

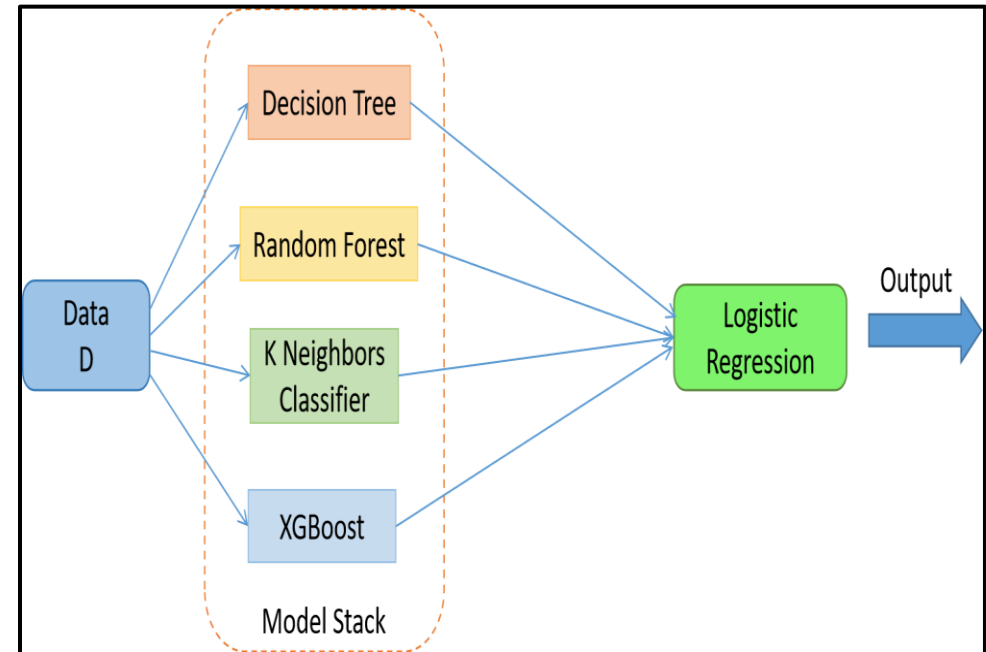
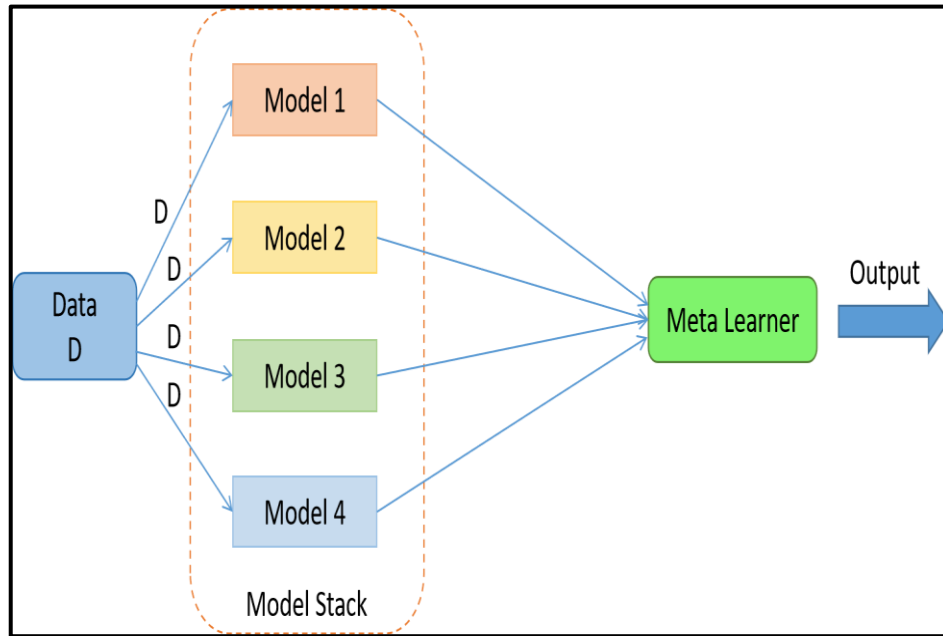
Stacking And Blending Ensemble Technique

Problem: It has probability to overfit.

