```
In [1]:   import numpy as np
          import tensorflow as tf
          !pip install tensorflow-hub
          !pip install tensorflow-datasets

          import tensorflow_hub as hub
          import tensorflow_datasets as tfds

          train_data, validation_data, test_data = tfds.load(
              name="imdb_reviews",
              split=('train[:60%]', 'train[60%:]', 'test'),
              as_supervised=True
          )

          train_example_batch, train_label_batch = next(iter(train_data.batch(10)))
          print(train_example_batch)
          print(train_label_batch)

          embedding = "https://tfhub.dev/google/tf2-preview/gnews-swivel-20dim/1"
          hub_layer = hub.KerasLayer(
              embedding,
              input_shape=[],
              dtype=tf.string,
              trainable=True
          )

          print(hub_layer(train_example_batch[:3]))

          model = tf.keras.Sequential()
          model.add(hub_layer)
          model.add(tf.keras.layers.Dense(16, activation='relu'))
          model.add(tf.keras.layers.Dense(1))

          model.summary()

          model.compile(
              optimizer='adam',
              loss=tf.keras.losses.BinaryCrossentropy(from_logits=True),
              metrics=['accuracy']
          )

          history = model.fit(
              train_data.shuffle(10000).batch(100),
              epochs=25,
              validation_data=validation_data.batch(100),
              verbose=1
          )

          results = model.evaluate(test_data.batch(100), verbose=2)

          for name, value in zip(model.metrics_names, results):
              print("%s: %.3f" % (name, value))
```

```
2025-07-08 08:58:30.725935: I tensorflow/tsl/cuda/cudart_stub.cc:28] Could not
find cuda drivers on your machine, GPU will not be used.
2025-07-08 08:58:30.784849: I tensorflow/tsl/cuda/cudart_stub.cc:28] Could not
find cuda drivers on your machine, GPU will not be used.
2025-07-08 08:58:30.785970: I tensorflow/core/platform/cpu_feature_guard.cc:18
2] This TensorFlow binary is optimized to use available CPU instructions in per
formance-critical operations.
To enable the following instructions: AVX2 FMA, in other operations, rebuild Te
nsorFlow with the appropriate compiler flags.
2025-07-08 08:58:31.977711: W tensorflow/compiler/tf2tensorrt/utils/py_utils.c
c:38] TF-TRT Warning: Could not find TensorRT
Collecting tensorflow-hub
  Using cached tensorflow_hub-0.16.1-py2.py3-none-any.whl (30 kB)
Collecting numpy>=1.12.0
  Downloading numpy-1.24.4-cp38-cp38-manylinux_2_17_x86_64.manylinux2014_x86_6
4.whl (17.3 MB)
                                           ━━━━━━━━ 17.3/17.3 MB 81.0 MB/s eta 0:00:0
0
^C
ERROR: Operation cancelled by user

[notice] A new release of pip is available: 23.0.1 -> 25.0.1
[notice] To update, run: pip install --upgrade pip
Collecting tensorflow-datasets
  Using cached tensorflow_datasets-4.9.2-py3-none-any.whl (5.4 MB)
Collecting toml
  Using cached toml-0.10.2-py2.py3-none-any.whl (16 kB)
Collecting tqdm
  Using cached tqdm-4.67.1-py3-none-any.whl (78 kB)
Collecting array-record
  Using cached array_record-0.4.0-py38-none-any.whl (3.0 MB)
Collecting importlib-resources
  Using cached importlib_resources-6.4.5-py3-none-any.whl (36 kB)
Collecting psutil
  Using cached psutil-7.0.0-cp36-abi3-manylinux_2_12_x86_64.manylinux2010_x86_6
4.manylinux_2_17_x86_64.manylinux2014_x86_64.whl (277 kB)
Collecting wrapt
  Using cached wrapt-1.17.2-cp38-cp38-manylinux_2_5_x86_64.manylinux1_x86_64.ma
nylinux_2_17_x86_64.manylinux2014_x86_64.whl (85 kB)
Collecting termcolor
  Using cached termcolor-2.4.0-py3-none-any.whl (7.7 kB)
Collecting etils[enp,epath]>=0.9.0
  Using cached etils-1.3.0-py3-none-any.whl (126 kB)
Collecting numpy
  Using cached numpy-1.24.4-cp38-cp38-manylinux_2_17_x86_64.manylinux2014_x86_6
4.whl (17.3 MB)
Collecting protobuf>=3.20
  Downloading protobuf-5.29.5-cp38-abi3-manylinux2014_x86_64.whl (319 kB)
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Collecting requests>=2.19.0
  Using cached requests-2.32.4-py3-none-any.whl (64 kB)
Collecting click
  Using cached click-8.1.8-py3-none-any.whl (98 kB)
```

