_executor/cuda/cuda_driver.cc:313] failed call to cuInit
orflow/stream_executor/cuda/cuda_diagnostics.cc:156] kernel driver do
s host (g5): /proc/driver/nvidia/version does not exist
orflow/core/platform/cpu_feature_guard.cc:143] Your CPU supports inst
ry was not compiled to use: AVX2 FMA
orflow/core/platform/profile_utils/cpu_utils.cc:102] CPU Frequency: 1
orflow/compiler/xla/service/service.cc:168] XLA service 0x7f908000b6
his does not guarantee that XLA will be used). Devices:
orflow/compiler/xla/service/service.cc:176] StreamExecutor device (
0): Host, Default Version
EpReward:-2.90 steps:100 done:True info: {'status': 'Max steps reached'}
10%|██████████| 1/10 [00:02<00:20, 2.27s/it]
EpReward:-3.10 steps:100 done:True info: {'status': 'Max steps reached'}
20%|██████████| 2/10 [00:03<00:16, 2.04s/it]

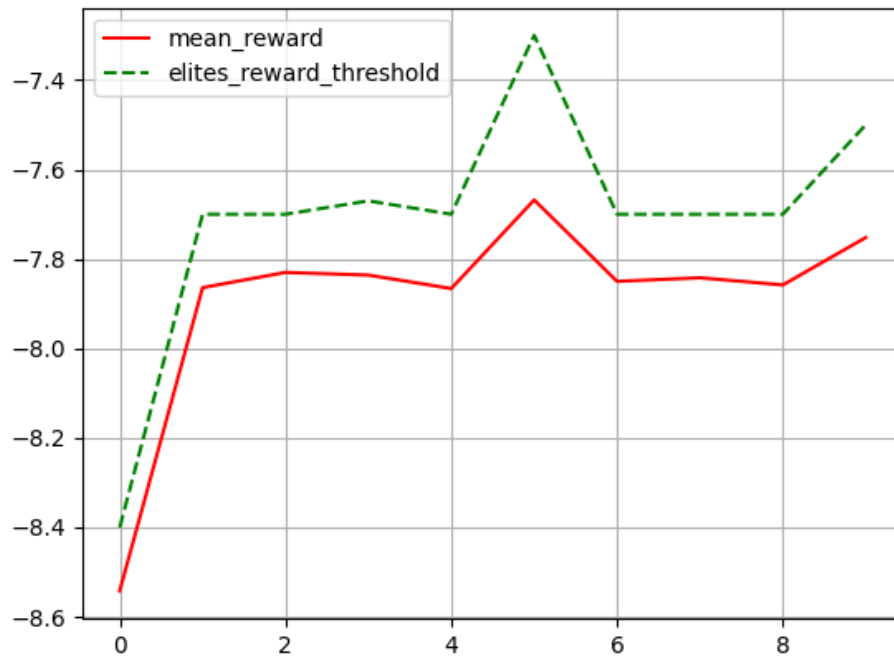
```

```

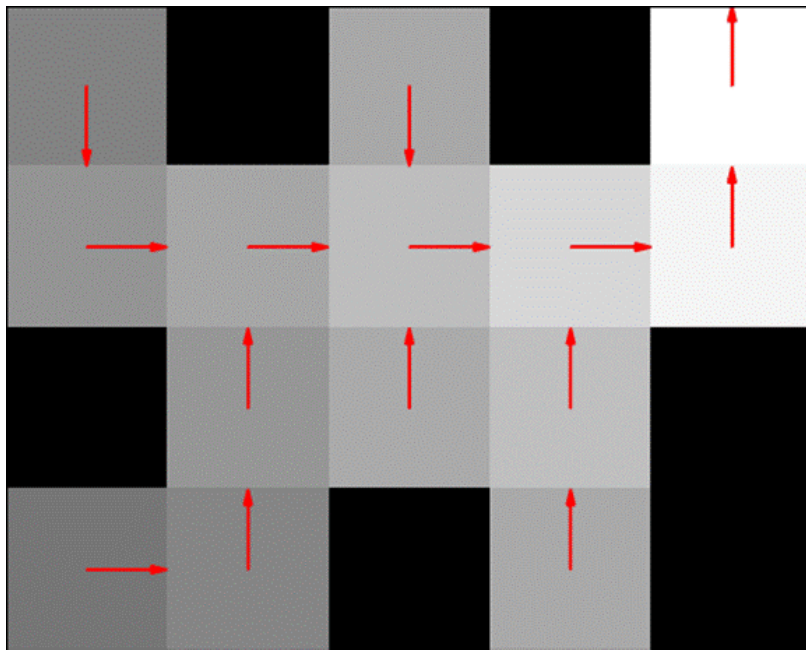
praveen@g5: ~/tf2rl-cookbook/src/ch1-developing-building-blocks-for-deep-rl
(tf2rl) neural_agent.py | 0/10 [00:00<?, ?it/s]
orflow/stream_executor/platform/default/dso_loader.cc:55] Could not l
; dlerror: libcuda.so.1: cannot open shared object file: No such file
orflow/stream_executor/cuda/cuda_driver.cc:313] failed call to cuInit
orflow/stream_executor/cuda/cuda_diagnostics.cc:156] kernel driver do
s host (g5): /proc/driver/nvidia/version does not exist
orflow/core/platform/cpu_feature_guard.cc:143] Your CPU supports inst
ry was not compiled to use: AVX2 FMA
orflow/core/platform/profile_utils/cpu_utils.cc:102] CPU Frequency: 1
orflow/compiler/xla/service/service.cc:168] XLA service 0x7f908000b6
his does not guarantee that XLA will be used). Devices:
orflow/compiler/xla/service/service.cc:176] StreamExecutor device (
0): Host, Default Version
EpReward:-2.90 steps:100 done:True info: {'status': 'Max steps reached'}
10%|██████████| 1/10 [00:02<00:20, 2.27s/it]

```





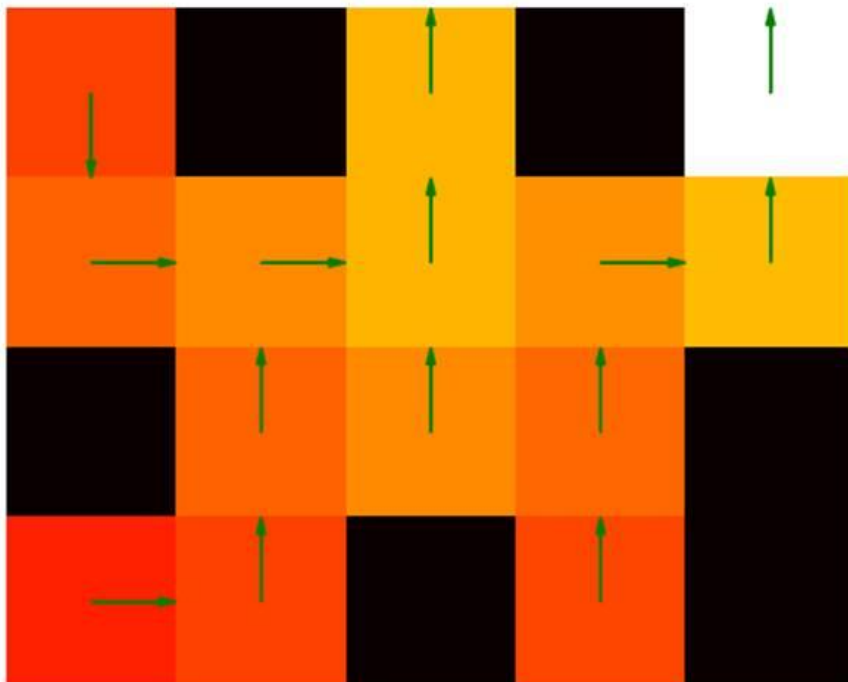
## Chapter 2: Implementing Value-Based, Policy-Based, and Actor-Critic Deep RL Algorithms



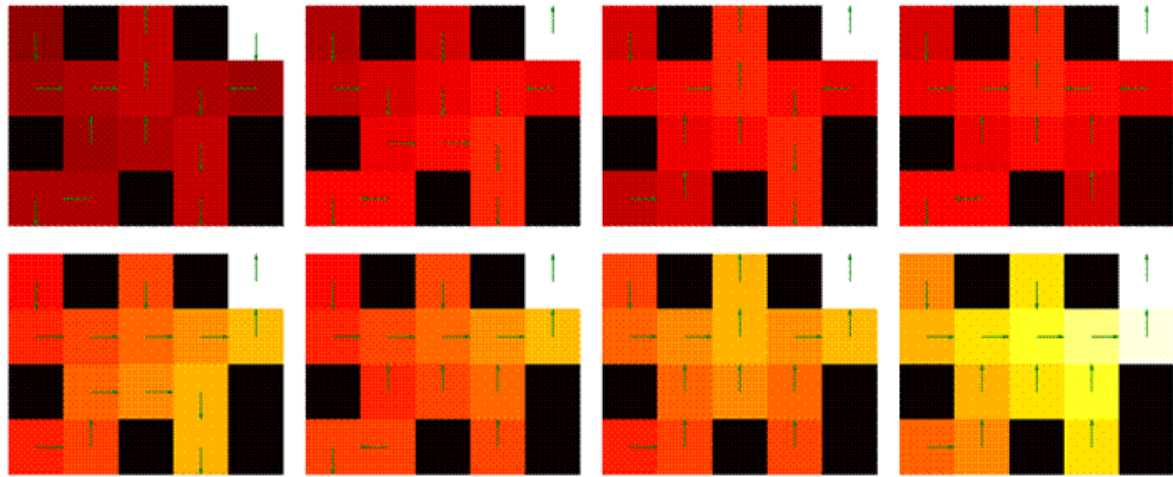
```