Solutions: There are two solutions to reduce overfit. They are:

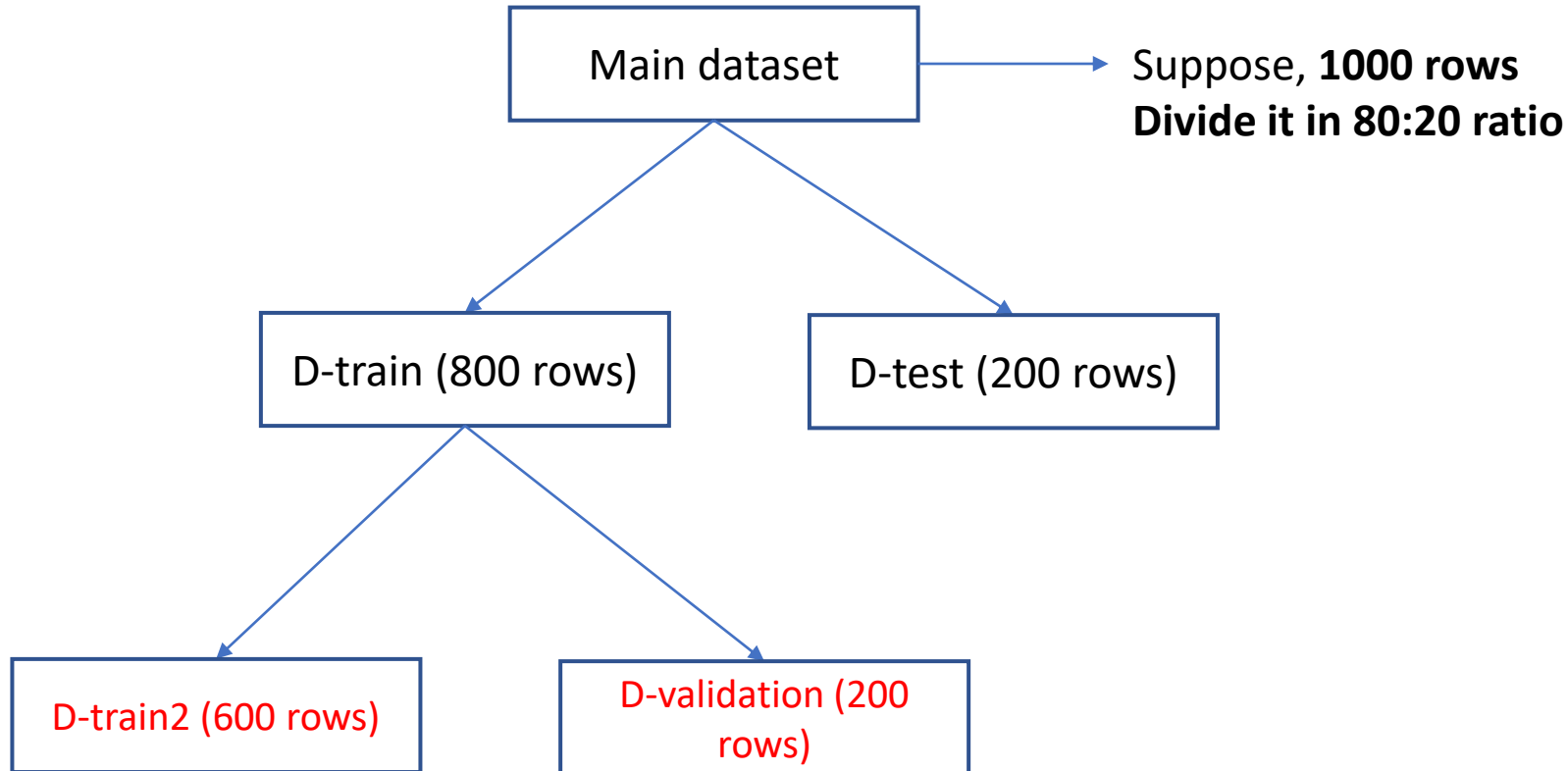
1. **Hold out approach or Blending.**
2. **K-Fold approach.**