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Collecting tensorflow-metadata
  Using cached tensorflow_metadata-1.14.0-py3-none-any.whl (28 kB)
Collecting dm-tree
  Using cached dm_tree-0.1.8-cp38-cp38-manylinux_2_17_x86_64.manylinux2014_x8
6_64.whl (152 kB)
Collecting promise
  Using cached promise-2.3-py3-none-any.whl
Collecting absl-py
  Using cached absl_py-2.3.1-py3-none-any.whl (135 kB)
Collecting typing_extensions
  Downloading typing_extensions-4.13.2-py3-none-any.whl (45 kB)
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Collecting zipp
  Using cached zipp-3.20.2-py3-none-any.whl (9.2 kB)
Collecting certifi>=2017.4.17
  Using cached certifi-2025.6.15-py3-none-any.whl (157 kB)
Collecting idna<4,>=2.5
  Using cached idna-3.10-py3-none-any.whl (70 kB)
Collecting charset_normalizer<4,>=2
  Using cached charset_normalizer-3.4.2-cp38-cp38-manylinux_2_17_x86_64.manylin
ux2014_x86_64.whl (147 kB)
Collecting urllib3<3,>=1.21.1
  Using cached urllib3-2.2.3-py3-none-any.whl (126 kB)
Collecting six
  Using cached six-1.17.0-py2.py3-none-any.whl (11 kB)
Collecting absl-py
  Using cached absl_py-1.4.0-py3-none-any.whl (126 kB)
Collecting googleapis-common-protos<2,>=1.52.0
  Using cached googleapis_common_protos-1.70.0-py3-none-any.whl (294 kB)
Collecting protobuf>=3.20
  Using cached protobuf-3.20.3-cp38-cp38-manylinux_2_5_x86_64.manylinux1_x86_6
4.whl (1.0 MB)
Installing collected packages: dm-tree, zipp, wrapt, urllib3, typing_extension
s, tqdm, toml, termcolor, six, psutil, protobuf, numpy, idna, etils, click, cha
rset_normalizer, certifi, absl-py, requests, promise, importlib-resources, goog
leapis-common-protos, tensorflow-metadata, array-record, tensorflow-datasets
ERROR: pip's dependency resolver does not currently take into account all the p
ackages that are installed. This behaviour is the source of the following depen
dency conflicts.
tensorflow 2.13.1 requires numpy<=1.24.3,>=1.22, but you have numpy 1.24.4 whic
h is incompatible.
tensorflow 2.13.1 requires typing-extensions<4.6.0,>=3.6.6, but you have typin
g-extensions 4.13.2 which is incompatible.
conda 24.9.2 requires setuptools>=60.0.0, but you have setuptools 56.0.0 which
is incompatible.
snowflake-connector-python 3.12.1 requires urllib3<2.0.0,>=1.21.1; python_versi
on < "3.10", but you have urllib3 2.2.3 which is incompatible.
grpcio-status 1.62.3 requires protobuf>=4.21.6, but you have protobuf 3.20.3 wh
ich is incompatible.
botocore 1.35.10 requires urllib3<1.27,>=1.25.4; python_version < "3.10", but y
ou have urllib3 2.2.3 which is incompatible.
Successfully installed absl-py-1.4.0 array-record-0.4.0 certifi-2025.6.15 chars
et_normalizer-3.4.2 click-8.1.8 dm-tree-0.1.8 etils-1.3.0 googleapis-common-pro
tos-1.70.0 idna-3.10 importlib-resources-6.4.5 numpy-1.24.4 promise-2.3 protobu
```

f-3.20.3 psutil-7.0.0 requests-2.32.4 six-1.17.0 tensorflow-datasets-4.9.2 tensorflow-metadata-1.14.0 termcolor-2.4.0 toml-0.10.2 tqdm-4.67.1 typing_extensions-4.13.2 urllib3-2.2.3 wrapt-1.17.2 zipp-3.20.2
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asets-4.9.2.dist-info already exists. Specify --upgrade to force replacement.
WARNING: Target directory /opt/conda/lib/python3.8/site-packages/bin already ex
ists. Specify --upgrade to force replacement.

[notice] A new release of pip is available: 23.0.1 -> 25.0.1

/opt/conda/lib/python3.8/site-packages/tqdm/auto.py:21: TqdmWarning: IProgress not found. Please update jupyter and ipywidgets. See https://ipywidgets.readthe docs.io/en/stable/user_install.html
  from .autonotebook import tqdm as notebook_tqdm
2025-07-08 08:58:49.570110: W tensorflow/tsl/platform/cloud/google_auth_provide r.cc:184] All attempts to get a Google authentication bearer token failed, retu rning an empty token. Retrieving token from files failed with "NOT_FOUND: Could not locate the credentials file.". Retrieving token from GCE failed with "FAILE D_PRECONDITION: Error executing an HTTP request: libcurl code 6 meaning 'Could n't resolve host name', error details: Could not resolve host: metadata.googl e.internal".
Downloading and preparing dataset 80.23 MiB (download: 80.23 MiB, generated: Un known size, total: 80.23 MiB) to /root/tensorflow_datasets/imdb_reviews/plain_t ext/1.0.0...
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Dl Size...:  72%|████████     | 58/80 [00:05<00:00, 24.45 MiB/s]
Dl Completed...:     0%|                    | 0/1 [00:05<?, ? url/s]
Dl Completed...:     0%|                    | 0/1 [00:05<?, ? url/s]
Dl Completed...:     0%|                    | 0/1 [00:05<?, ? url/s]
Dl Size...:  76%|█████████    | 61/80 [00:05<00:00, 24.39 MiB/s]
Dl Completed...:     0%|                    | 0/1 [00:05<?, ? url/s]
```

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Dl Completed...:    0%|            | 0/1 [00:05<?, ? url/s]
Dl Completed...:    0%|            | 0/1 [00:05<?, ? url/s]
Dl Size...:   80%|██████   | 64/80 [00:05<00:00, 24.08 MiB/s]
Dl Completed...:    0%|            | 0/1 [00:05<?, ? url/s]
Dl Completed...:    0%|            | 0/1 [00:05<?, ? url/s]
Dl Completed...:    0%|            | 0/1 [00:05<?, ? url/s]
Dl Size...:   84%|███████  | 67/80 [00:05<00:00, 20.34 MiB/s]
Dl Completed...:    0%|            | 0/1 [00:05<?, ? url/s]
Dl Completed...:    0%|            | 0/1 [00:05<?, ? url/s]
Dl Completed...:    0%|            | 0/1 [00:05<?, ? url/s]
Dl Size...:   88%|███████  | 70/80 [00:05<00:00, 18.84 MiB/s]
Dl Completed...:    0%|            | 0/1 [00:05<?, ? url/s]
Dl Completed...:    0%|            | 0/1 [00:05<?, ? url/s]
Dl Completed...:    0%|            | 0/1 [00:05<?, ? url/s]
Dl Size...:   91%|███████  | 73/80 [00:05<00:00, 19.81 MiB/s]
Dl Completed...:    0%|            | 0/1 [00:06<?, ? url/s]
Dl Completed...:    0%|            | 0/1 [00:06<?, ? url/s]
Dl Completed...:    0%|            | 0/1 [00:06<?, ? url/s]
Dl Size...:   95%|████████ | 76/80 [00:06<00:00, 18.38 MiB/s]
Dl Completed...:    0%|            | 0/1 [00:06<?, ? url/s]
Dl Completed...:    0%|            | 0/1 [00:06<?, ? url/s]
Dl Completed...:    0%|            | 0/1 [00:06<?, ? url/s]
Dl Size...:   99%|████████ | 79/80 [00:06<00:00, 19.60 MiB/s]
Dl Completed...:    0%|            | 0/1 [00:06<?, ? url/s]
Dl Completed...: 100%|████████| 1/1 [00:06<00:00,  6.38s/ url]
Dl Size...:  100%|████████| 80/80 [00:06<00:00, 12.53 MiB/s]
Dl Completed...: 100%|████████| 1/1 [00:06<00:00,  6.39s/ url]
Generating splits...:    0%|        | 0/3 [00:00<?, ? splits/s]
Generating train examples...:    0%|        | 0/25000 [00:00<?, ? examples/s]
Generating train examples...:    0%|        | 1/25000 [00:02<17:29:57,  2.52s/
examples]
Generating train examples...:    2%||        | 483/25000 [00:02<01:34, 258.95 e
xamples/s]
Generating train examples...:    4%||        | 905/25000 [00:02<00:44, 540.86 e
xamples/s]
Generating train examples...:    5%||        | 1366/25000 [00:02<00:25, 916.28
examples/s]
Generating train examples...:    7%||        | 1811/25000 [00:02<00:17, 1327.78
examples/s]
Generating train examples...:    9%||        | 2222/25000 [00:03<00:13, 1723.22
examples/s]
Generating train examples...:   11%|█        | 2679/25000 [00:03<00:10, 2204.76
examples/s]
Generating train examples...:   13%|█        | 3135/25000 [00:03<00:08, 2661.89
examples/s]
Generating train examples...:   14%|█        | 3570/25000 [00:03<00:07, 2852.91
examples/s]
Generating train examples...:   16%|█        | 3975/25000 [00:03<00:07, 2985.34
examples/s]
Generating train examples...:   18%|█        | 4376/25000 [00:03<00:06, 3226.38
examples/s]
Generating train examples...:   19%|█        | 4769/25000 [00:03<00:05, 3401.81
examples/s]
Generating train examples...:   21%|█        | 5159/25000 [00:03<00:05, 3444.86
```

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examples/s]
Generating train examples...:  22%|██        | 5582/25000 [00:03<00:05, 3655.55
examples/s]
Generating train examples...:  24%|██        | 5975/25000 [00:03<00:05, 3665.50
examples/s]
Generating train examples...:  26%|██        | 6402/25000 [00:04<00:04, 3834.22
examples/s]
Generating train examples...:  27%|██        | 6839/25000 [00:04<00:04, 3986.79
examples/s]
Generating train examples...:  29%|██        | 7249/25000 [00:04<00:04, 3849.06
examples/s]
Generating train examples...:  31%|███       | 7670/25000 [00:04<00:04, 3949.92
examples/s]
Generating train examples...:  32%|███       | 8072/25000 [00:04<00:04, 3725.46
examples/s]
Generating train examples...:  34%|███       | 8452/25000 [00:04<00:04, 3675.75
examples/s]
Generating train examples...:  35%|███       | 8825/25000 [00:04<00:04, 3599.83
examples/s]
Generating train examples...:  37%|███       | 9189/25000 [00:04<00:04, 3513.32
examples/s]
Generating train examples...:  38%|███       | 9543/25000 [00:04<00:04, 3454.75
examples/s]
Generating train examples...:  40%|████      | 9890/25000 [00:05<00:04, 3412.20
examples/s]
Generating train examples...:  41%|████      | 10259/25000 [00:05<00:04, 3488.0
8 examples/s]
Generating train examples...:  43%|████      | 10725/25000 [00:05<00:03, 3826.0
9 examples/s]
Generating train examples...:  45%|████      | 11173/25000 [00:05<00:03, 4014.1
9 examples/s]
Generating train examples...:  46%|████      | 11577/25000 [00:05<00:03, 3950.8
5 examples/s]
Generating train examples...:  48%|████      | 12018/25000 [00:05<00:03, 4081.1
2 examples/s]
Generating train examples...:  50%|█████     | 12476/25000 [00:05<00:02, 4223.8
7 examples/s]
Generating train examples...:  52%|█████     | 12955/25000 [00:05<00:02, 4386.9
3 examples/s]
Generating train examples...:  54%|█████     | 13458/25000 [00:05<00:02, 4576.6
1 examples/s]
Generating train examples...:  56%|█████     | 13917/25000 [00:05<00:02, 4389.9
1 examples/s]
Generating train examples...:  57%|█████     | 14359/25000 [00:06<00:02, 4329.8
0 examples/s]
Generating train examples...:  59%|█████     | 14794/25000 [00:06<00:02, 4127.6
0 examples/s]
Generating train examples...:  61%|██████    | 15210/25000 [00:06<00:02, 4085.1
0 examples/s]
Generating train examples...:  63%|██████    | 15636/25000 [00:06<00:02, 4133.5
8 examples/s]
Generating train examples...:  64%|██████    | 16051/25000 [00:06<00:02, 3994.7
5 examples/s]
Generating train examples...:  66%|██████    | 16460/25000 [00:06<00:02, 4021.4
```