(tf2rl-cookbook) praveen@g5:~/tf2rl-cookbook/src/c
n2-value-based-policy-gradients-and-actor-critic-m
ethods/envs$ python maze.py
SWFWG
00000
W000W
F0WFW
step#:1 action:RIGHT reward:0.0 done:False
SWFWG
00000
W000W
F0WFW
step#:2 action:UP reward:0.0 done:False
SWFWG
00000
W000W
F0WFW
step#:3 action:UP reward:0.0 done:False
SWFWG
00000
W000W
F0WFW
step#:4 action:DOWN reward:0.0 done:False
SWFWG
00000
W000W
F0WFW
step#:5 action:RIGHT reward:0.0 done:False
SWFWG
00000
W000W
F0WFW
step#:6 action:RIGHT reward:0.0 done:False
SWFWG
00000
W000W
F0WFW
step#:7 action:DOWN reward:0.0 done:False
SWFWG
00000
W000W
F0WFW

```



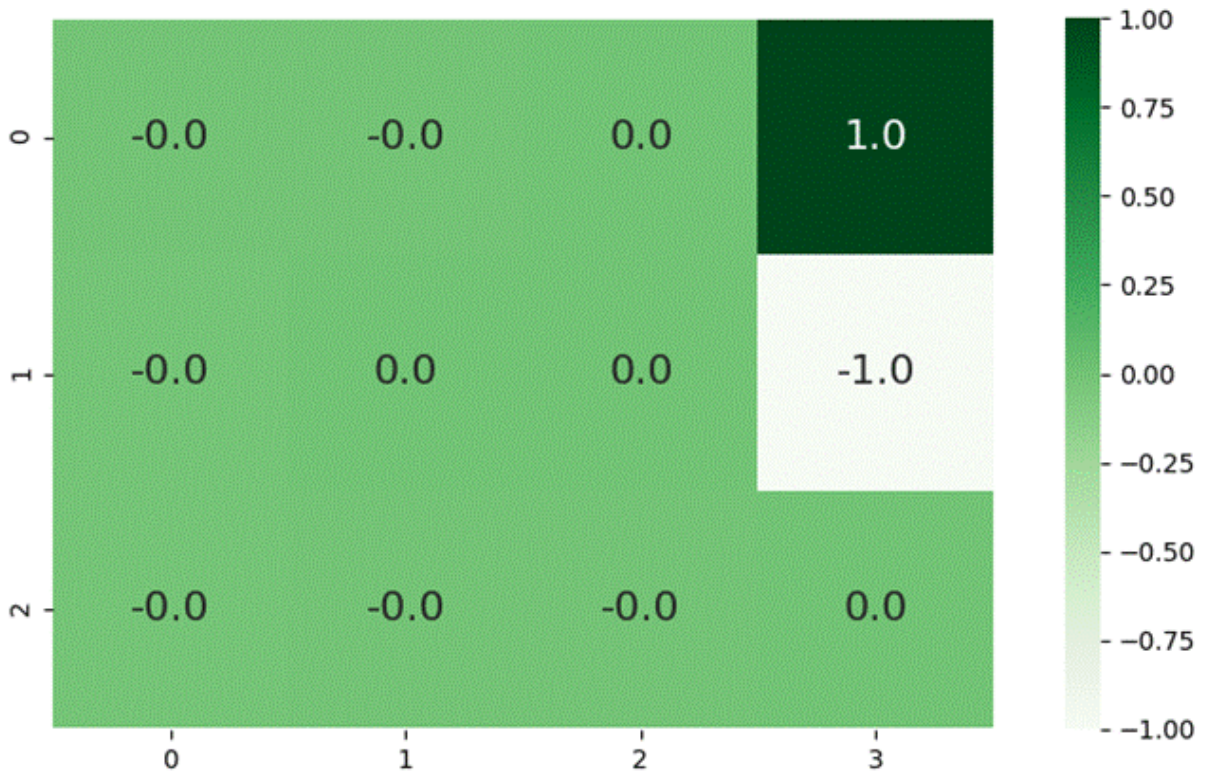


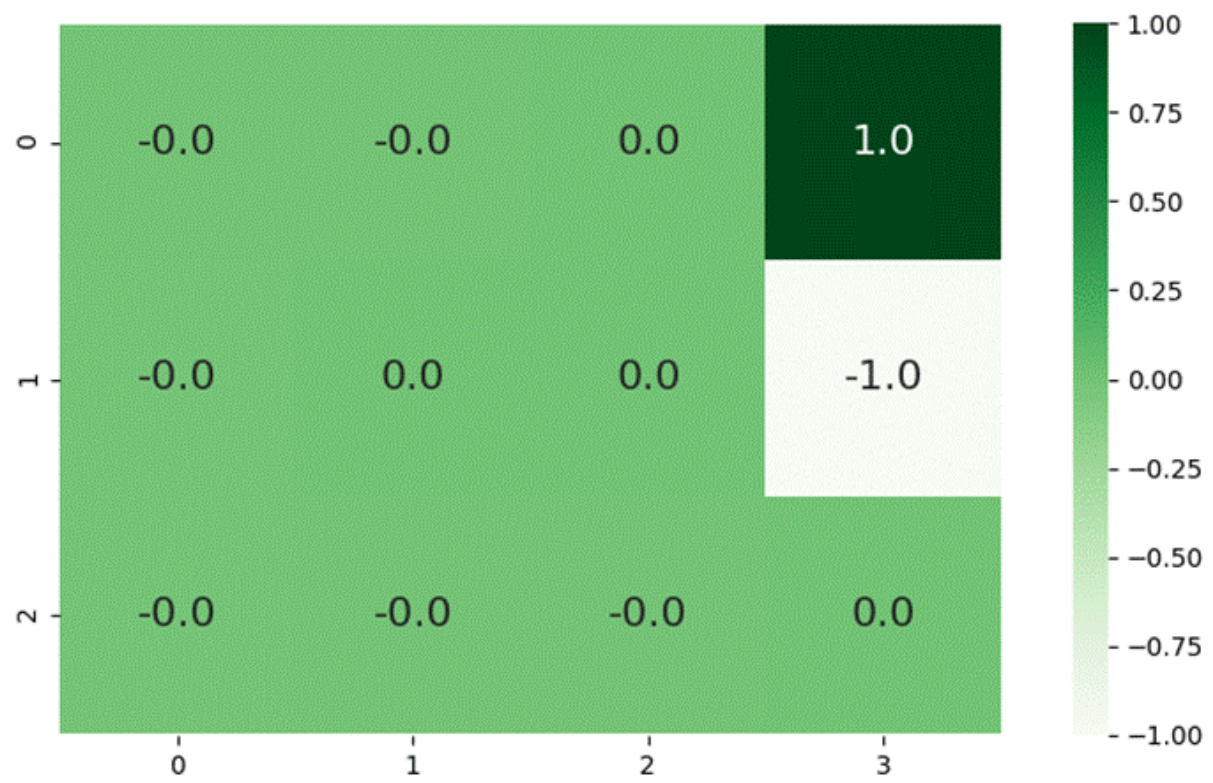


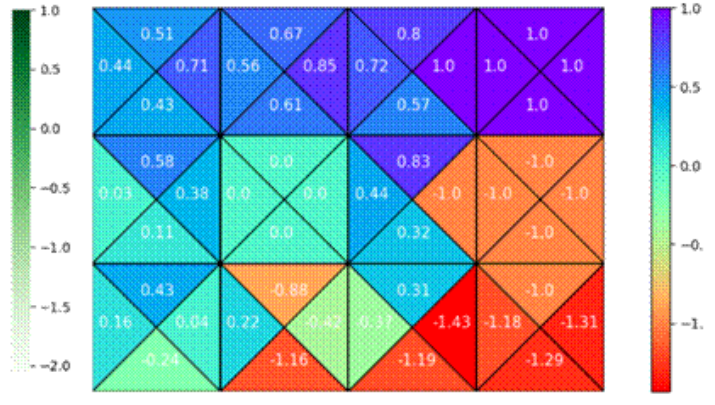
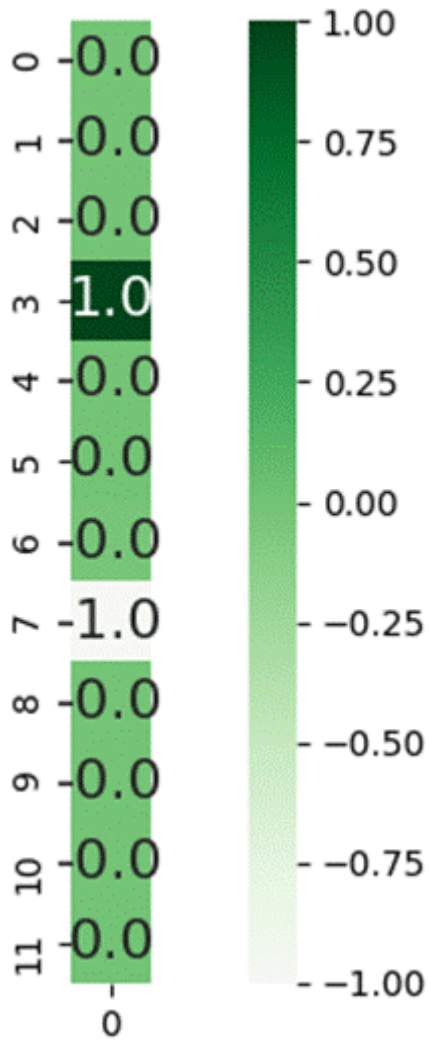
```

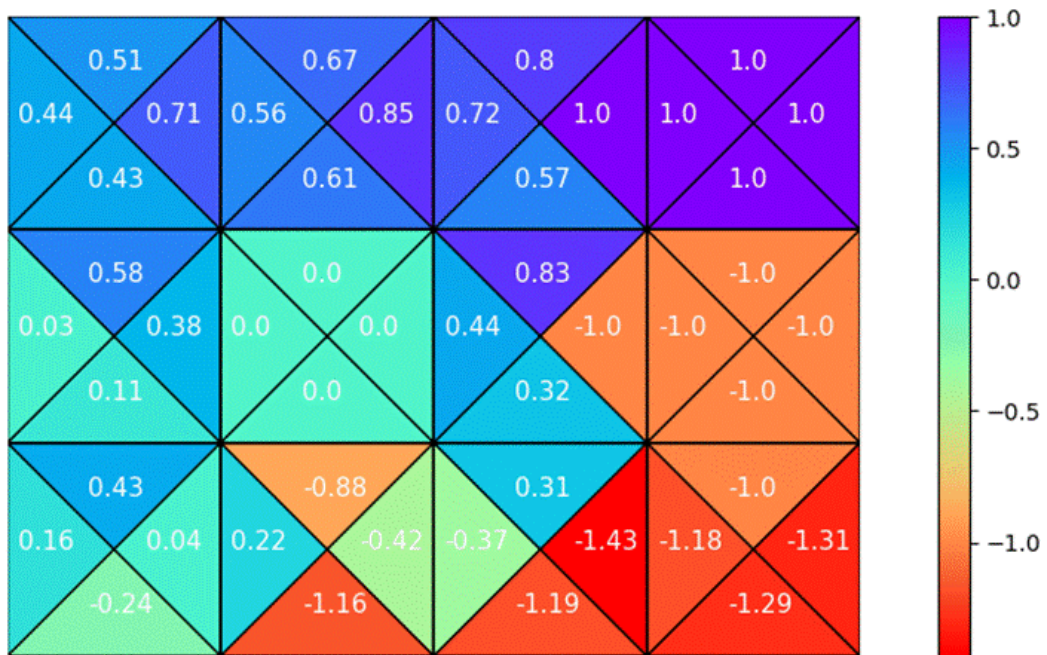
Action mapping:[0 - UP; 1 - DOWN; 2 - LEFT; 3 - RIGHT
Optimal actions:
[1. 1. 1. 1. 1. 1. 1. 1. 3. 3. 3. 3. 3. 3. 3. 3. 1. 1. 3. 1. 3. 1. 3. 3.
 3. 1. 3. 3. 3. 3. 3. 3. 0. 3. 0. 0. 3. 0. 0. 0. 2. 2. 0. 2. 0. 2. 0. 0.
 0. 1. 0. 0. 1. 1. 0. 1. 0. 1. 0. 0. 3. 3. 0. 3. 0. 3. 0. 0. 3. 0. 0. 0.
 1. 1. 1. 2. 3. 3. 3. 3. 1. 1. 1. 0. 1. 0. 0. 0. 1. 1. 1. 0. 1. 0. 0. 0.
 1. 0. 0. 0. 0. 0. 0. 0. 2. 2. 2. 2. 0. 0. 0. 0. 0.]

