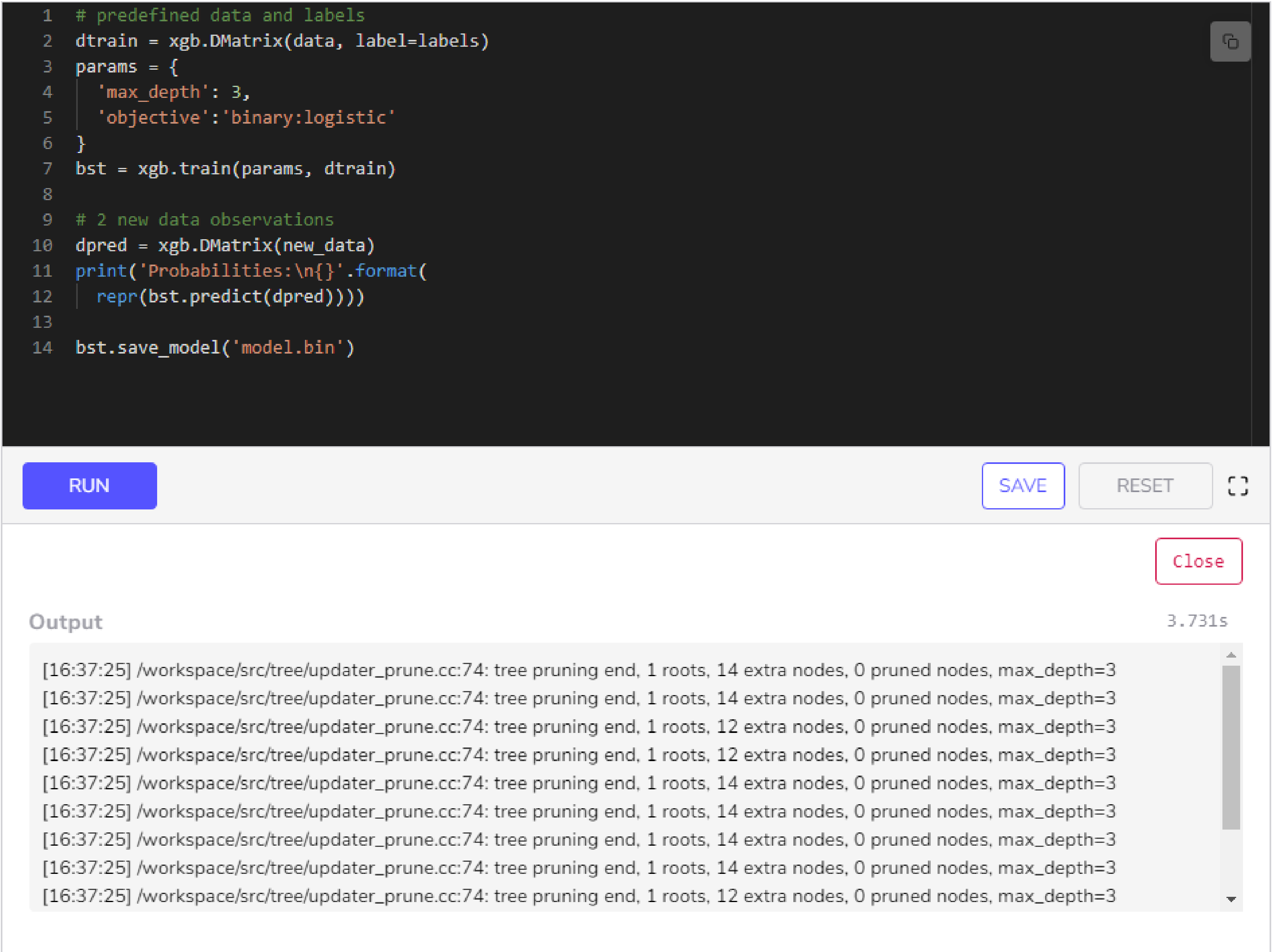
- Learn how to save and load `Booster` models in XGBoost

A. Saving and loading binary data

After finding the best parameters for a `Booster` and training it on a dataset, we can save the model into a binary file. Each `Booster` contains a function called `save_model`, which saves the model's binary data into an input file.