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7 examples/s]
Generating train examples...:  68%|████     | 16884/25000 [00:06<00:01, 4084.0
1 examples/s]
Generating train examples...:  69%|████     | 17357/25000 [00:06<00:01, 4272.4
4 examples/s]
Generating train examples...:  71%|████     | 17874/25000 [00:06<00:01, 4533.2
5 examples/s]
Generating train examples...:  73%|████     | 18360/25000 [00:07<00:01, 4629.1
0 examples/s]
Generating train examples...:  75%|████     | 18826/25000 [00:07<00:01, 4638.1
1 examples/s]
Generating train examples...:  77%|████     | 19322/25000 [00:07<00:01, 4729.3
4 examples/s]
Generating train examples...:  79%|████     | 19796/25000 [00:07<00:01, 4663.6
2 examples/s]
Generating train examples...:  81%|████     | 20263/25000 [00:07<00:01, 4471.4
2 examples/s]
Generating train examples...:  83%|████     | 20713/25000 [00:07<00:01, 4213.9
7 examples/s]
Generating train examples...:  85%|████     | 21139/25000 [00:07<00:00, 4140.9
8 examples/s]
Generating train examples...:  86%|████     | 21556/25000 [00:07<00:00, 4102.3
6 examples/s]
Generating train examples...:  88%|████     | 22059/25000 [00:07<00:00, 4365.6
8 examples/s]
Generating train examples...:  90%|████     | 22509/25000 [00:07<00:00, 4402.5
4 examples/s]
Generating train examples...:  92%|████     | 22975/25000 [00:08<00:00, 4476.4
5 examples/s]
Generating train examples...:  94%|████     | 23430/25000 [00:08<00:00, 4497.3
2 examples/s]
Generating train examples...:  96%|████     | 23899/25000 [00:08<00:00, 4553.1
8 examples/s]
Generating train examples...:  97%|████     | 24356/25000 [00:08<00:00, 4525.2
2 examples/s]
Generating train examples...:  99%|████     | 24826/25000 [00:08<00:00, 4576.9
5 examples/s]