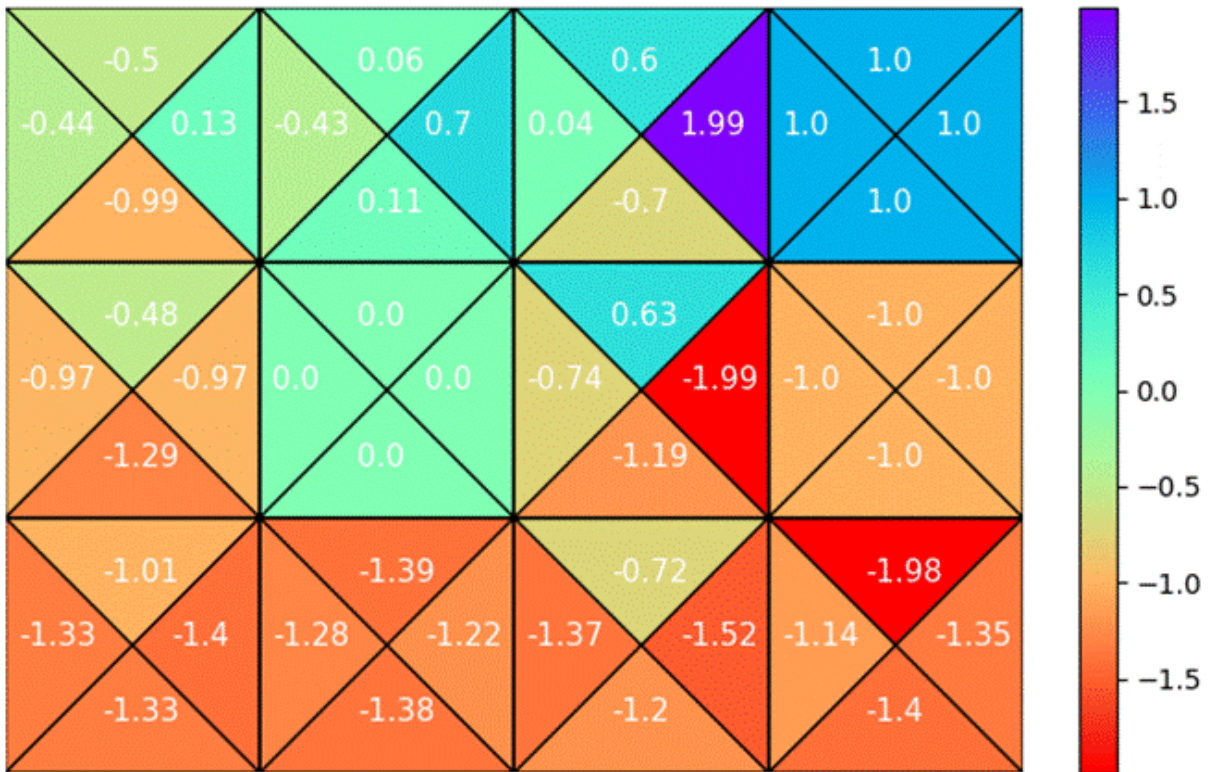
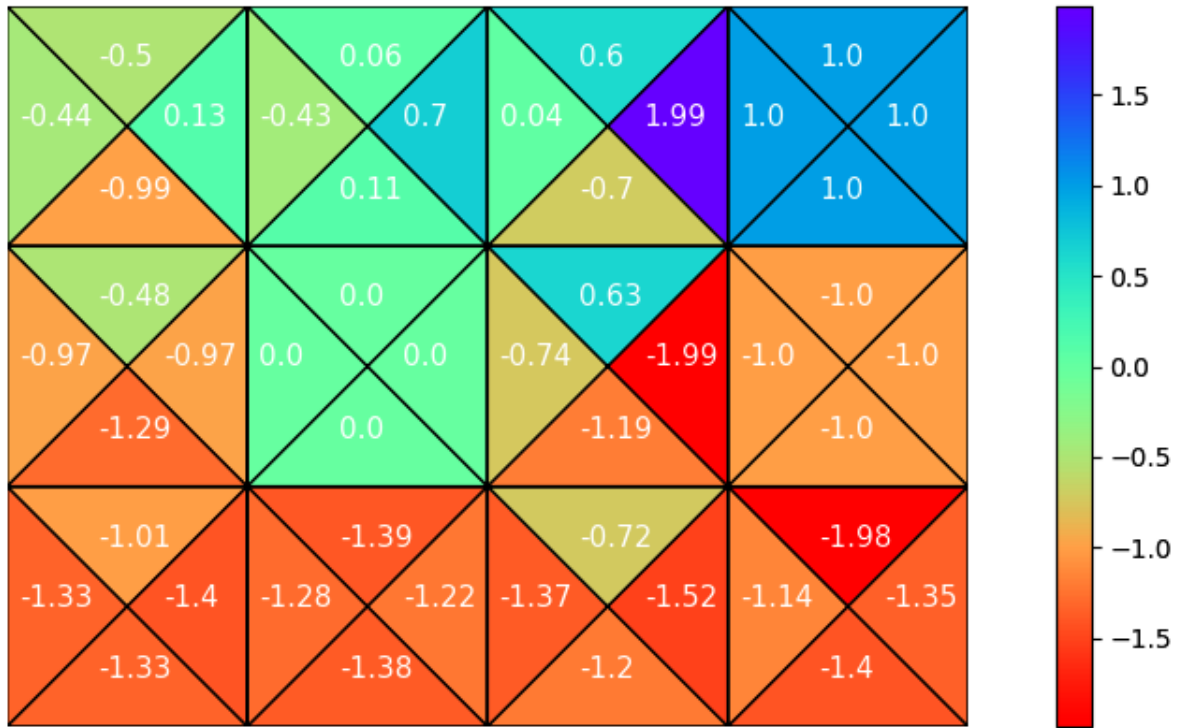
```

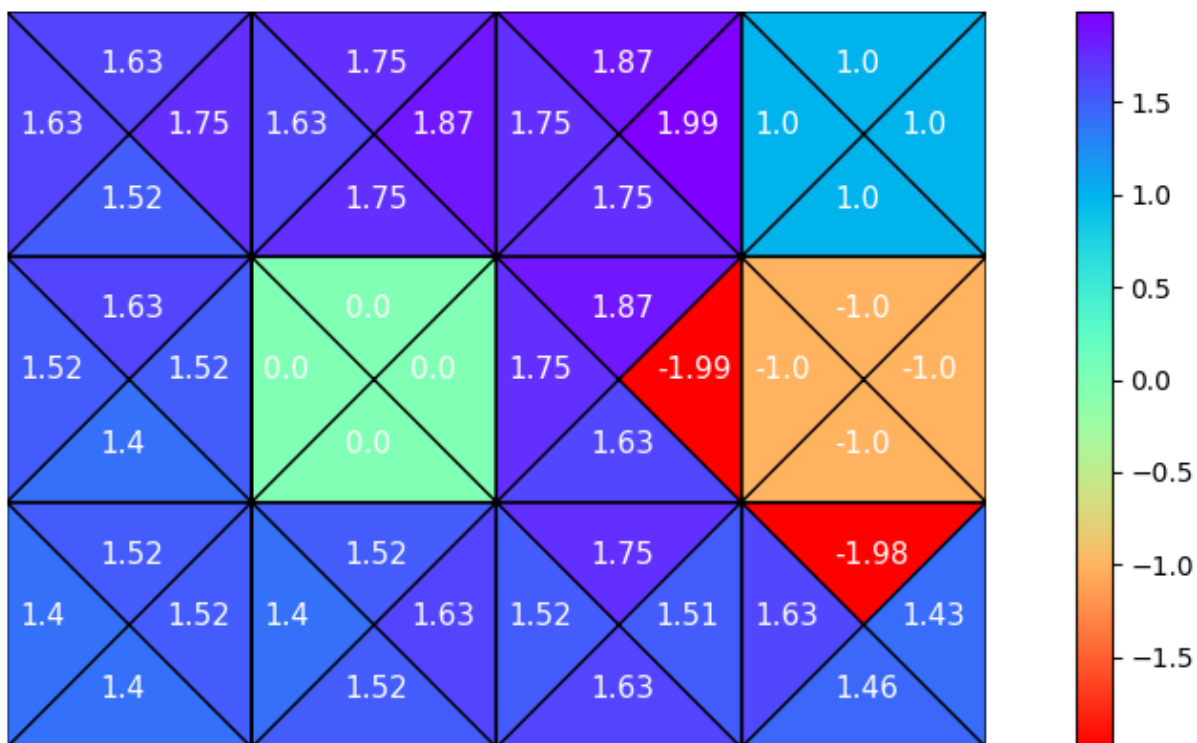
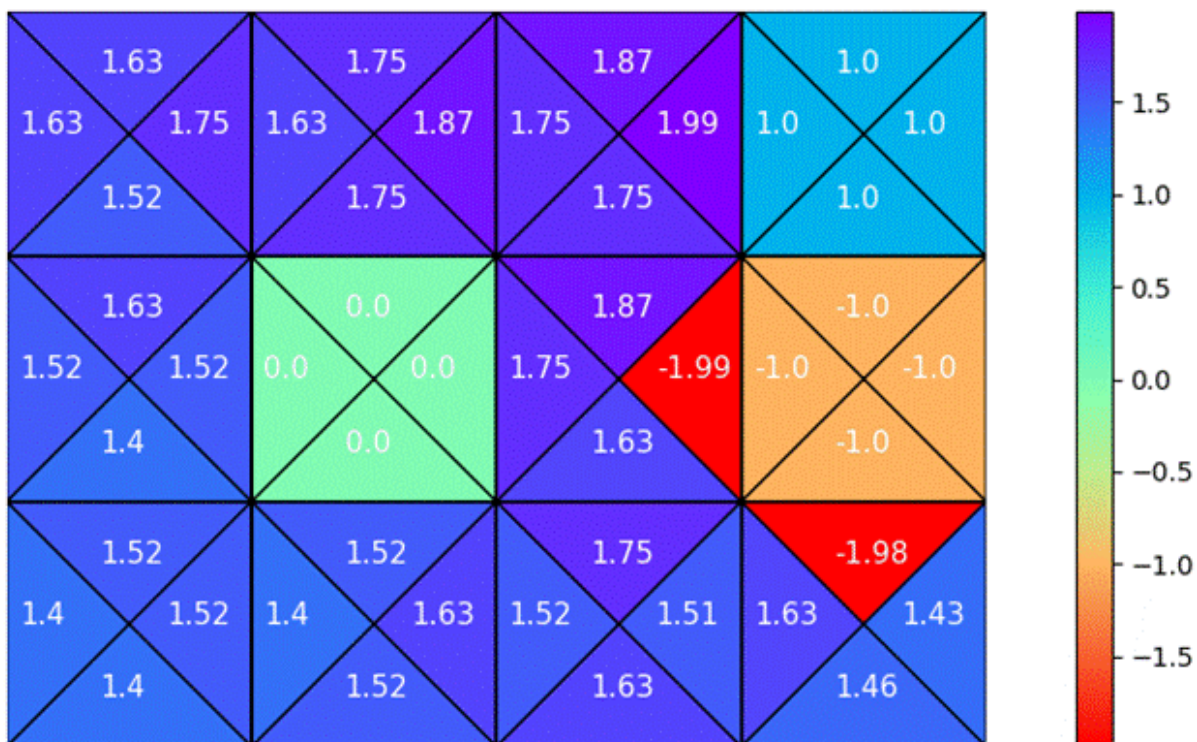


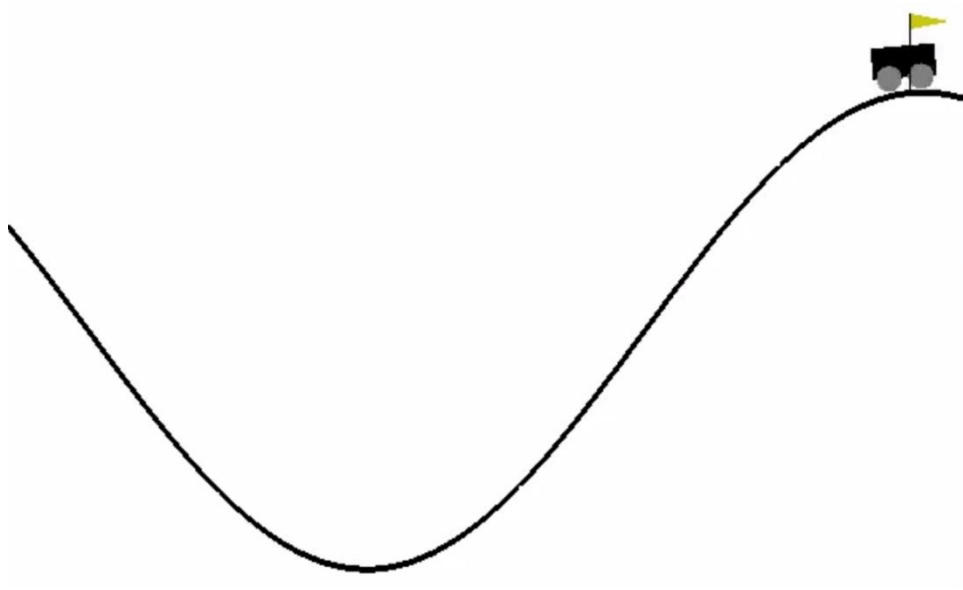




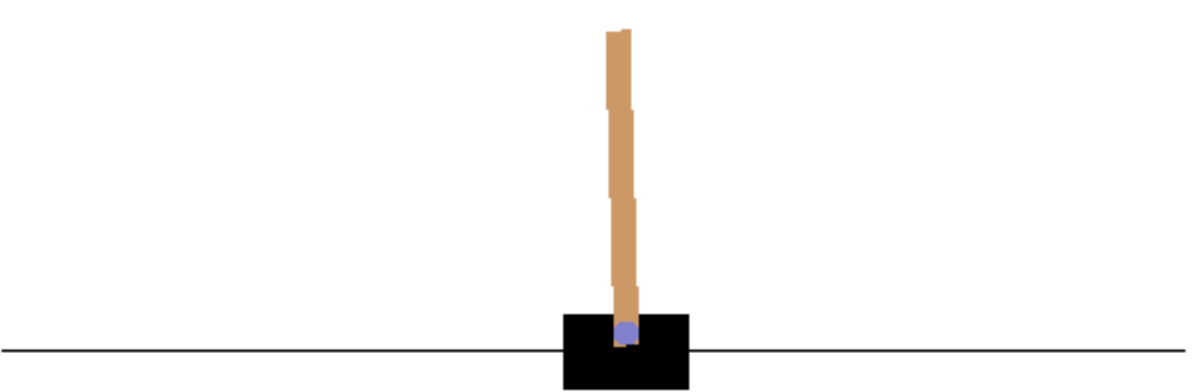




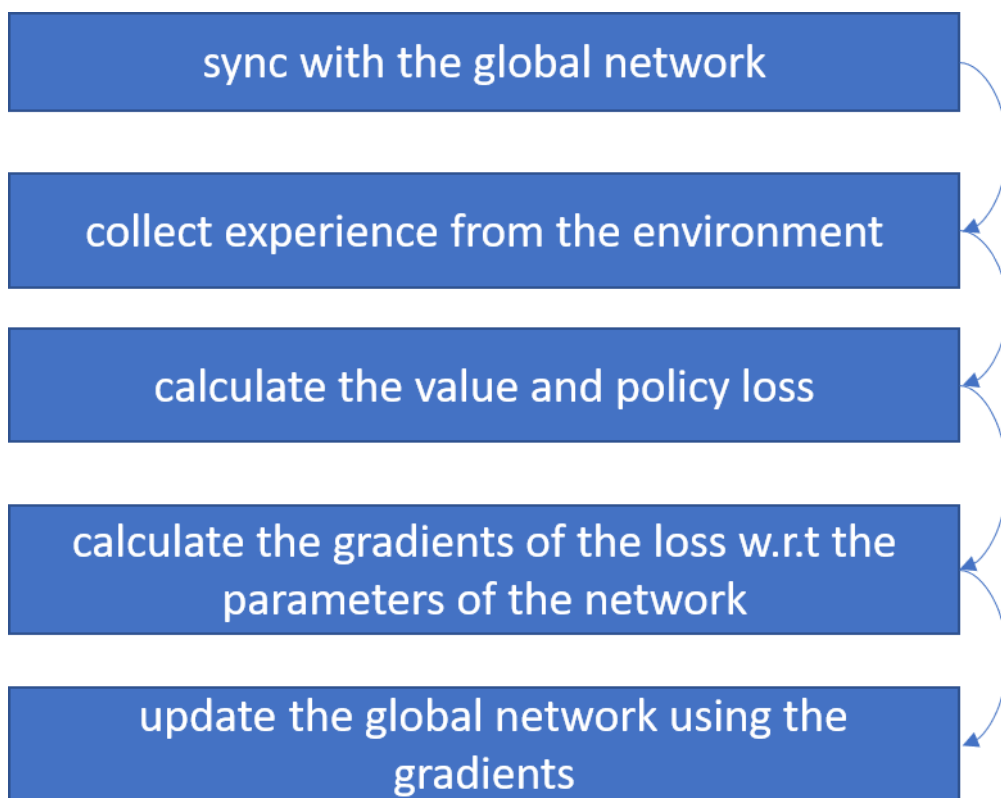
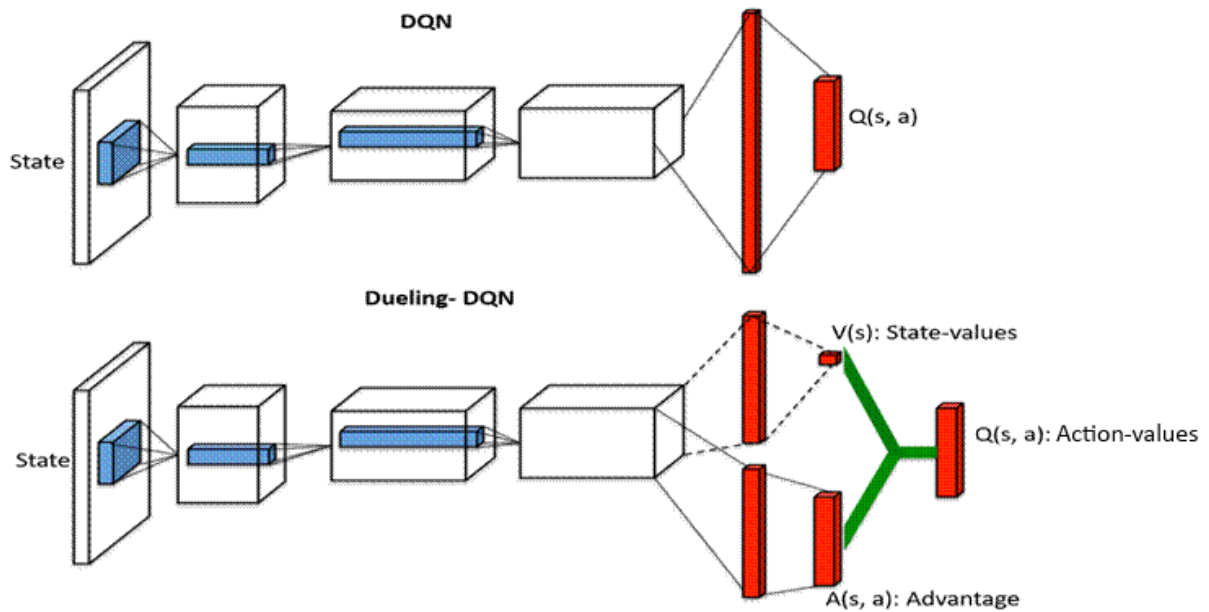




8\_actor\_critic\_agent.py

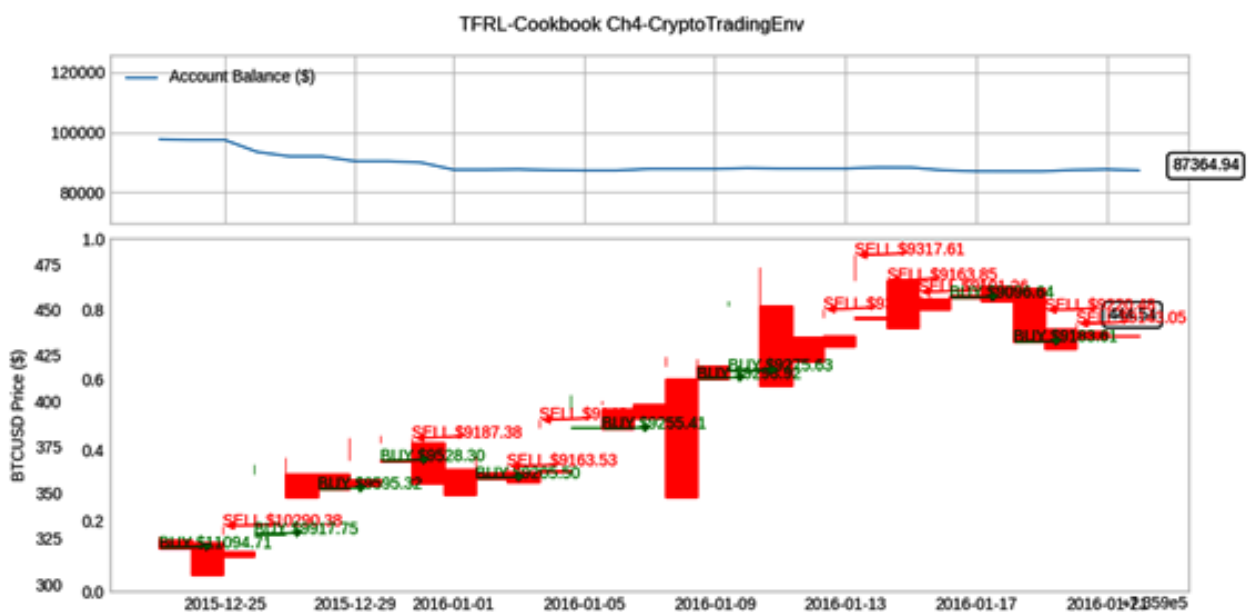
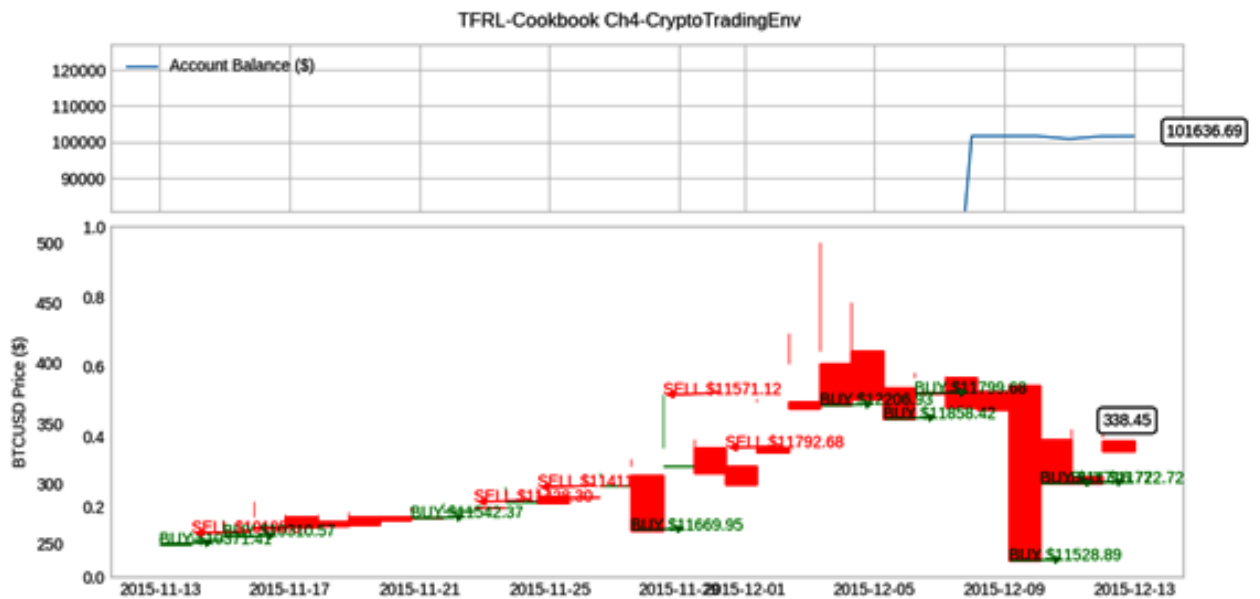


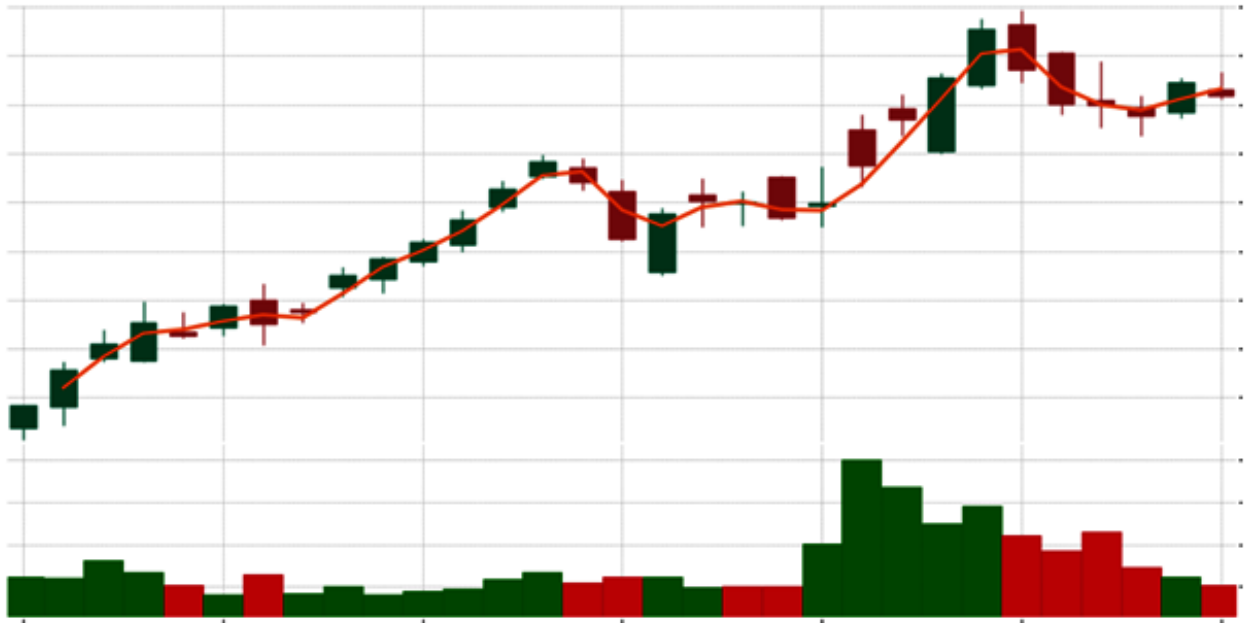
## Chapter 3: Implementing Advanced RL Algorithms



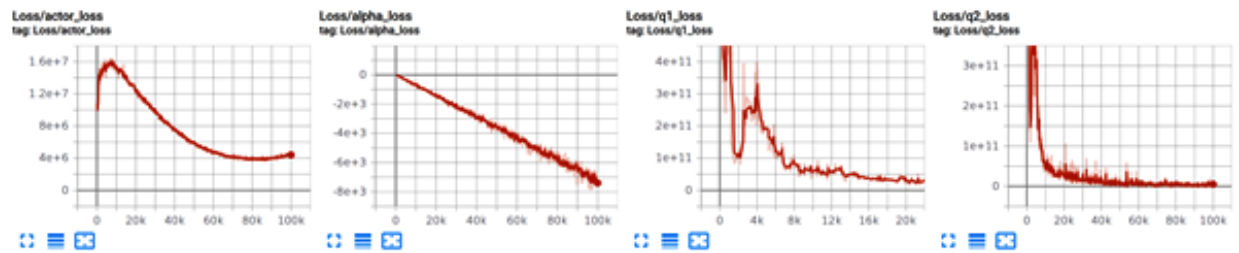


# Chapter 4: Reinforcement Learning in the Real World – Building Cryptocurrency Trading Agents

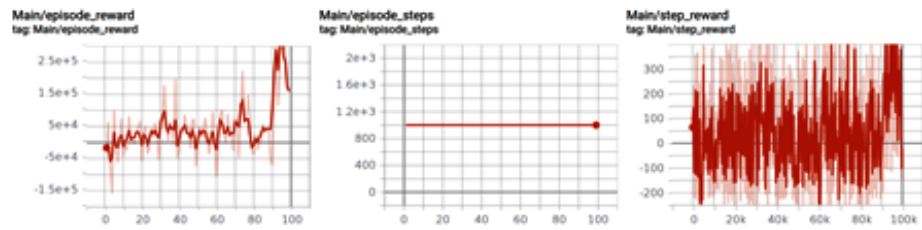




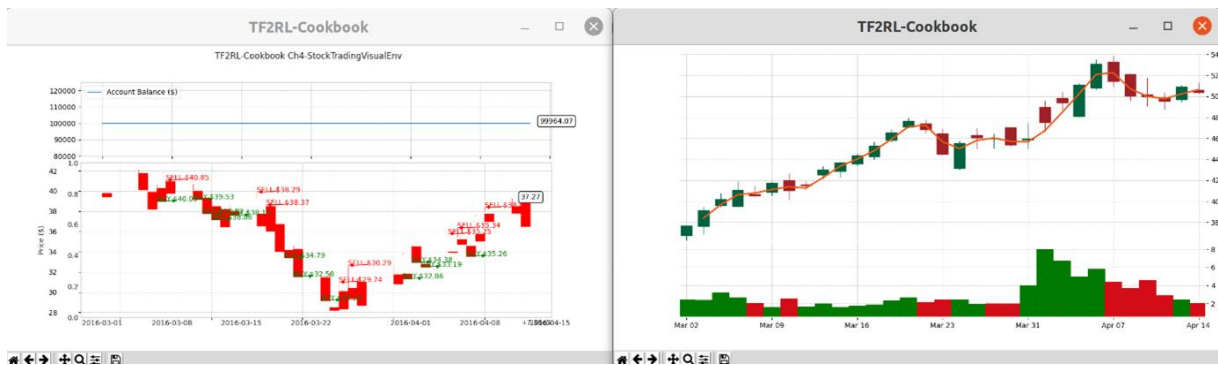
Loss



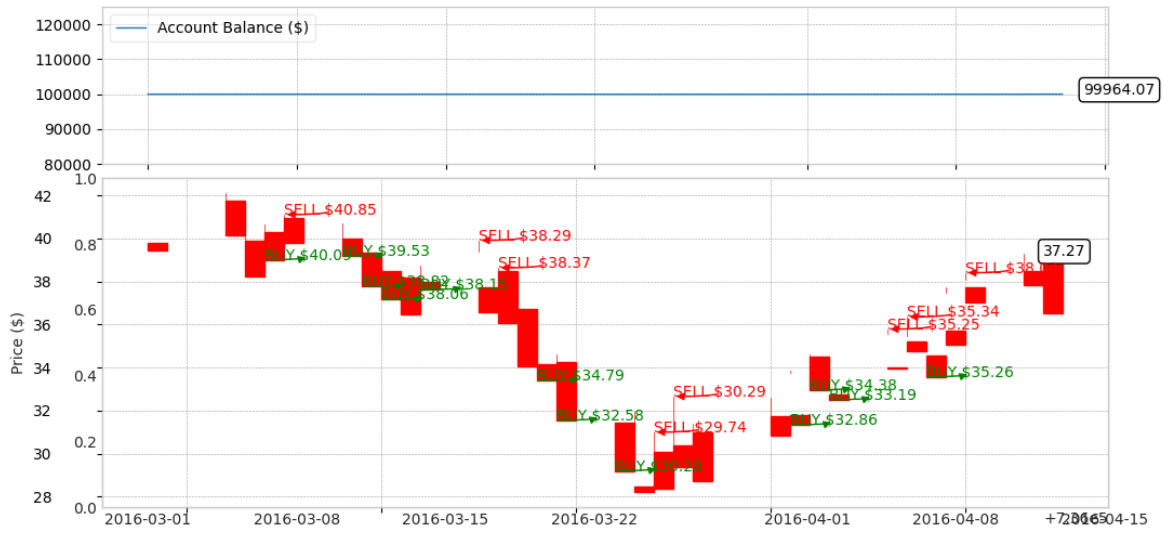
Main



# Chapter 5: Reinforcement Learning in the Real World – Building Stock/Share Trading Agents



# TF2RL-Cookbook



# Chapter 6: Reinforcement Learning in the Real World – Building Intelligent Agents to Complete Your To-Dos

Click on the link "porttitor".	Click on the link "at".	Click on the link "at".	Click on the link "rhoncus".	Click on the link "erat".	Click on the link "libero".
Ac congue magna <a href="#">dictumst</a> . Ullamcorper feugiat lorem <a href="#">imperdiet</a> . Sed cum <a href="#">in porttitor mattis</a> maecenas et gravida maecenas aliquam massa <a href="#">risus</a> .	<a href="#">Commodo</a> vitae massa amet maecenas varius. Fermentum <a href="#">at</a> turpis laoreet. <a href="#">Nisi</a> bibendum quisque turpis amet tellus <a href="#">donec</a> ornare elit mauris.	Pellentesque. Eget. <a href="#">Tristique</a> . <a href="#">Vestibulum</a> felis <a href="#">velit</a> . Commodo egestas tellus. Sit quis ultrices sit <a href="#">senectus</a> scelerisque <a href="#">at</a> morbi mauris lectus vitae.	Arcu pulvinar massa, <a href="#">rhoncus</a> vulputate tristique vestibulum. Consectetur. Imperdiet bibendum sagittis adipiscing <a href="#">in</a> praesent. Neque. Diam <a href="#">incidunt</a> amet. Etiam urna.	Elementum euismod sed sociis <a href="#">vitae</a> euismod interdum. Arcu. Leo, <a href="#">tincidunt erat</a> consequat enim dictum vestibulum, facilisis tempus. Et rhoncus, <a href="#">massa</a> .	Est <a href="#">id</a> arcu ullamcorper lacus, risus lectus laoreet pellentesque tortor <a href="#">orci</a> . Quam vel. Ac tortor <a href="#">dictum</a> . Egestas ac. Metus <a href="#">libero</a> .
Select GDKkQ and click Submit.	Select Vdpr2dP and click Submit.	Select b2O and click Submit.	Select yKwBox and click Submit.	Select L0 and click Submit.	Select i2bF and click Submit.
<input type="radio"/> USa <input type="radio"/> GDKkQ Submit	<input type="radio"/> 9iYPF <input type="radio"/> Zi <input type="radio"/> Vdpr2dP <input type="radio"/> d7Qt <input type="radio"/> OX Submit	<input type="radio"/> 8F <input type="radio"/> YPK6gX <input type="radio"/> oN4Z <input type="radio"/> niC <input type="radio"/> b2O <input type="radio"/> 56a Submit	<input type="radio"/> yKwBox <input type="radio"/> EClyt Submit	<input type="radio"/> 6j <input type="radio"/> ZIU <input type="radio"/> 7gF <input type="radio"/> 606 <input type="radio"/> L0 <input type="radio"/> 2QMPAG Submit	<input type="radio"/> REK <input type="radio"/> VccT <input type="radio"/> i2bF <input type="radio"/> cLCzAK <input type="radio"/> FI <input type="radio"/> p5Nr Submit

✕ ◯ ◻

## Click Button Task

Click on the "Okay" button.

viverra nam sociis  
sit nulla nunc:

placerat arcu egestas:

Last reward: **-1.00**

Last 10 average: **-1.00**

Time left: **3 / 10sec**

Episodes done: **85**

✕ ◯ ◻
✕ ◯ ◻
✕ ◯ ◻
✕ ◯ ◻
✕ ◯ ◻
✕ ◯ ◻
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✕ ◯ ◻
✕ ◯ ◻

Click on the "okay" button.	Click on the "OK" button.	Click on the "ok" button.	Click on the "no" button.	Click on the "OK" button.	Click on the "submit" button.	Click on the "previous" button.	Click on the "Next" button.	Click on the "cancel" button.
bonex lacus, ridiculus okay okay next error et at	curant dis justo facilisis proin aliquam Ok pharetra turpis scelerisque adurna lectus adipiscing pretium, aliquam egestas	pretium purus duis facilisis ac massa sit leo at ok	erat enim ipsum Okay okay american pulvinar pellentesque	Ok commodo ullamcorper turpis next submit	submit no okay fermentum eget at turpis vel laoreet nisi amet lobortis	pellentesque scelerisque eget enimque sagittis vestibulum yes commodo nisl egestas tellus et at previous	Next consectetur nisl nulla imperdiet	submit sed nunc sociis vibor congue euismod Submit cancel

Click on the "cancel" button.

Last reward: **-1.00**

Last 10 average: **-0.27**

Time left: **10 / 10sec**

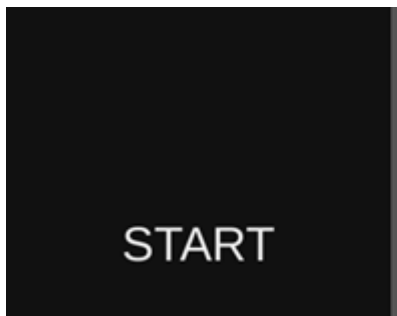
Episodes done: **5**

Click on the "Previous" button.

in semper gravida:

fames eget quis:

Last reward: **0.84**  
Last 10 average: **0.22**  
Time left: **9 / 10sec**  
Episodes done: **3**



Last reward: **0.82**  
Last 10 average: **0.05**  
Time left: -  
Episodes done: **7**