Stacking And Blending Ensemble Technique

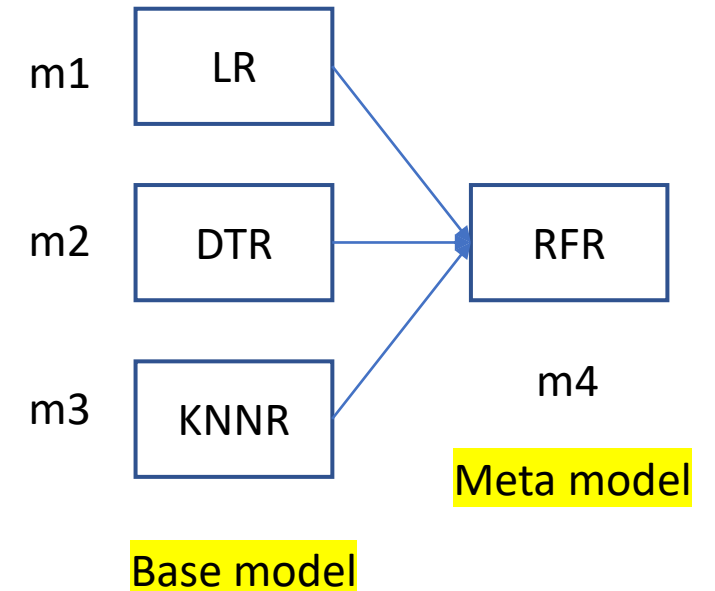


Hold out approach or Blending

Dataset Operations:




Our model structure:



1. Now we train our three base model using **D-train** data. And test those base model by **D-validation** data. When we test we will get some prediction output and using those output we can create a dataset like this.

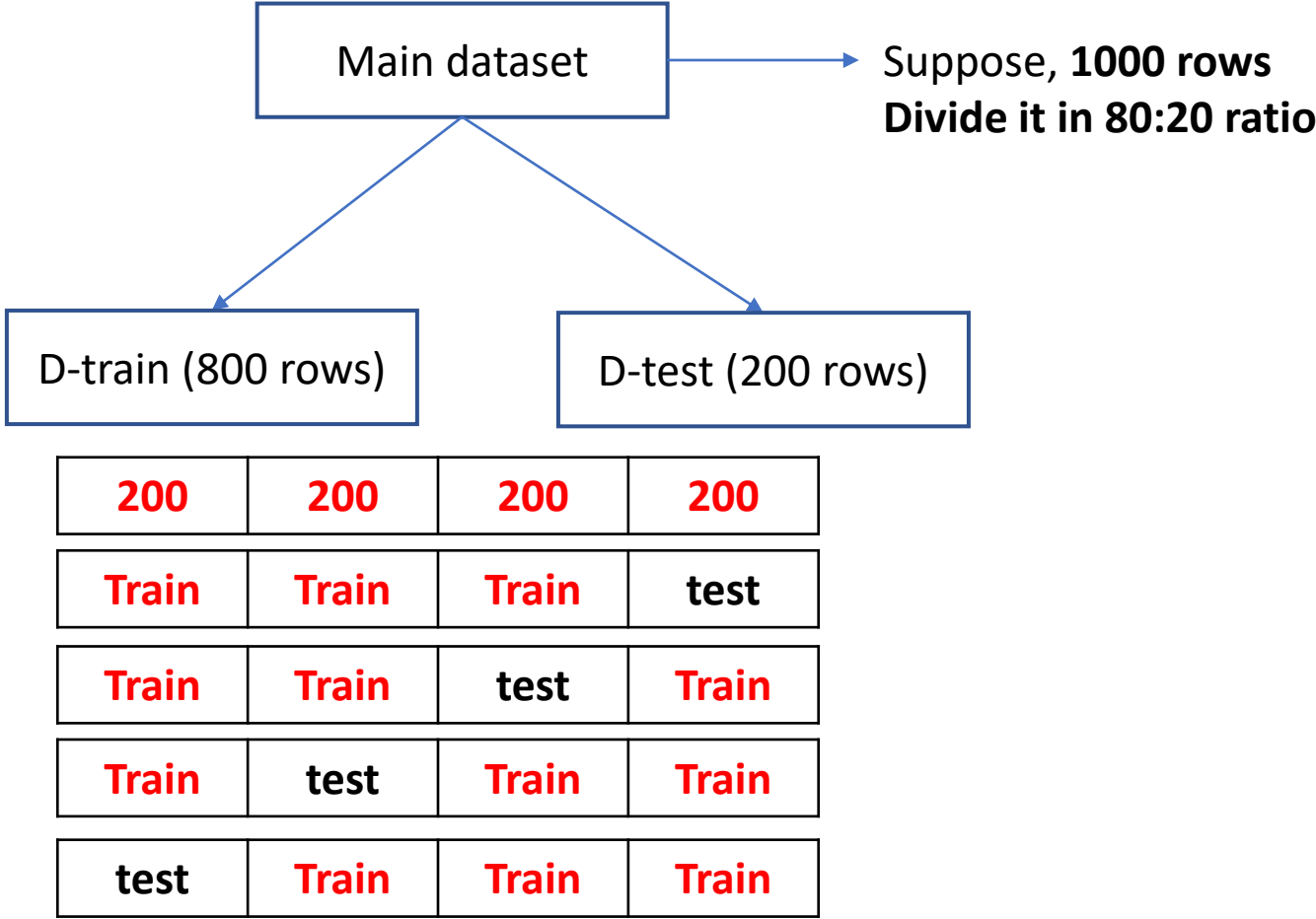
M1 prediction	M2 prediction	M3 prediction	Actual output
Some value	Some value	Some value	Actual value
Some value	Some value	Some value	Actual value