Shuffling /root/tensorflow_datasets/imdb_reviews/plain_text/1.0.0.incompleteEMJ
OT5/imdb_reviews-train.tfrecord*...:   0%|        | 0/25000 [00:00<?, ? examp
les/s]
Shuffling /root/tensorflow_datasets/imdb_reviews/plain_text/1.0.0.incompleteEMJ
OT5/imdb_reviews-train.tfrecord*...:  83%|████     | 20674/25000 [00:00<00:00,
206726.40 examples/s]
Generating splits...:  33%|██      | 1/3 [00:12<00:25, 12.91s/ splits]
Generating test examples...:   0%|        | 0/25000 [00:00<?, ? examples/s]
Generating test examples...:   0%|        | 1/25000 [00:00<4:41:32,  1.48 exa
mples/s]
Generating test examples...:   2%||       | 424/25000 [00:00<00:33, 739.30 ex
amples/s]
Generating test examples...:   4%||       | 888/25000 [00:00<00:15, 1517.45 e
xamples/s]
Generating test examples...:   6%||       | 1412/25000 [00:00<00:10, 2342.68
examples/s]
```
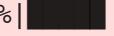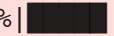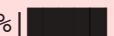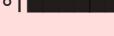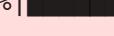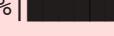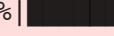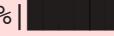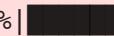
```
Generating test examples...:   8%|█        | 1888/25000 [00:01<00:07, 2920.72
examples/s]
Generating test examples...:   9%|█        | 2326/25000 [00:01<00:06, 3239.73
examples/s]
Generating test examples...:  11%|█        | 2755/25000 [00:01<00:06, 3496.67
examples/s]
Generating test examples...:  13%|█        | 3181/25000 [00:01<00:06, 3433.39
examples/s]
Generating test examples...:  14%|█        | 3577/25000 [00:01<00:06, 3521.97
examples/s]
Generating test examples...:  16%|█        | 4087/25000 [00:01<00:05, 3949.74
examples/s]
Generating test examples...:  18%|█        | 4608/25000 [00:01<00:04, 4300.00
examples/s]
Generating test examples...:  20%|██       | 5118/25000 [00:01<00:04, 4526.75
examples/s]
Generating test examples...:  23%|██       | 5631/25000 [00:01<00:04, 4701.35
examples/s]
Generating test examples...:  24%|██       | 6116/25000 [00:02<00:04, 4606.06
examples/s]
Generating test examples...:  26%|██       | 6587/25000 [00:02<00:04, 4473.40
examples/s]
Generating test examples...:  28%|██       | 7046/25000 [00:02<00:03, 4506.22
examples/s]
Generating test examples...:  30%|███      | 7503/25000 [00:02<00:03, 4476.65
examples/s]
Generating test examples...:  32%|███      | 7955/25000 [00:02<00:03, 4410.70
examples/s]
Generating test examples...:  34%|███      | 8414/25000 [00:02<00:03, 4462.29
examples/s]
Generating test examples...:  35%|███      | 8863/25000 [00:02<00:03, 4334.41
examples/s]
Generating test examples...:  37%|███      | 9315/25000 [00:02<00:03, 4385.56
examples/s]
Generating test examples...:  39%|███      | 9771/25000 [00:02<00:03, 4432.04
examples/s]
Generating test examples...:  41%|████     | 10248/25000 [00:02<00:03, 4531.16
examples/s]
Generating test examples...:  43%|████     | 10726/25000 [00:03<00:03, 4603.65
examples/s]
Generating test examples...:  45%|████     | 11188/25000 [00:03<00:03, 4555.25
examples/s]
Generating test examples...:  47%|████     | 11645/25000 [00:03<00:02, 4477.18
examples/s]
Generating test examples...:  48%|████     | 12094/25000 [00:03<00:02, 4446.39
examples/s]
Generating test examples...:  50%|█████    | 12578/25000 [00:03<00:02, 4559.12
examples/s]
Generating test examples...:  52%|█████    | 13046/25000 [00:03<00:02, 4594.26
examples/s]
Generating test examples...:  54%|█████    | 13551/25000 [00:03<00:02, 4727.84
examples/s]
Generating test examples...:  56%|█████    | 14050/25000 [00:03<00:02, 4805.53
examples/s]
```
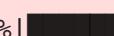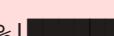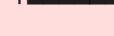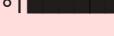
```
Generating test examples...:  58%|████     | 14578/25000 [00:03<00:02, 4944.07
examples/s]
Generating test examples...:  60%|████     | 15114/25000 [00:03<00:01, 5053.50
examples/s]
Generating test examples...:  62%|████     | 15620/25000 [00:04<00:01, 4967.43
examples/s]
Generating test examples...:  65%|████     | 16145/25000 [00:04<00:01, 5047.25
examples/s]
Generating test examples...:  67%|████     | 16674/25000 [00:04<00:01, 5118.46
examples/s]
Generating test examples...:  69%|████     | 17187/25000 [00:04<00:01, 4898.03
examples/s]
Generating test examples...:  71%|████     | 17679/25000 [00:04<00:01, 4726.40
examples/s]
Generating test examples...:  73%|████     | 18155/25000 [00:04<00:01, 4734.15
examples/s]
Generating test examples...:  75%|████     | 18676/25000 [00:04<00:01, 4870.10
examples/s]
Generating test examples...:  77%|████     | 19165/25000 [00:04<00:01, 4296.67
examples/s]
Generating test examples...:  79%|████     | 19713/25000 [00:04<00:01, 4614.15
examples/s]
Generating test examples...:  81%|████     | 20220/25000 [00:05<00:01, 4739.85
examples/s]
Generating test examples...:  83%|████     | 20733/25000 [00:05<00:00, 4849.72
examples/s]
Generating test examples...:  85%|████     | 21226/25000 [00:05<00:00, 4808.44
examples/s]
Generating test examples...:  87%|████     | 21752/25000 [00:05<00:00, 4938.44
examples/s]
Generating test examples...:  89%|████     | 22260/25000 [00:05<00:00, 4972.84
examples/s]
Generating test examples...:  91%|████     | 22761/25000 [00:05<00:00, 4837.96
examples/s]
Generating test examples...:  93%|████     | 23248/25000 [00:05<00:00, 4725.34
examples/s]
Generating test examples...:  95%|████     | 23723/25000 [00:05<00:00, 4670.18
examples/s]
Generating test examples...:  97%|████     | 24257/25000 [00:05<00:00, 4862.68
examples/s]
Generating test examples...:  99%|████     | 24811/25000 [00:05<00:00, 5057.58
examples/s]