<p>Enter the <b>username</b> "nathalie" and the <b>password</b> "17/RP" into the text fields and press login.</p> <p>Username <input type="text"/></p> <p>Password <input type="text"/></p> <p><input type="button" value="Login"/></p>	<p>Enter the <b>username</b> "dannee" and the <b>password</b> "8F" into the text fields and press login.</p> <p>Username <input type="text"/></p> <p>Password <input type="text"/></p> <p><input type="button" value="Login"/></p>	<p>Enter the <b>username</b> "denene" and the <b>password</b> "ykwbo" into the text fields and press login.</p> <p>Username <input type="text"/></p> <p>Password <input type="text"/></p> <p><input type="button" value="Login"/></p>	<p>Enter the <b>username</b> "nacie" and the <b>password</b> "272vd" into the text fields and press login.</p> <p>Username <input type="text"/></p> <p>Password <input type="text"/></p> <p><input type="button" value="Login"/></p>	<p>Enter the <b>username</b> "ignacio" and the <b>password</b> "6" into the text fields and press login.</p> <p>Username <input type="text"/></p> <p>Password <input type="text"/></p> <p><input type="button" value="Login"/></p>	<p>Enter the <b>username</b> "burnan" and the <b>password</b> "RE" into the text fields and press login.</p> <p>Username <input type="text"/></p> <p>Password <input type="text"/></p> <p><input type="button" value="Login"/></p>
---	--	---	--	--	--

Enter the **username** "nathalie" and the **password** "6928q" into the text fields and press login.

Username

Password

Last reward: **-1.00**  
Last 10 average: **-1.00**  
Time left: **5 / 10sec**  
Episodes done: **3**

Enter the **username** "annis" and the **password** "pC1" into the text fields and press login.

Username

Password

Login

Last reward: **-1.00**

Last 10 average: **-1.00**

Time left: **4 / 10sec**

Episodes done: **5**

Enter the **username** "olin" and the **password** "Ky" into the text fields and press login.

Username

Password

Login

Last reward: **-1.00**

Last 10 average: **-1.00**

Time left: **6 / 10sec**

Episodes done: **2**

Book the cheapest one-way flight from: HBB to: SWD on 10/25/2016.	Book the shortest one-way flight from: Telluride, CO to: WAS on 12/13/2016.	Book the shortest one-way flight from: GPT to: BIL on 10/03/2016.	Book the cheapest one-way flight from: LCH to: GGG on 12/18/2016.	Book the shortest one-way flight from: Venetie, AK to: Twin Falls, ID on 10/30/2016.	Book the cheapest one-way flight from: West Yellowstone, MT to: Killeen, TX on 12/04/2016.
Book Your One-Way Flight	Book Your One-Way Flight	Book Your One-Way Flight	Book Your One-Way Flight	Book Your One-Way Flight	Book Your One-Way Flight
From:	From:	From:	From:	From:	From:
To:	To:	To:	To:	To:	To:
Departure Date	Departure Date	Departure Date	Departure Date	Departure Date	Departure Date
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Search	Search	Search	Search	Search	Search





Find the email by **Arlina** and click the star icon to mark it as important.

**Primary**

**Robbie**  
Quis varius.  
Ac. Est neque, ..

**Arlina**  
Nibh integer.  
Sem in eleifend..

**Hephzibah**  
Quis pulvinar.  
Arcu tincidunt ..

Last reward: **-1.00**  
Last 10 average: **-1.00**  
Time left: **30 / 30sec**  
Episodes done: **1**

Find the email by **Audrey** and click the star icon to mark it as important.

**In id.**

Cora to me

Lacus. At sit. Volutpat tellus. Maecenas commodo, purus pellentesque tellus duis leo pulvinar varius.

Reply Forward

Last reward: **-**  
Last 10 average: **-**  
Time left: **21 / 30sec**  
Episodes done: **0**

Find the email by **Kit** and click the star icon to mark it as important.

**Consequat vel.**

Kit to me

Vulputate suspendisse. Sagittis tempor. Sed mi, sapien. Nulla nullam faucibus.

Reply Forward

Last reward: **-1.00**  
Last 10 average: **-1.00**  
Time left: **26 / 30sec**  
Episodes done: **2**

Find the email by **Olenka** and click the star icon to mark it as important.

**Ultrices quisque.**

Olenka to me

Diam nec. Ipsum at. Consectetur. Eget adipiscing consectetur semper mus nam.

Reply Forward

Last reward: **0.88**  
Last 10 average: **-0.30**  
Time left: **26 / 30sec**  
Episodes done: **5**

For the user @nec, click on the "Share via DM" button.	For the user @eget, click on the "Retweet" button.	For the user @lectus, click on the "Retweet" button.	For the user @volutpat, click on the "Like" button.	For the user @kasie, click on the "Reply" button.	For the user @integer, click on the "Share via DM" button.
<b>Christa</b> @et · 11h ago Orci, ultrices consectetur.	<b>Nielsen</b> @moleslie · 1h ago Libero urna, sem et cras.	<b>Acosta</b> @dolores · 8h ago Gravida enim nibh.	<b>Antoinette</b> @thaddeus · 1h ago Arcu. Diam integer pellentesque.	<b>Lyons</b> @vel · 6h ago Fringilla consectetur tortor.	<b>Sib</b> @briana · 9h ago Integer semper aliquam nibh. Odio.
<b>Branch</b> @nec · 9h ago Massa, eget id egestas.	<b>Hanson</b> @sed · 17h ago Tincidunt a.	<b>Bond</b> @chas · 2h ago Diam eget et.	<b>Bertie</b> @fusse · 15h ago Sit vulputate cras aliquam.	<b>Moody</b> @lacus · 9h ago Cursus velit.	<b>Rush</b> @integer · 5h ago Ut diam arcu nulla.
<b>Salaith</b> @tempus · 11h ago Aliquam tempor, quam. Et	<b>Campos</b> @blandit · 5h ago Euismod mauris ornare	<b>Loria</b> @ac · 4h ago Vehicula pulvinar. Mi.	<b>Nathalie</b> @renda · 5h ago Turpis pellentesque id. Enim.	<b>Dinnie</b> @kasie · 3h ago Ut gravida volutpat.	<b>Cherie</b> @ashlea · 14h ago Rhoncus. Vel tempor.

For the user @karrie, click on the "Embed Tweet" button.

Reply Retweet Like ...

**Evaleen** @karrie · 8h ago  
Nec, proin. Mi et.

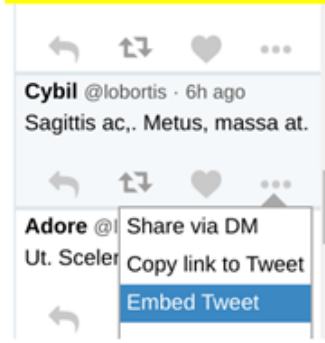
Reply Retweet Like ...

**Vere** @cierra · 17h ago  
Ipsum at vel egestas in.

Reply Retweet Like ...

Last reward: **-1.00**  
Last 10 average: **-1.00**  
Time left: **11 / 15sec**  
Episodes done: **1**

For the user @lobortis, click on the "Mute" button.



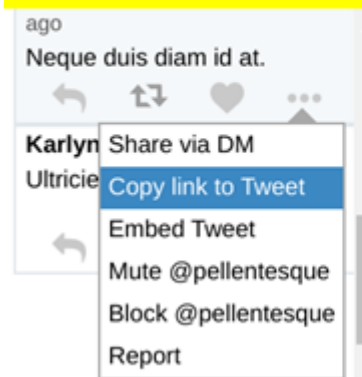
Last reward: **-1.00**

Last 10 average: **-1.00**

Time left: **7 / 15sec**

Episodes done: **4**

For the user @pellentesque, click on the "Copy link to Tweet" button.



Last reward: **-1.00**

Last 10 average: **-1.00**

Time left: **4 / 15sec**

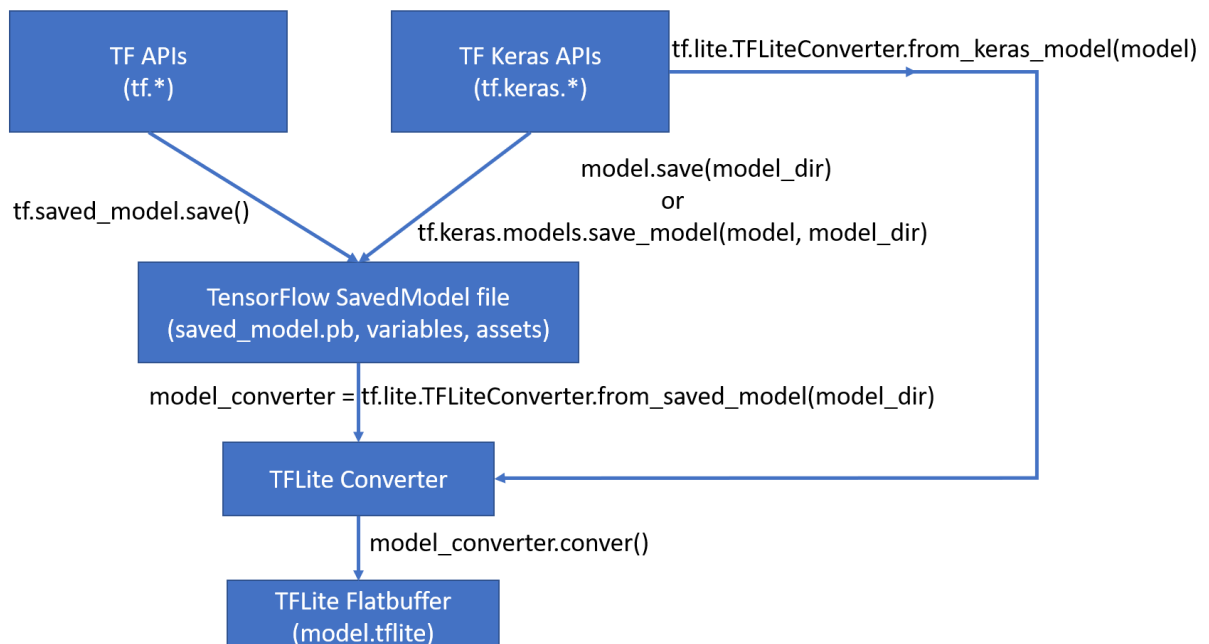
Episodes done: **6**

## Chapter 9: Deploying Deep RL Agents on Multiple Platforms

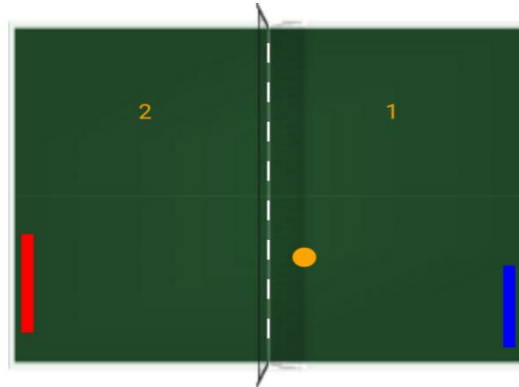
```

