

For 13 : ['Anantapur'] For 14 : ['Angul'] For 15 : ['Arrah'] For 16 : ['Asansol'] For 17 : ['Aurangabad'] For 18 : ['Baddi'] For 19 : ['Bahadurgarh'] For 20 : ['Balasore'] For 21 : ['Bangalore'] For 22 : ['Bankura'] For 23 : ['Banswara'] For 24 : ['Barabanki'] For 25 : ['Bardhaman'] For 26 : ['Bareilly'] For 27 : ['Beed'] For 28 : ['Belgaum'] For 29 : ['Berhampur'] For 30 : ['Betul'] For 31 : ['Bhadrak'] For 32 : ['Bhagalpur'] For 33 : ['Bhandara'] For 34 : ['Bharatpur'] For 35 : ['Bharuch'] For 36 : ['Bhavnagar'] For 37 : ['Bhilai'] For 38 : ['Bhimavaram'] For 39 : ['Bhiwadi'] For 40 : ['Bhiwani'] For 41 : ['Bhopal'] For 42 : ['Bhubaneswar'] For 43 : ['Bhuj'] For 44 : ['Bikaner'] For 45 : ['Bilaspur'] For 46 : ['Bokaro'] For 47 : ['Chandigarh'] For 48 : ['Chandrapur'] For 49 : ['Chennai'] For 50 : ['Chhindwara'] For 51 : ['Chittoor'] For 52 : ['Coimbatore'] For 53 : ['Cuttack'] For 54 : ['Dahod'] For 55 : ['Dalhousie'] For 56 : ['Darbhanga'] For 57 : ['Darjeeling'] For 58 : 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105 : ['Jajpur'] For 106 : ['Jalandhar'] For 107 : ['Jalgaon'] For 108 : ['Jalna'] For 109 : ['Jammu'] For 110 : ['Jamnagar'] For 111 : ['Jamshedpur'] For 112 : ['Jhansi'] For 113 : ['Jharsuguda'] For 114 : ['Jhunjhunu'] For 115 : ['Jind'] For 116 : ['Jodhpur'] For 117 : ['Junagadh'] For 118 : ['Kadapa'] For 119 : ['Kadi'] For 120 : ['Kakinada'] For 121 : ['Kanchipuram'] For 122 : ['Kangra'] For 123 : ['Kannur'] For 124 : ['Kanpur'] For 125 : ['Karad'] For 126 : ['Karaikudi'] For 127 : ['Karjat'] For 128 : ['Karnal'] For 129 : ['Karwar'] For 130 : ['Kharagpur'] For 131 : ['Kochi'] For 132 : ['Kolhapur'] For 133 : ['Kolkata'] For 134 : ['Kollam'] For 135 : ['Korba'] For 136 : ['Kota'] For 137 : ['Kotdwara'] For 138 : ['Kottayam'] For 139 : ['Kurnool'] For 140 : ['Kurukshetra'] For 141 : ['Lalitpur'] For 142 : ['Latur'] For 143 : ['Lucknow'] For 144 : ['Ludhiana'] For 145 : ['Machilipatnam'] For 146 : ['Madurai'] For 147 : ['Maharashtra'] For 148 : ['Malappuram'] For 149 : ['Mangalore'] For 150 : ['Margao'] For 151 : ['Mathura'] For 152 : ['Meerut'] For 153 : ['Midnapore'] For 154 : ['Mohali'] For 155 : ['Moradabad'] For 156 : ['Morbi'] For 157 : ['Mumbai'] For 158 : ['Muzaffarpur'] For 159 : ['Mysore'] For 160 : ['Nadiad'] For 161 : ['Nagaon'] For 162 : ['Nagapattinam'] For 163 : ['Nagaur'] For 164 : ['Nagpur'] For 165 : ['Nainital'] For 166 : ['Nanded'] For 167 : ['Navsari'] For 168 : ['Neemrana'] For 169 : ['Nellore'] For 170 : ['Nizamabad'] For 171 : ['Noida'] For 172 : ['Ongole'] For 173 : ['Ooty'] For 174 : ['Osmanabad'] For 175 : ['Ottapalam'] For 176 : ['Palakkad'] For 177 : ['Palanpur'] For 178 : ['Palghar'] For 179 : ['Pali'] For 180 : ['Palwal'] For 181 : ['Panaji'] For 182 : ['Panchkula'] For 183 : ['Panipat'] For 184 : ['Pathanamthitta'] For 185 : ['Patiala'] For 186 : ['Patna'] For 187 : ['Phagwara'] For 188 : ['Pondicherry'] For 189 : ['Porbandar'] For 190 : ['Pudukkottai'] For 191 : ['Pune'] For 192 : ['Puri'] For 193 : ['Raichur'] For 194 : ['Raigad'] For 195 : ['Raigarh'] For 196 : ['Raipur'] For 197 : ['Raisen'] For 198 : ['Rajkot'] For 199 : ['Rajnandgaon'] For 200 : ['Rajpura'] For 201 : ['Ranchi'] For 202 : ['Ratnagiri'] For 203 : ['Rayagada'] For 204 : ['Rewa'] For 205 : ['Rewari'] For 206 : ['Rishikesh'] For 207 : ['Rohtak'] For 208 : ['Roorkee'] For 209 : ['Rourkela'] For 210 : ['Rudrapur'] For 211 : ['Sabarkantha'] For 212 : ['Sagar'] For 213 : ['Salem'] For 214 : ['Sambalpur'] For 215 : ['Satna'] For 216 : ['Secunderabad'] For 217 : ['Shimla'] For 218 : ['Shirdi'] For 