Shuffling /root/tensorflow_datasets/imdb_reviews/plain_text/1.0.0.incompleteEMJ
OT5/imdb_reviews-test.tfrecord*...:   0%|          | 0/25000 [00:00<?, ? exampl
es/s]
Shuffling /root/tensorflow_datasets/imdb_reviews/plain_text/1.0.0.incompleteEMJ
OT5/imdb_reviews-test.tfrecord*...:  70%|████    | 17555/25000 [00:00<00:00,
175540.96 examples/s]
Generating splits...:  67%|████    | 2/3 [00:24<00:12, 12.29s/ splits]
Generating unsupervised examples...:   0%|          | 0/50000 [00:00<?, ? examp
les/s]
Generating unsupervised examples...:   0%|          | 1/50000 [00:04<60:54:38,
4.39s/ examples]
```

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Generating unsupervised examples...:   1%|              | 502/50000 [00:04<05:12, 1
58.26 examples/s]
Generating unsupervised examples...:   2%||             | 992/50000 [00:04<02:15, 3
62.73 examples/s]
Generating unsupervised examples...:   3%||            | 1487/50000 [00:04<01:17,
628.89 examples/s]
Generating unsupervised examples...:   4%||            | 1954/50000 [00:04<00:51,
938.15 examples/s]
Generating unsupervised examples...:   5%||            | 2396/50000 [00:04<00:37,
1275.37 examples/s]
Generating unsupervised examples...:   6%||            | 2861/50000 [00:04<00:27,
1690.09 examples/s]
Generating unsupervised examples...:   7%|▌            | 3341/50000 [00:05<00:21,
2154.28 examples/s]
Generating unsupervised examples...:   8%|▌            | 3797/50000 [00:05<00:18,
2468.19 examples/s]
Generating unsupervised examples...:   9%|▌            | 4284/50000 [00:05<00:15,
2933.59 examples/s]
Generating unsupervised examples...:   9%|▌            | 4732/50000 [00:05<00:13,
3267.27 examples/s]
Generating unsupervised examples...:  10%|█            | 5178/50000 [00:05<00:12,
3510.75 examples/s]
Generating unsupervised examples...:  11%|█            | 5633/50000 [00:05<00:11,
3769.16 examples/s]
Generating unsupervised examples...:  12%|█            | 6078/50000 [00:05<00:11,
3722.39 examples/s]
Generating unsupervised examples...:  13%|█            | 6586/50000 [00:05<00:10,
4077.70 examples/s]
Generating unsupervised examples...:  14%|█▌           | 7073/50000 [00:05<00:10,
4292.54 examples/s]
Generating unsupervised examples...:  15%|█▌           | 7532/50000 [00:06<00:10,
4192.67 examples/s]
Generating unsupervised examples...:  16%|█▌           | 7972/50000 [00:06<00:10,
4127.44 examples/s]
Generating unsupervised examples...:  17%|█▌           | 8400/50000 [00:06<00:09,
4166.87 examples/s]
Generating unsupervised examples...:  18%|█▌           | 8861/50000 [00:06<00:09,
4290.25 examples/s]
Generating unsupervised examples...:  19%|██           | 9349/50000 [00:06<00:09,
4460.08 examples/s]
Generating unsupervised examples...:  20%|██           | 9802/50000 [00:06<00:09,
4460.43 examples/s]
Generating unsupervised examples...:  21%|██          | 10300/50000 [00:06<00:08,
4612.69 examples/s]
Generating unsupervised examples...:  22%|██          | 10765/50000 [00:06<00:08,
4436.26 examples/s]
Generating unsupervised examples...:  23%|██          | 11254/50000 [00:06<00:08,
4566.82 examples/s]
Generating unsupervised examples...:  23%|██          | 11742/50000 [00:06<00:08,
4656.40 examples/s]
Generating unsupervised examples...:  25%|██▌         | 12273/50000 [00:07<00:07,
4846.81 examples/s]
Generating unsupervised examples...:  26%|██▌         | 12760/50000 [00:07<00:07,
4796.63 examples/s]
```

```
Generating unsupervised examples...:  26%|████        | 13242/50000 [00:07<00:07,
4659.92 examples/s]
Generating unsupervised examples...:  27%|████        | 13710/50000 [00:07<00:08,
4455.64 examples/s]
Generating unsupervised examples...:  28%|████        | 14159/50000 [00:07<00:08,
4462.42 examples/s]
Generating unsupervised examples...:  29%|████        | 14670/50000 [00:07<00:07,
4646.80 examples/s]
Generating unsupervised examples...:  30%|████        | 15139/50000 [00:07<00:07,
4658.41 examples/s]
Generating unsupervised examples...:  31%|████        | 15667/50000 [00:07<00:07,
4839.37 examples/s]
Generating unsupervised examples...:  32%|████        | 16153/50000 [00:07<00:07,
4490.13 examples/s]
Generating unsupervised examples...:  33%|████        | 16622/50000 [00:08<00:07,
4545.48 examples/s]
Generating unsupervised examples...:  34%|████        | 17104/50000 [00:08<00:07,
4622.97 examples/s]
Generating unsupervised examples...:  35%|████        | 17570/50000 [00:08<00:07,
4618.25 examples/s]
Generating unsupervised examples...:  36%|████        | 18035/50000 [00:08<00:07,
4557.31 examples/s]
Generating unsupervised examples...:  37%|████        | 18493/50000 [00:08<00:06,
4526.52 examples/s]
Generating unsupervised examples...:  38%|████        | 18947/50000 [00:08<00:07,
4251.91 examples/s]
Generating unsupervised examples...:  39%|████        | 19376/50000 [00:08<00:07,
4180.02 examples/s]
Generating unsupervised examples...:  40%|████        | 19839/50000 [00:08<00:07,
4306.38 examples/s]
Generating unsupervised examples...:  41%|████        | 20273/50000 [00:08<00:07,
4173.24 examples/s]
Generating unsupervised examples...:  41%|████        | 20712/50000 [00:08<00:06,
4232.99 examples/s]
Generating unsupervised examples...:  42%|████        | 21138/50000 [00:09<00:07,
4115.94 examples/s]
Generating unsupervised examples...:  43%|████        | 21552/50000 [00:09<00:07,
3996.49 examples/s]
Generating unsupervised examples...:  44%|████        | 21954/50000 [00:09<00:07,
3778.19 examples/s]
Generating unsupervised examples...:  45%|████        | 22335/50000 [00:09<00:07,
3774.56 examples/s]
Generating unsupervised examples...:  46%|████▌       | 22766/50000 [00:09<00:06,
3925.37 examples/s]
Generating unsupervised examples...:  46%|████▌       | 23249/50000 [00:09<00:06,
4184.37 examples/s]
Generating unsupervised examples...:  47%|████▌       | 23671/50000 [00:09<00:06,
3891.86 examples/s]
Generating unsupervised examples...:  48%|████▌       | 24066/50000 [00:09<00:06,
3746.30 examples/s]
Generating unsupervised examples...:  49%|████▌       | 24535/50000 [00:09<00:06,
4004.87 examples/s]
Generating unsupervised examples...:  50%|████▌       | 24941/50000 [00:10<00:06,
3804.08 examples/s]
```

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Generating unsupervised examples...:  51%|████    | 25327/50000 [00:10<00:06,
3675.41 examples/s]
Generating unsupervised examples...:  51%|████    | 25699/50000 [00:10<00:06,
3649.40 examples/s]
Generating unsupervised examples...:  52%|████    | 26203/50000 [00:10<00:05,
4038.51 examples/s]
Generating unsupervised examples...:  53%|████    | 26619/50000 [00:10<00:05,
4072.98 examples/s]
Generating unsupervised examples...:  54%|████    | 27090/50000 [00:10<00:05,
4256.82 examples/s]
Generating unsupervised examples...:  55%|████    | 27535/50000 [00:10<00:05,
4312.91 examples/s]
Generating unsupervised examples...:  56%|████    | 27999/50000 [00:10<00:04,
4406.88 examples/s]
Generating unsupervised examples...:  57%|████    | 28475/50000 [00:10<00:04,
4510.56 examples/s]
Generating unsupervised examples...:  58%|████    | 28928/50000 [00:11<00:04,
4391.30 examples/s]
Generating unsupervised examples...:  59%|████    | 29371/50000 [00:11<00:04,
4394.70 examples/s]
Generating unsupervised examples...:  60%|████    | 29814/50000 [00:11<00:04,
4403.52 examples/s]
Generating unsupervised examples...:  61%|████    | 30298/50000 [00:11<00:04,
4532.51 examples/s]
Generating unsupervised examples...:  62%|████    | 30777/50000 [00:11<00:04,
4607.98 examples/s]
Generating unsupervised examples...:  62%|████    | 31239/50000 [00:11<00:04,
4557.16 examples/s]
Generating unsupervised examples...:  63%|████    | 31725/50000 [00:11<00:03,
4643.57 examples/s]
Generating unsupervised examples...:  64%|████    | 32190/50000 [00:11<00:03,
4581.33 examples/s]
Generating unsupervised examples...:  65%|████    | 32649/50000 [00:11<00:03,
4566.78 examples/s]
Generating unsupervised examples...:  66%|████    | 33106/50000 [00:11<00:03,
4285.90 examples/s]
Generating unsupervised examples...:  67%|████    | 33539/50000 [00:12<00:03,
4147.68 examples/s]
Generating unsupervised examples...:  68%|████    | 34037/50000 [00:12<00:03,
4379.06 examples/s]
Generating unsupervised examples...:  69%|████    | 34479/50000 [00:12<00:03,
4365.62 examples/s]
Generating unsupervised examples...:  70%|████    | 34918/50000 [00:12<00:03,
4265.48 examples/s]
Generating unsupervised examples...:  71%|████    | 35408/50000 [00:12<00:03,
4447.07 examples/s]
Generating unsupervised examples...:  72%|████    | 35856/50000 [00:12<00:03,
4455.98 examples/s]
Generating unsupervised examples...:  73%|████    | 36323/50000 [00:12<00:03,
4517.57 examples/s]
Generating unsupervised examples...:  74%|████    | 36832/50000 [00:12<00:02,
4684.14 examples/s]
Generating unsupervised examples...:  75%|████    | 37330/50000 [00:12<00:02,
4769.78 examples/s]
```