  ✓ actor / 1 / model.savedmodel
  |
  |   ✓ assets
  |   |
  |   |   ✓ variables
  |   |   |
  |   |   |   ≡ variables.data-00000-of-00002
  |   |   |   ≡ variables.data-00001-of-00002
  |   |   |   ≡ variables.index
  |   |   |   ≡ saved_model.pb
  |   |
  |   |   ✓ critic / 1 / model.savedmodel
  |   |   |
  |   |   |   ✓ assets
  |   |   |   |
  |   |   |   |   ✓ variables
  |   |   |   |   |
  |   |   |   |   |   ≡ variables.data-00000-of-00002
  |   |   |   |   |   ≡ variables.data-00001-of-00002
  |   |   |   |   |   ≡ variables.index
  |   |   |   |   |   ≡ saved_model.pb
  |   |   |
  |   |   |   ≡ saved_model.pb
  |   |
  |   |   ≡ saved_model.pb
  |
  |   ≡ saved_model.pb

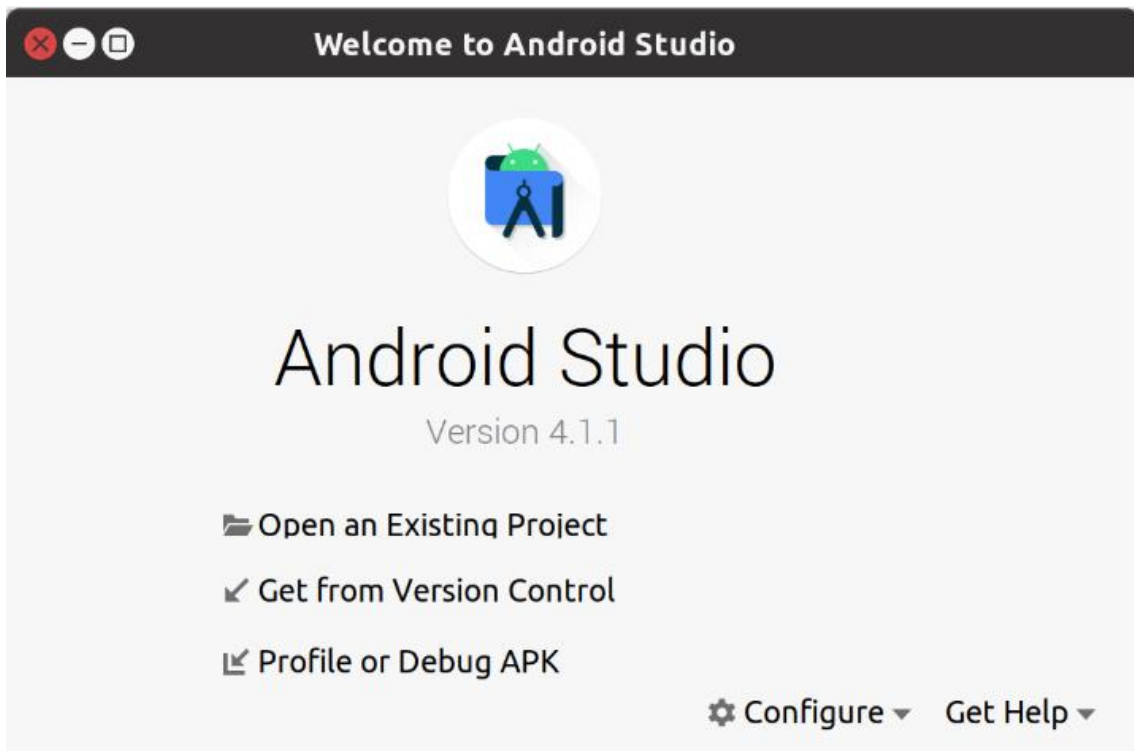
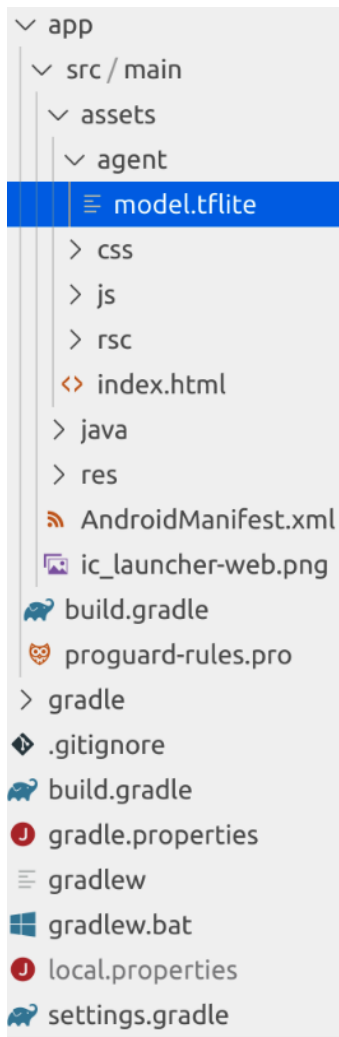
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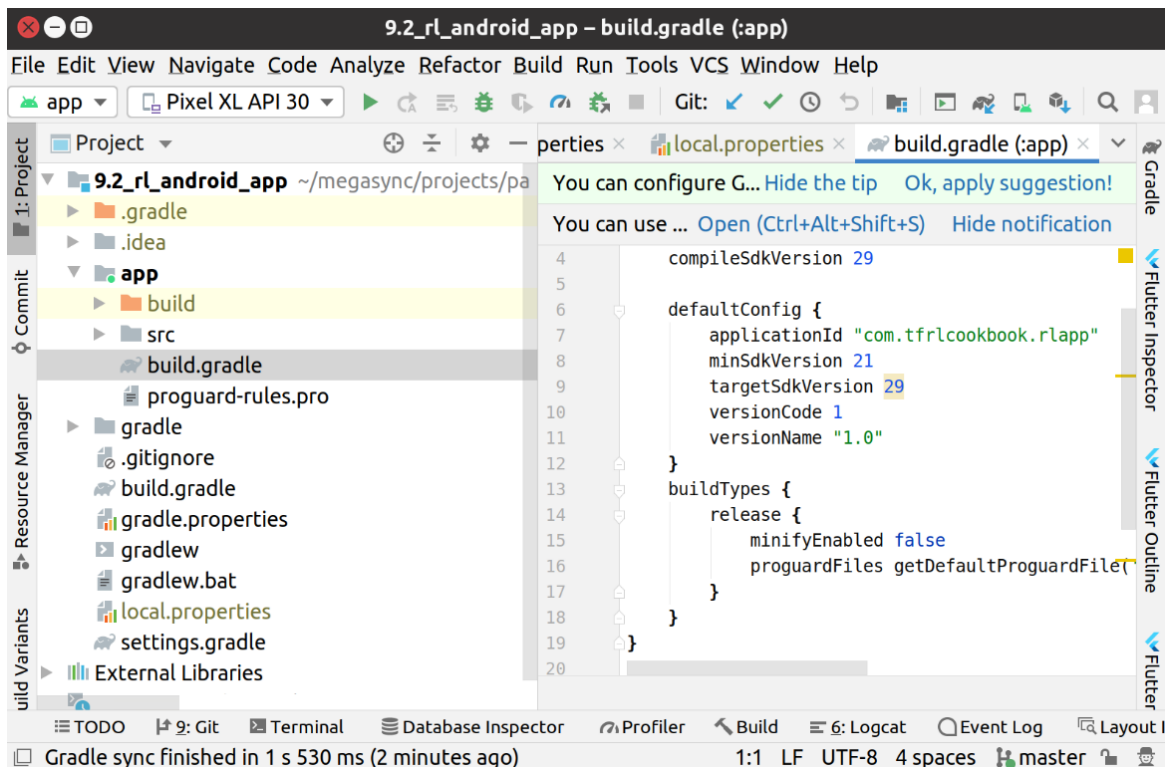
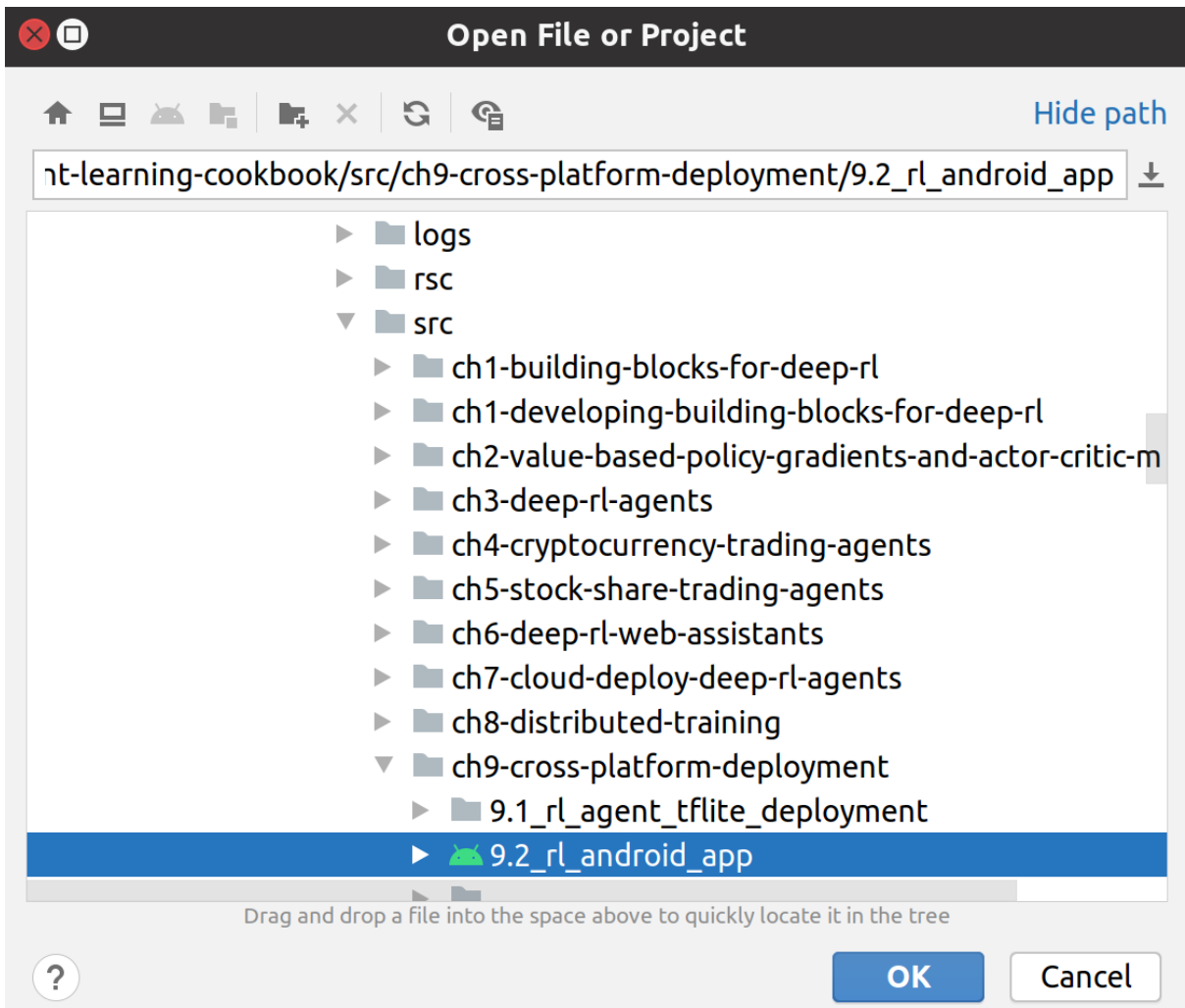