**200 rows**

2. Now, we will train our meta model using this new dataset and test the meta model using **D-test** data.

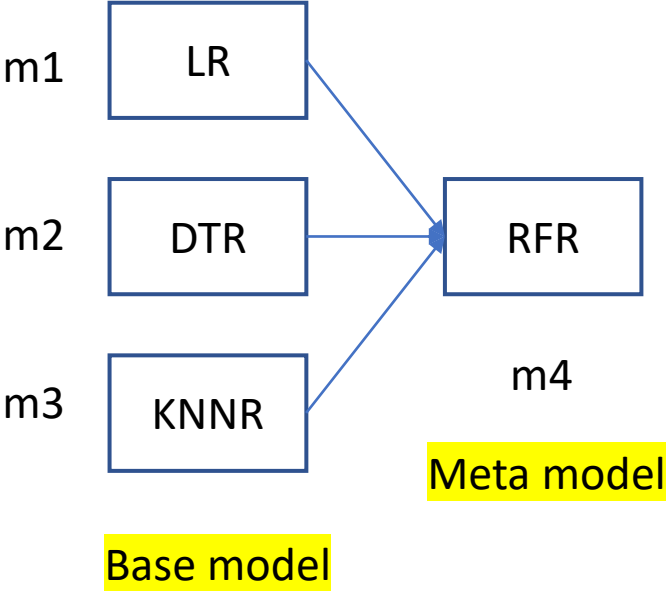
K-Fold Approach

Dataset Operations:



Cross validation apply, k=4 just for example

Our model structure:



1. First of all we will train our base model using **D-train** data based on **K-Fold cross validation technique**. In this cross validation every base model will be trained 4 times. And at last we will get below data:

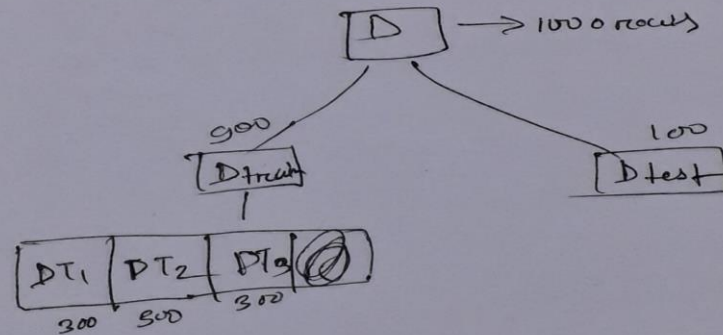
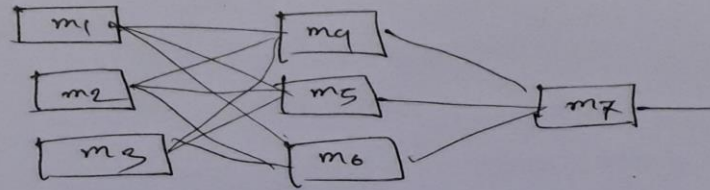
M1 prediction	M2 prediction	M3 prediction	Actual output
Some value	Some value	Some value	Actual value
Some value	Some value	Some value	Actual value

→ **800 rows**

2. Now, using the new data we will train our meta model.
3. Now, again will train our base model using full **D-train data**.
4. Again, we will test our base model using **D-test data**. And this will give some prediction or output. Those output will be gone to our meta model and meta mode will predict value.

Multi layer Stacking (this is used blending technique)

① Multi layer Stacking: — consist of blending technique



① m_1, m_2 and m_3 will train using DT_1 Data. and will be test using DT_2 data. Then will get new data set.

m_1 pred	m_2 pred	m_3 pred	Actual
—	—	—	—

→ 300 rows.

② using this new data we will train m_4, m_5, m_6 model and test by DT_3 data.

m_4 p	m_5 p	m_6 p	actual
—	—	—	—

⇒ 300 rows,

③ using this new data we will train m_7 model and test by D_{test} data.