```
Generating unsupervised examples...:  76%|██████    | 37808/50000 [00:12<00:02,
4648.17 examples/s]
Generating unsupervised examples...:  77%|██████    | 38315/50000 [00:13<00:02,
4770.63 examples/s]
Generating unsupervised examples...:  78%|██████    | 38794/50000 [00:13<00:02,
4298.65 examples/s]
Generating unsupervised examples...:  78%|██████    | 39234/50000 [00:13<00:02,
4290.57 examples/s]
Generating unsupervised examples...:  79%|██████    | 39691/50000 [00:13<00:02,
4368.25 examples/s]
Generating unsupervised examples...:  80%|██████    | 40133/50000 [00:13<00:02,
4239.22 examples/s]
Generating unsupervised examples...:  81%|██████    | 40589/50000 [00:13<00:02,
4326.11 examples/s]
Generating unsupervised examples...:  82%|██████    | 41068/50000 [00:13<00:02,
4458.64 examples/s]
Generating unsupervised examples...:  83%|██████    | 41564/50000 [00:13<00:01,
4601.96 examples/s]
Generating unsupervised examples...:  84%|██████    | 42048/50000 [00:13<00:01,
4671.39 examples/s]
Generating unsupervised examples...:  85%|██████    | 42560/50000 [00:14<00:01,
4802.36 examples/s]
Generating unsupervised examples...:  86%|██████    | 43082/50000 [00:14<00:01,
4925.95 examples/s]
Generating unsupervised examples...:  87%|██████    | 43576/50000 [00:14<00:01,
4843.82 examples/s]
Generating unsupervised examples...:  88%|██████    | 44062/50000 [00:14<00:01,
4809.25 examples/s]
Generating unsupervised examples...:  89%|██████    | 44566/50000 [00:14<00:01,
4875.50 examples/s]
Generating unsupervised examples...:  90%|███████   | 45055/50000 [00:14<00:01,
4632.46 examples/s]
Generating unsupervised examples...:  91%|███████   | 45522/50000 [00:14<00:01,
4437.40 examples/s]
Generating unsupervised examples...:  92%|███████   | 45969/50000 [00:14<00:00,
4267.45 examples/s]
Generating unsupervised examples...:  93%|███████   | 46424/50000 [00:14<00:00,
4345.06 examples/s]
Generating unsupervised examples...:  94%|███████   | 46903/50000 [00:15<00:00,
4470.14 examples/s]
Generating unsupervised examples...:  95%|███████   | 47432/50000 [00:15<00:00,
4705.83 examples/s]
Generating unsupervised examples...:  96%|███████   | 47906/50000 [00:15<00:00,
4548.12 examples/s]
Generating unsupervised examples...:  97%|███████   | 48385/50000 [00:15<00:00,
4616.07 examples/s]
Generating unsupervised examples...:  98%|███████   | 48849/50000 [00:15<00:00,
4491.63 examples/s]
Generating unsupervised examples...:  99%|███████   | 49301/50000 [00:15<00:00,
4412.70 examples/s]
Generating unsupervised examples...: 100%|███████   | 49801/50000 [00:15<00:00,
4575.00 examples/s]

Shuffling /root/tensorflow_datasets/imdb_reviews/plain_text/1.0.0.incompleteEMJ
```

```
OT5/imdb_reviews-unsupervised.tfrecord*...:   0%|         | 0/50000 [00:00<?,
? examples/s]
Shuffling /root/tensorflow_datasets/imdb_reviews/plain_text/1.0.0.incompleteEMJ
OT5/imdb_reviews-unsupervised.tfrecord*...:  32%|██      | 16141/50000 [00:0
0<00:00, 161396.30 examples/s]
Shuffling /root/tensorflow_datasets/imdb_reviews/plain_text/1.0.0.incompleteEMJ
OT5/imdb_reviews-unsupervised.tfrecord*...:  79%|██████   | 39658/50000 [00:0
0<00:00, 204783.15 examples/s]
```

**Dataset imdb_reviews downloaded and prepared to /root/tensorflow_datasets/imd
b_reviews/plain_text/1.0.0. Subsequent calls will reuse this data.**