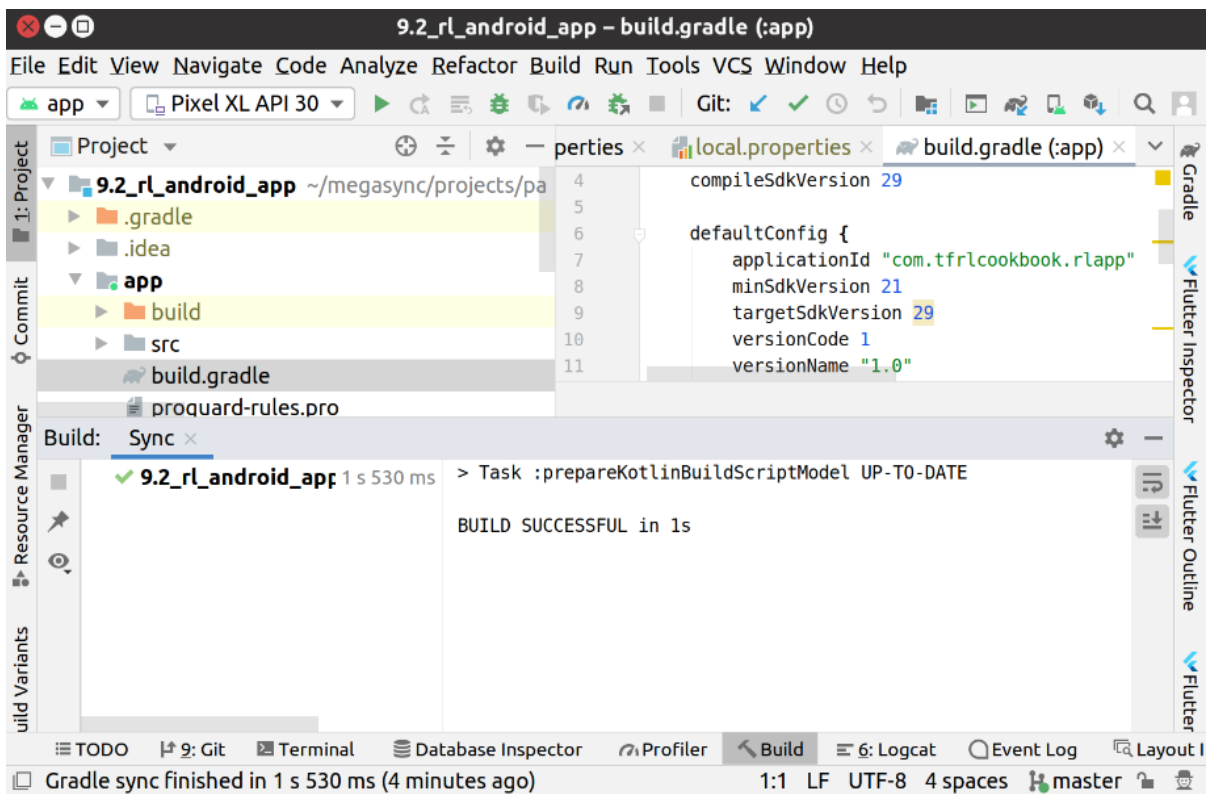
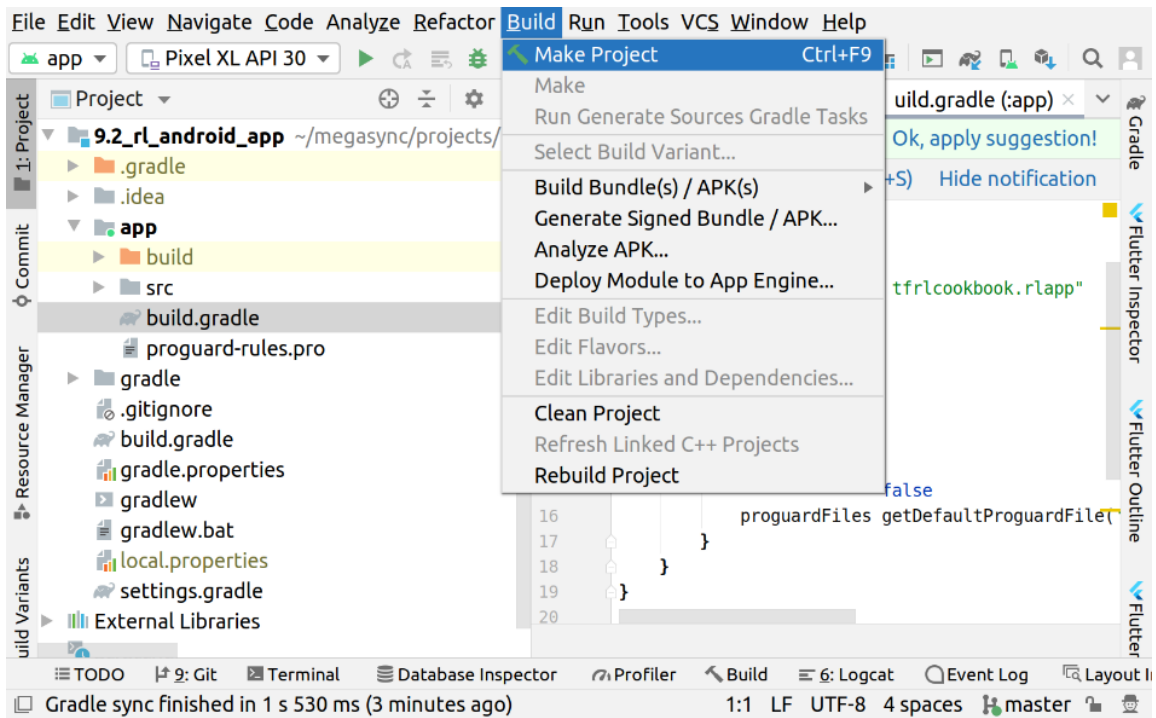
# TFRL-Cookbook Ch9: Table Tennis