The code below saves a trained `Booster` object, `bst`, into a binary file called *model.bin*.



```python
# predefined data and labels
dtrain = xgb.DMatrix(data, label=labels)
params = {
  'max_depth': 3,
  'objective':'binary:logistic'
}
bst = xgb.train(params, dtrain)

# 2 new data observations
dpred = xgb.DMatrix(new_data)
print('Probabilities:\n{}'.format(
  repr(bst.predict(dpred))))

bst.save_model('model.bin')
```

```
[16:37:25] /workspace/src/tree/updater_prune.cc:74: tree pruning end, 1 roots, 14 extra nodes, 0 pruned nodes, max_depth=3
[16:37:25] /workspace/src/tree/updater_prune.cc:74: tree pruning end, 1 roots, 14 extra nodes, 0 pruned nodes, max_depth=3
[16:37:25] /workspace/src/tree/updater_prune.cc:74: tree pruning end, 1 roots, 12 extra nodes, 0 pruned nodes, max_depth=3
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[16:37:25] /workspace/src/tree/updater_prune.cc:74: tree pruning end, 1 roots, 14 extra nodes, 0 pruned nodes, max_depth=3
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[16:37:25] /workspace/src/tree/updater_prune.cc:74: tree pruning end, 1 roots, 12 extra nodes, 0 pruned nodes, max_depth=3
```
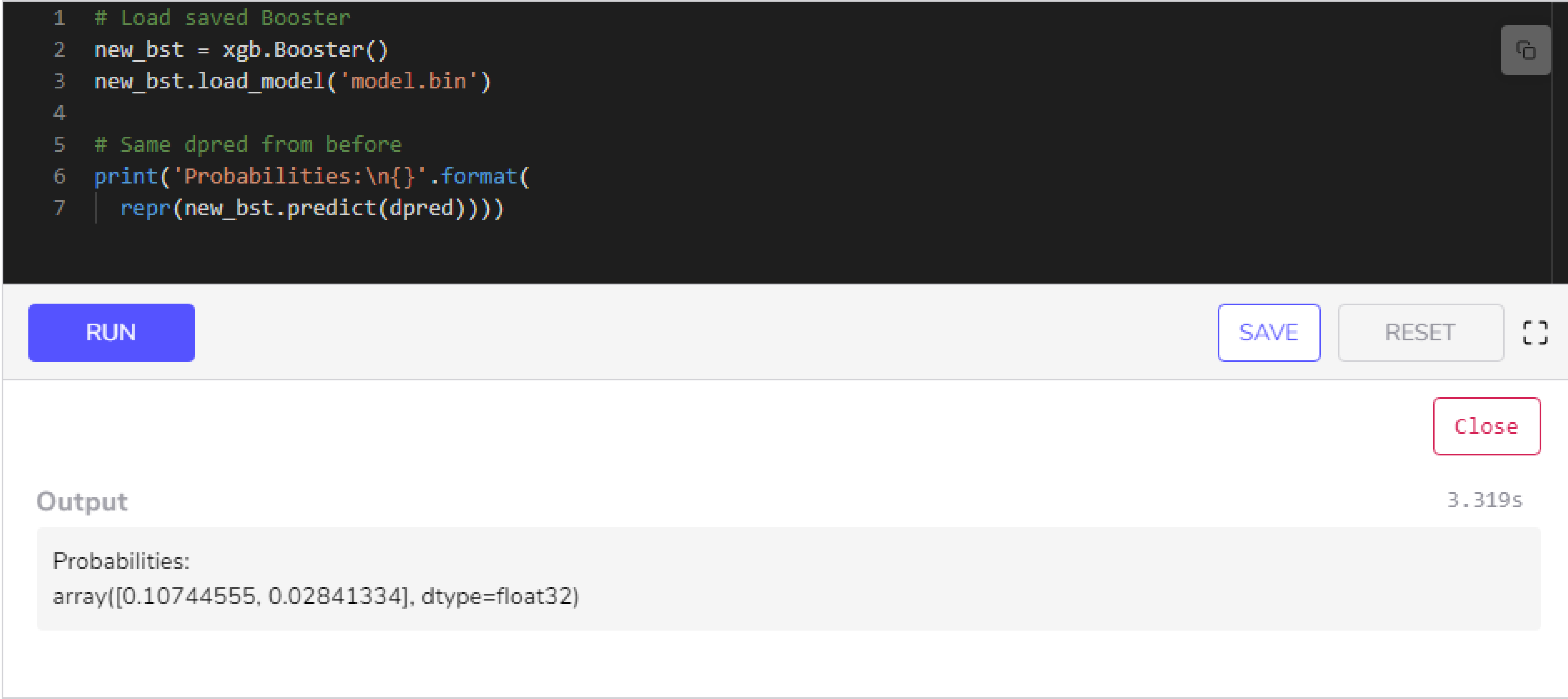

We can restore a `Booster` from a binary file using the `load_model` function. This requires us to initialize an empty `Booster` and load the file's data into it.

The code below loads the previously saved `Booster` from *model.bin*.



```python
# Load saved Booster
new_bst = xgb.Booster()
new_bst.load_model('model.bin')

# Same dpred from before
print('Probabilities:\n{}'.format(
  repr(new_bst.predict(dpred))))
```

```
Probabilities:
array([0.10744555, 0.02841334], dtype=float32)
```