```
2025-07-08 08:59:37.792274: W tensorflow/core/kernels/data/cache_dataset_ops.c
c:854] The calling iterator did not fully read the dataset being cached. In ord
er to avoid unexpected truncation of the dataset, the partially cached contents
of the dataset  will be discarded. This can happen if you have an input pipelin
e similar to `dataset.cache().take(k).repeat()`. You should use `dataset.tak
e(k).cache().repeat()` instead.
tf.Tensor(
[b"This was an absolutely terrible movie. Don't be lured in by Christopher Walk
en or Michael Ironside. Both are great actors, but this must simply be their wo
rst role in history. Even their great acting could not redeem this movie's ridi
culous storyline. This movie is an early nineties US propaganda piece. The most
pathetic scenes were those when the Columbian rebels were making their cases fo
r revolutions. Maria Conchita Alonso appeared phony, and her pseudo-love affair
with Walken was nothing but a pathetic emotional plug in a movie that was devoi
d of any real meaning. I am disappointed that there are movies like this, ruini
ng actor's like Christopher Walken's good name. I could barely sit through it."
 b'I have been known to fall asleep during films, but this is usually due to a
combination of things including, really tired, being warm and comfortable on th
e sette and having just eaten a lot. However on this occasion I fell asleep bec
ause the film was rubbish. The plot development was constant. Constantly slow a
nd boring. Things seemed to happen, but with no explanation of what was causing
them or why. I admit, I may have missed part of the film, but i watched the maj
ority of it and everything just seemed to happen of its own accord without any
real concern for anything else. I cant recommend this film at all.'
 b'Mann photographs the Alberta Rocky Mountains in a superb fashion, and Jimmy
Stewart and Walter Brennan give enjoyable performances as they always seem to d
o. <br /><br />But come on Hollywood - a Mountie telling the people of Dawson C
ity, Yukon to elect themselves a marshal (yes a marshal!) and to enforce the la
w themselves, then gunfighters battling it out on the streets for control of th
e town? <br /><br />Nothing even remotely resembling that happened on the Canad
ian side of the border during the Klondike gold rush. Mr. Mann and company appe
ar to have mistaken Dawson City for Deadwood, the Canadian North for the Americ
an Wild West.<br /><br />Canadian viewers be prepared for a Reefer Madness type
of enjoyable howl with this ludicrous plot, or, to shake your head in disgust.'
 b'This is the kind of film for a snowy Sunday afternoon when the rest of the w
orld can go ahead with its own business as you descend into a big arm-chair and
mellow for a couple of hours. Wonderful performances from Cher and Nicolas Cage
(as always) gently row the plot along. There are no rapids to cross, no dangero
us waters, just a warm and witty paddle through New York life at its best. A fa
mily film in every sense and one that deserves the praise it received.'
 b'As others have mentioned, all the women that go nude in this film are mostly
absolutely gorgeous. The plot very ably shows the hypocrisy of the female libid
o. When men are around they want to be pursued, but when no "men" are around, t
hey become the pursuers of a 14 year old boy. And the boy becomes a man really
```

fast (we should all be so lucky at this age!). He then gets up the courage to pursue his true love.'

b"This is a film which should be seen by anybody interested in, effected by, or suffering from an eating disorder. It is an amazingly accurate and sensitive portrayal of bulimia in a teenage girl, its causes and its symptoms. The girl is played by one of the most brilliant young actresses working in cinema today, Alison Lohman, who was later so spectacular in 'Where the Truth Lies'. I would recommend that this film be shown in all schools, as you will never see a better on this subject. Alison Lohman is absolutely outstanding, and one marvels at her ability to convey the anguish of a girl suffering from this compulsive disorder. If barometers tell us the air pressure, Alison Lohman tells us the emotional pressure with the same degree of accuracy. Her emotional range is so precise, each scene could be measured microscopically for its gradations of trauma, on a scale of rising hysteria and desperation which reaches unbearable intensity. Mare Winningham is the perfect choice to play her mother, and does so with immense sympathy and a range of emotions just as finely tuned as Lohman's. Together, they make a pair of sensitive emotional oscillators vibrating in resonance with one another. This film is really an astonishing achievement, and director Katt Shea should be proud of it. The only reason for not seeing it is if you are not interested in people. But even if you like nature films best, this is after all animal behaviour at the sharp edge. Bulimia is an extreme version of how a tormented soul can destroy her own body in a frenzy of despair. And if we don't sympathise with people suffering from the depths of despair, then we are dead inside."

b'Okay, you have:

Penelope Keith as Miss Herringbone-Tweed, B.B.E. (Backbone of England.) She\'s killed off in the first scene - that\'s right, folks; this show has no backbone!

Peter O\'Toole as Ol\' Colonel Cricket from The First War and now the emblazered Lord of the Manor.

Joanna Lumley as the ensweatered Lady of the Manor, 20 years younger than the colonel and 20 years past her own prime but still glamourous (Brit spelling, not mine) enough to have a toy-boy on the side. It\'s alright, they have Col. Cricket\'s full knowledge and consent (they guy even comes \'round for Christmas!) Still, she\'s considerate of the colonel enough to have said toy-boy her own age (what a gal!)

David McCallum as said toy-boy, equally as pointlessly glamourous as his squeeze. Pilcher couldn\'t come up with any cover for him within the story, so she gave him a hush-hush job at the Circus.

and finally:

Susan Hampshire as Miss Polonia Teacups, Venerable Headmistress of the Venerable Girls\' Boarding-School, serving tea in her office with a dash of deep, poignant advice for life in the outside world just before graduation. Her best bit of advice: "I\'ve only been to Nancherrow (the local Stately Home of England) once. I thought it was very beautiful but, somehow, not part of the real world." Well, we can\'t say they didn\'t warn us.

Ah, Susan - time was, your character would have been running the whole show. They don\'t write \'em like that any more. Our loss, not yours.

So - with a cast and setting like this, you have the re-makings of "Brideshead Revisited," right?

Wrong! They took these 1-dimensional supporting roles because they paid so well. After all, acting is one of the oldest temp-jobs there is (YOU name another!)

First warning sign: lots and lots of backlighting. They get around it by shooting outdoors - "hey, it\'s just the sunlight!"

Second warning sign: Leading Lady cries a lot. When not crying, her eyes are moist. That\'s the law of romance novels: Leading Lady is "dewy-eyed."

Henceforth, Leading Lady shall be known as L.L.

Third warning sign: L.L. actually has stars in her eyes when she\'s in love. Still, I\'ll give Emily Mortimer an award just for having to act with that spotlight in her e

yes (I wonder . did they use contacts?)

And lastly, fourth warning s
ign: no on-screen female character is "Mrs." She\'s either "Miss" or "Lady."

When all was said and done, I still couldn\'t tell you who was pursuing
whom and why. I couldn\'t even tell you what was said and done.

To s
um up: they all live through World War II without anything happening to them at
all.

OK, at the end, L.L. finds she\'s lost her parents to the Japan
ese prison camps and baby sis comes home catatonic. Meanwhile (there\'s always
a "meanwhile,") some young guy L.L. had a crush on (when, I don\'t know) comes
home from some wartime tough spot and is found living on the street by Lady of
the Manor (must be some street if SHE\'s going to find him there.) Both war cas
ualties are whisked away to recover at Nancherrow (SOMEBODY has to be "whisked
away" SOMEWHERE in these romance stories!)

Great drama.'
 b'The film is based on a genuine 1950s novel.

Journalist Colin McIn
nes wrote a set of three "London novels": "Absolute Beginners", "City of Spade
s" and "Mr Love and Justice". I have read all three. The first two are excellen
t. The last, perhaps an experiment that did not come off. But McInnes\'s work i
s highly acclaimed; and rightly so. This musical is the novelist\'s ultimate ni
ghtmare - to see the fruits of one\'s mind being turned into a glitzy, badly-ac
ted, soporific one-dimensional apology of a film that says it captures the spir
it of 1950s London, and does nothing of the sort.

Thank goodness Col
in McInnes wasn\'t alive to witness it.'
 b'I really love the sexy action and sci-fi films of the sixties and its becaus
e of the actress\'s that appeared in them. They found the sexiest women to be i
n these films and it didn\'t matter if they could act (Remember "Candy"?). The
reason I was disappointed by this film was because it wasn\'t nostalgic enough.
The story here has a European sci-fi film called "Dragonfly" being made and the
director is fired. So the producers decide to let a young aspiring filmmaker (J
eremy Davies) to complete the picture. They\'re is one real beautiful woman in
the film who plays Dragonfly but she\'s barely in it. Film is written and direc
ted by Roman Coppola who uses some of his fathers exploits from his early days
and puts it into the script. I wish the film could have been an homage to those
early films. They could have lots of cameos by actors who appeared in them. The
re is one actor in this film who was popular from the sixties and its John Phil
lip Law (Barbarella). Gerard Depardieu, Giancarlo Giannini and Dean Stockwell a
ppear as well. I guess I\'m going to have to continue waiting for a director to
make a good homage to the films of the sixties. If any are reading this, "Make
it as sexy as you can"! I\'ll be waiting!'
 b'Sure, this one isn\'t really a blockbuster, nor does it target such a positi
on. "Dieter" is the first name of a quite popular German musician, who is eithe
r loved or hated for his kind of acting and thats exactly what this movie is ab
out. It is based on the autobiography "Dieter Bohlen" wrote a few years ago but
isn\'t meant to be accurate on that. The movie is filled with some sexual offen
sive content (at least for American standard) which is either amusing (not for
the other "actors" of course) or dumb - it depends on your individual kind of h
umor or on you being a "Bohlen"-Fan or not. Technically speaking there isn\'t m
uch to criticize. Speaking of me I find this movie to be an OK-movie.'], shap
e=(10,), dtype=string)
tf.Tensor([0 0 0 1 1 1 0 0 0 0], shape=(10,), dtype=int64)
tf.Tensor(
[[1.765786   -3.882232   3.9134233 -1.5557289 -3.3362343 -1.7357955
   -1.9954445   1.2989551   5.081598   -1.1041286 -2.0503852 -0.72675157
   -0.65675956 0.24436149 -3.7208383   2.0954835   2.2969332 -2.0689783
   -2.9489717 -1.1315987]
 [1.8804485 -2.5852382   3.4066997   1.0982676 -4.056685   -4.891284