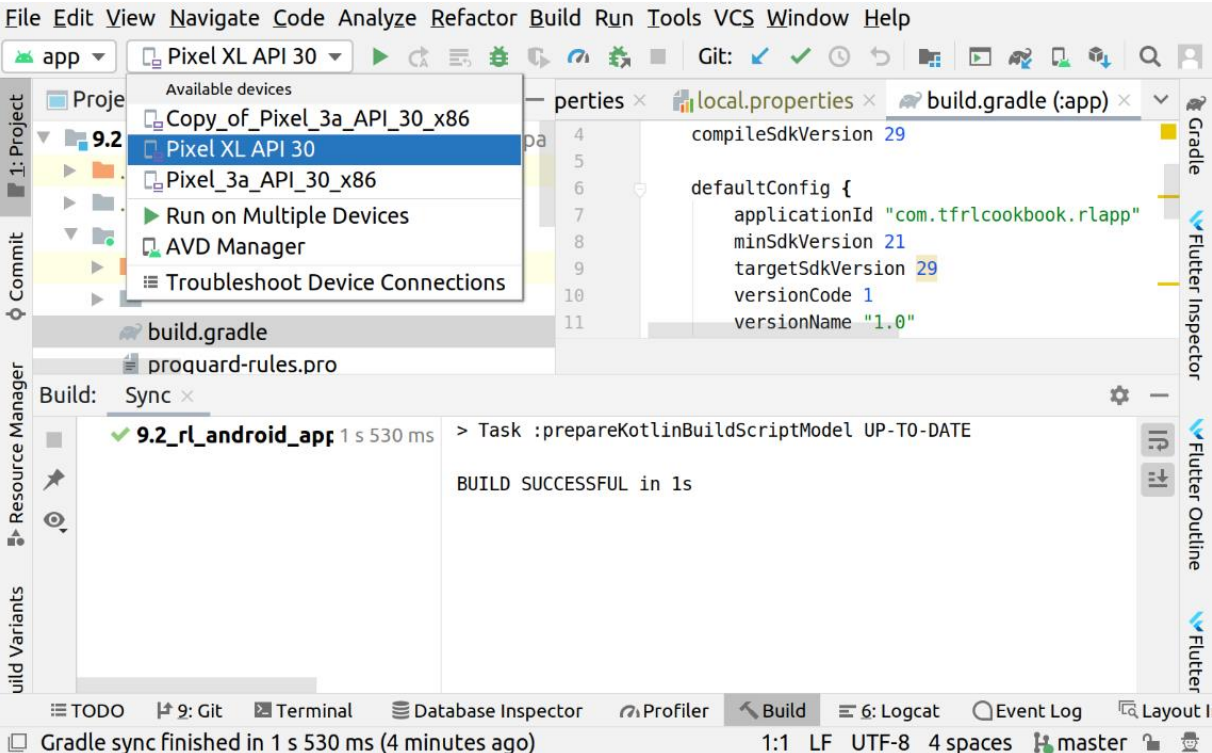
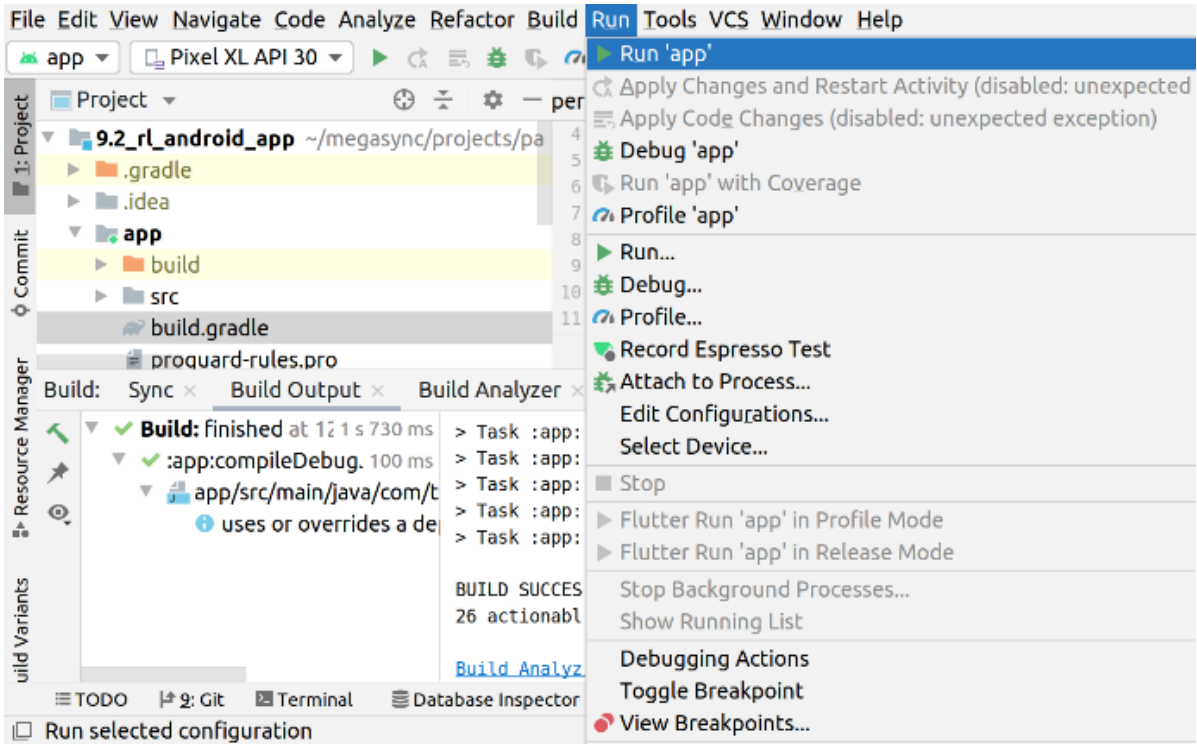