```
  -2.785554    1.3874227   3.8476458  -0.9256538  -1.896706    1.2113281
   0.11474707  0.76209456 -4.8791065   2.906149    4.7087674  -2.3652055
  -3.5015898  -1.6390051 ]
 [ 0.71152234 -0.6353217   1.7385626  -1.1168286  -0.5451594  -1.1808156
   0.09504455  1.4653089   0.66059524  0.79308075 -2.2268345   0.07446612
  -1.4075904  -0.70645386 -1.907037    1.4419787   1.9551861  -0.42660055
  -2.8022065   0.43727064]], shape=(3, 20), dtype=float32)
Model: "sequential"
_____
 Layer (type)                Output Shape              Param #
=================================================================
 keras_layer (KerasLayer)    (None, 20)                400020

 dense (Dense)               (None, 16)                336

 dense_1 (Dense)             (None, 1)                 17

=================================================================
Total params: 400373 (1.53 MB)
Trainable params: 400373 (1.53 MB)
Non-trainable params: 0 (0.00 Byte)
_____
Epoch 1/25
150/150 [==============================] - 5s 25ms/step - loss: 0.7692 - accura
cy: 0.5705 - val_loss: 0.6075 - val_accuracy: 0.6605
Epoch 2/25
150/150 [==============================] - 2s 15ms/step - loss: 0.5452 - accura
cy: 0.7087 - val_loss: 0.4997 - val_accuracy: 0.7421
Epoch 3/25
150/150 [==============================] - 3s 16ms/step - loss: 0.4421 - accura
cy: 0.7845 - val_loss: 0.4274 - val_accuracy: 0.7756
Epoch 4/25
150/150 [==============================] - 2s 16ms/step - loss: 0.3598 - accura
cy: 0.8333 - val_loss: 0.3644 - val_accuracy: 0.8315
Epoch 5/25
150/150 [==============================] - 2s 15ms/step - loss: 0.2955 - accura
cy: 0.8722 - val_loss: 0.3293 - val_accuracy: 0.8516
Epoch 6/25
150/150 [==============================] - 2s 15ms/step - loss: 0.2489 - accura
cy: 0.8965 - val_loss: 0.3086 - val_accuracy: 0.8644
Epoch 7/25
150/150 [==============================] - 2s 15ms/step - loss: 0.2141 - accura
cy: 0.9155 - val_loss: 0.2994 - val_accuracy: 0.8719
Epoch 8/25
150/150 [==============================] - 2s 15ms/step - loss: 0.1850 - accura
cy: 0.9313 - val_loss: 0.2947 - val_accuracy: 0.8734
Epoch 9/25
150/150 [==============================] - 3s 16ms/step - loss: 0.1613 - accura
cy: 0.9408 - val_loss: 0.2974 - val_accuracy: 0.8701
Epoch 10/25
150/150 [==============================] - 3s 16ms/step - loss: 0.1413 - accura
cy: 0.9500 - val_loss: 0.2990 - val_accuracy: 0.8754
Epoch 11/25
150/150 [==============================] - 3s 17ms/step - loss: 0.1235 - accura
```

```
cy: 0.9577 - val_loss: 0.3066 - val_accuracy: 0.8753
Epoch 12/25
150/150 [==============================] - 2s 15ms/step - loss: 0.1076 - accura
cy: 0.9650 - val_loss: 0.3154 - val_accuracy: 0.8719
Epoch 13/25
150/150 [==============================] - 2s 15ms/step - loss: 0.0937 - accura
cy: 0.9714 - val_loss: 0.3265 - val_accuracy: 0.8731
Epoch 14/25
150/150 [==============================] - 3s 16ms/step - loss: 0.0808 - accura
cy: 0.9771 - val_loss: 0.3392 - val_accuracy: 0.8728
Epoch 15/25
150/150 [==============================] - 3s 16ms/step - loss: 0.0705 - accura
cy: 0.9807 - val_loss: 0.3623 - val_accuracy: 0.8711
Epoch 16/25
150/150 [==============================] - 2s 15ms/step - loss: 0.0599 - accura
cy: 0.9849 - val_loss: 0.3733 - val_accuracy: 0.8706
Epoch 17/25
150/150 [==============================] - 2s 15ms/step - loss: 0.0503 - accura
cy: 0.9889 - val_loss: 0.3998 - val_accuracy: 0.8696
Epoch 18/25
150/150 [==============================] - 2s 15ms/step - loss: 0.0417 - accura
cy: 0.9918 - val_loss: 0.4124 - val_accuracy: 0.8670
Epoch 19/25
150/150 [==============================] - 3s 16ms/step - loss: 0.0350 - accura
cy: 0.9938 - val_loss: 0.4323 - val_accuracy: 0.8655
Epoch 20/25
150/150 [==============================] - 2s 16ms/step - loss: 0.0297 - accura
cy: 0.9951 - val_loss: 0.4547 - val_accuracy: 0.8630
Epoch 21/25
150/150 [==============================] - 3s 16ms/step - loss: 0.0247 - accura
cy: 0.9963 - val_loss: 0.4811 - val_accuracy: 0.8604
Epoch 22/25
150/150 [==============================] - 2s 16ms/step - loss: 0.0202 - accura
cy: 0.9977 - val_loss: 0.4948 - val_accuracy: 0.8619
Epoch 23/25
150/150 [==============================] - 2s 15ms/step - loss: 0.0167 - accura
cy: 0.9981 - val_loss: 0.5220 - val_accuracy: 0.8617
Epoch 24/25
150/150 [==============================] - 2s 15ms/step - loss: 0.0138 - accura
cy: 0.9990 - val_loss: 0.5380 - val_accuracy: 0.8615
Epoch 25/25
150/150 [==============================] - 2s 15ms/step - loss: 0.0114 - accura
cy: 0.9993 - val_loss: 0.5634 - val_accuracy: 0.8587
250/250 - 3s - loss: 0.6267 - accuracy: 0.8437 - 3s/epoch - 11ms/step
loss: 0.627
accuracy: 0.844
```