- > .gradle
- > .idea
- > app
- > gradle
- ◆ .gitignore
- 🐘 build.gradle
- Ⓜ gradle.properties
- ☰ gradlew
- 🪟 gradlew.bat
- Ⓜ local.properties
- 🐘 settings.gradle

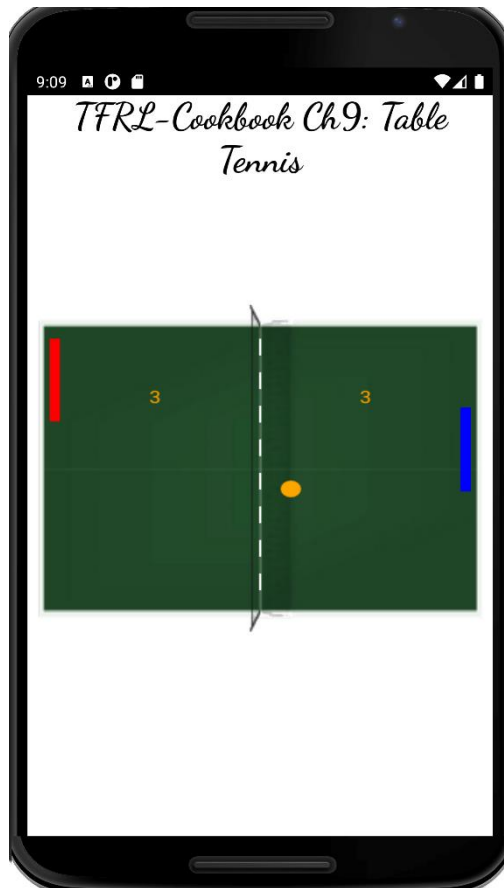
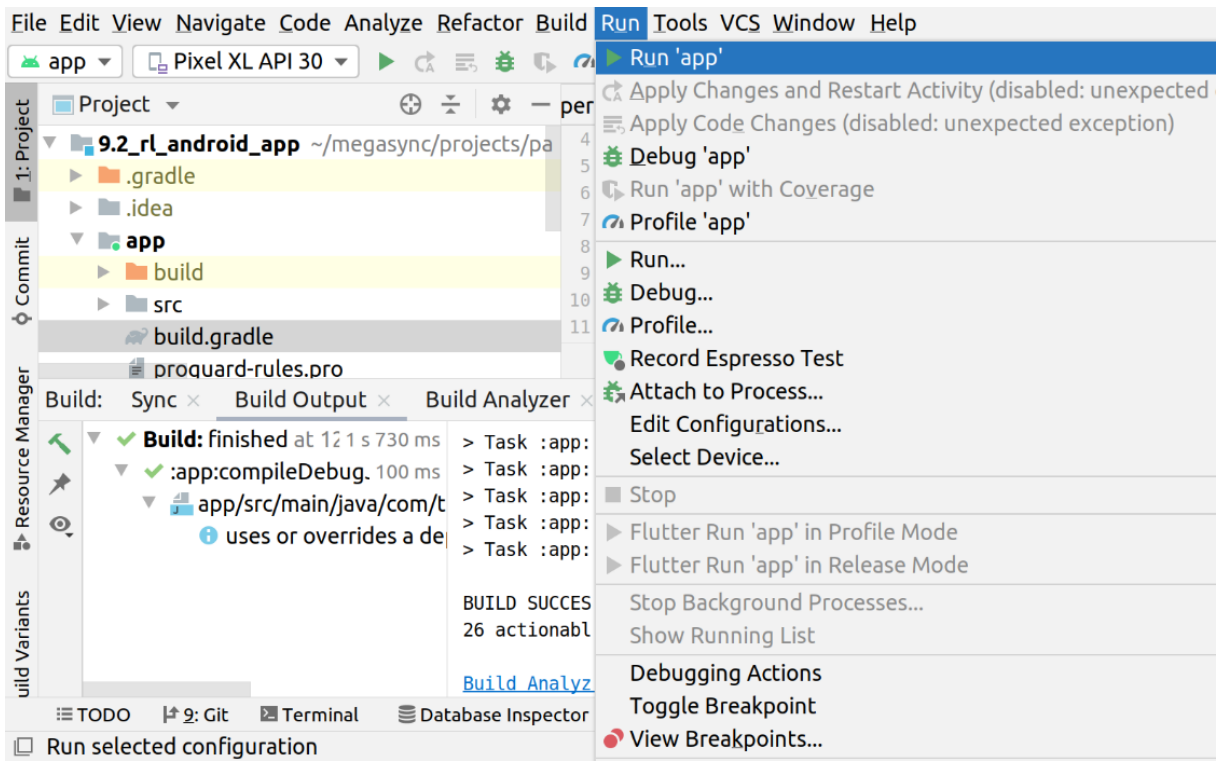












- ▼ trained\_models
  - ▼ DDPG\_MiniWoBSocialMediaMuteUserVisualEnv-v0
    - ▼ actor / 1
      - ≡ model.h5
    - ▼ critic / 1
      - ≡ model.h5

- ▼ DDPG\_MiniWoBSocialMediaMuteUserVisualEnv-v0
  - ▼ actor / 1 / model.tfjs
    - ≡ group1-shard1of1.bin
    - { } model.json
  - ▼ critic / 1 / model.tfjs
    - ≡ group1-shard1of1.bin
    - { } model.json

- ▼ trained\_models
  - > dqn-cartpole
  - ▼ PPO-MiniWoBSocialMediaMuteUserVisualEnv-v0
    - ▼ actor / 1 / model.savedmodel
      - > assets
      - > variables
        - ≡ saved\_model.pb
    - > critic

```

└─ trained_models / PPO_procgen:procgen-ninja-v0
  └─ actor / 1
    └─ model.savedmodel
      └─ assets
      └─ variables
        ├── variables.data-00000-of-00001
        ├── variables.index
        └─ saved_model.pb
      └─ model.tfjs
        ├── group1-shard1of1.bin
        ├── {} model.json
        ├── model.h5
        ├── model.onnx
        └─ model.tflite
    └─ critic / 1
      > model.savedmodel
      > model.tfjs
      └─ model.h5
      └─ model.onnx
      └─ model.tflite

```