219 : ['Siddipet'] For 220 : ['Sikar'] For 221 : ['Silchar'] For 222 : ['Siliguri'] For 223 : ['Sindhudurg'] For 224 : ['Siwan'] For 225 : ['Solan'] For 226 : ['Solapur'] For 227 : ['Sonipat'] For 228 : ['Srikakulam'] For 229 : ['Srinagar'] For 230 : ['Surat'] For 231 : ['Surendranagar'] For 232 : ['Tenali'] For 233 : ['Thanjavur'] For 234 : ['Thoothukudi'] For 235 : ['Thrissur'] For 236 : ['Tirunelveli'] For 237 : ['Tirupati'] For 238 : ['Udaipur'] For 239 : ['Udupi'] For 240 : ['Ujjain'] For 241 : ['Vadodara'] For 242 : ['Valsad'] For 243 : ['Vapi'] For 244 : ['Varanasi'] For 245 : ['Vellore'] For 246 : ['Vijayawada'] For 247 : ['Visakhapatnam'] For 248 : ['Visnagar'] For 249 : ['Vizianagaram'] For 250 : ['Warangal'] For 251 : ['Wardha'] For 252 : ['Washim'] For 253 : ['Yavatmal'] 3872 21 2188 141 1833 191 1631 171 1608 133 54 1 94 1 221 113 1 148 Name: ADDRESS, Length: 254, dtype: int64 **Train-Test Spiliting** In [54]: import numpy as np def split\_train\_test(data, test\_ratio): np.random.seed(42) shuffled=np.random.permutation(len(data)) print(shuffled) test\_set\_size=int(len(data)\*test ratio) test\_indices=shuffled[:test\_set\_size] train\_indices=shuffled[test\_set\_size:] return data.iloc[train\_indices], data.iloc[test\_indices] train\_set, test\_set=split\_train\_test(housing, 0.2) In [55]: [25944 4405 18664 ... 860 15795 23654] In [56]: print(f"Rows in train set:{len(train set)}\nRows in test set: {len(test set)}\n") Rows in train set:21094 Rows in test set: 5273 In [57]: from sklearn.model selection import train test split train set, test set=train test split(housing,test size=0.2,random state=42) print(f"Rows in train set:{len(train set)}\nRows in test set: {len(test set)}\n") Rows in train set:21093 Rows in test set: 5274 In [58]: #from sklearn.model\_selection import StratifiedShuffleSplit #split=StratifiedShuffleSplit(n splits=1,test size=0.2,random state=42) #for train index, test index in split.split(housing,housing['BHK NO.']): #strat train set=housing.loc[train index] #strat test set=housing.loc[test index] In [59]: strat\_train\_set=train set strat test set=test set strat train set.shape In [60]: (21093, 5)Out[60]: strat train set.describe() In [61]: Out[61]: **RERA** SQUARE\_FT ADDRESS TARGET(PRICE\_IN\_LACS) BHK\_NO. **count** 21093.000000 21093.000000 21093.000000 21093.000000 21093.000000 0.306500 2.286872 1166.311355 116.148201 66.069103 mean 0.461051 380.031293 std 0.754000 65.966970 40.521177 621.000000 0.000000 1.000000 1.000000 0.250000 min 2.000000 25% 0.000000 861.775860 49.000000 35.000000 50% 0.000000 1129.908619 55.000000 2.000000 133.000000 1.000000 164.000000 87.000000 75% 3.000000 1450.209475 1.000000 6.000000 max 1814.000000 253.000000 190.000000 strat\_test\_set.shape In [62]: (5274, 5)Out[62]: In [63]: strat test set.value counts('BHK NO.') BHK NO. Out[63]: 2 2587 3 1816 687 4 167 5 11 6 6 dtype: int64 In [64]: strat\_train\_set.value counts('BHK NO.') BHK NO. Out[64]: 10207 3 7263 1 2851 4 702 5 45 6 25 dtype: int64 housing=strat train set.copy() In [65]: housing=strat train set.drop("TARGET(PRICE IN LACS)",axis=1) In [66]: housing\_labels=strat\_train\_set["TARGET(PRICE\_IN\_LACS)"].copy() **Creating a Pipeline** from sklearn.impute import SimpleImputer In [67]: from sklearn.pipeline import Pipeline from sklearn.preprocessing import OneHotEncoder,StandardScaler my pipeline=Pipeline({ ('imputer', SimpleImputer(strategy='median')), # .....add as many as you want in your pipeline ('std scaler', StandardScaler()), }) housing num=my pipeline.fit\_transform(housing) In [68]: housing num.shape In [69]: (21093, 4)Out[69]: Selecting a desired model In [70]: from sklearn.linear\_model import LinearRegression from sklearn.tree import DecisionTreeRegressor from sklearn.ensemble import RandomForestRegressor #model=LinearRegression() #model=DecisionTreeRegressor() model=RandomForestRegressor() model.fit(housing num, housing labels) RandomForestRegressor Out[70]: RandomForestRegressor() In [71]: some\_data=housing.iloc[:5] print(some data) RERA BHK NO. SQUARE FT ADDRESS 0 1 621.000000 1 685.027261 22851 2 621.000000 20607 157 2117 1 665.821179 75 23211 3 1814.000000 In [72]: some\_labels=housing\_labels.iloc[:5] In [73]: prepared\_data=my\_pipeline.transform(some data) prepared data array([[-0.66480119, -1.70676813, -1.43494573, 0.37673988], [ 1.5042091 , -1.70676813, -1.26646282, 0.61929125], [ 1.5042091 , -0.38047649, -1.43494573, 0.61929125], [-0.66480119, -1.70676813, -1.31700218, -0.62378454],[ 1.5042091 , 0.94581514, 1.70434385, -1.01793053]]) model.predict(prepared data) array([62.23698837, 51.192 , 93.38066227, 22.045 , 86.62357798]) Out[74]: In [75]: list(some labels) [42.5, 49.0, 77.1, 21.0, 79.0] Out[75]: **Evaluating model** In [76]: from sklearn.metrics import mean\_squared\_error housing\_predictions=model.predict(housing\_num) lin mse=mean squared error(housing labels, housing predictions) lin\_rmse=np.sqrt(lin\_mse) lin mse In [77]: 214.68809605030108 Out[77]: In [78]: lin rmse 14.652238602012359 Out[78]: In [79]: from sklearn.model selection import cross val score scores=cross val score(model,housing num,housing labels,scoring="neg mean squared error") rmse scores=(-scores) rmse\_scores In [80]: array([658.53303762, 635.99660193, 678.43730237, 665.38452436, Out[80]: 635.16126106]) def print scores(scores): In [81]: print("Scores:", scores) print("Mean:",scores.mean()) print("Standard deviation", scores.std()) In [82]: print\_scores(rmse scores) Scores: [658.53303762 635.99660193 678.43730237 665.38452436 635.16126106] Mean: 654.7025454677524 Standard deviation 16.87536753974217 Saving the model In [83]: from joblib import dump, load dump(model, 'HousePricePridiction.joblib') ['HousePricePridiction.joblib'] Out[83]: Testing the model on Test data In [84]: X\_test=strat\_test\_set.drop("TARGET(PRICE IN LACS)",axis=1) Y test=strat test set["TARGET(PRICE IN LACS)"].copy() X\_test\_prepared=my\_pipeline.transform(X\_test) final prediction=model.predict(X test prepared) final mse=mean squared error(Y test, final prediction) final rmse=np.sqrt(final mse) print(final\_prediction, list(Y\_test)) [ 31.43501589 80.4 139.60133333 ... 31.55 46.328 ] [26.5, 74.9, 76.0, 170.0, 110.0, 40.0, 70.0, 11.3, 28.0, 150.0, 45.0, 53.0, 65.0, 85.0, 190.0, 4 3.0, 37.0, 25.0, 190.0, 36.0, 110.0, 85.0, 70.0, 91.1, 67.2, 150.0, 80.3, 18.5, 85.0, 30.0, 30.0, 66.5, 26.0, 6 0.0, 67.0, 56.0, 33.0, 32.0, 49.4, 25.0, 140.0, 40.0, 17.5, 60.0, 32.0, 89.0, 37.5, 17.5, 22.5, 29.0, 49.0, 44. 4, 67.5, 37.0, 170.0, 110.0, 50.0, 75.0, 45.0, 25.0, 55.1, 85.0, 67.2, 45.0, 55.0, 160.0, 34.0, 28.8, 48.5, 58. 0, 34.5, 72.6, 140.0, 70.0, 42.0, 56.9, 87.0, 20.0, 87.0, 56.5, 120.0, 110.0, 25.0, 18.0, 30.6, 50.2, 24.0, 99. 9, 150.0, 130.0, 160.0, 51.0, 28.0, 65.0, 20.0, 96.0, 37.0, 51.0, 45.0, 75.0, 72.0, 160.0, 27.0, 99.6, 17.8, 2 6.0, 120.0, 90.0, 68.0, 38.0, 12.0, 110.0, 100.0, 16.0, 13.0, 100.0, 90.0, 53.0, 40.0, 96.0, 80.0, 40.0, 42.0, 20.0, 50.0, 69.0, 18.1, 150.0, 30.0, 65.0, 55.0, 27.0, 110.0, 100.0, 42.5, 15.0, 64.0, 31.0, 53.0, 20.0, 75.0, 47.0, 95.0, 45.0, 100.0, 45.0, 130.0, 34.1, 85.8, 47.7, 35.0, 55.0, 80.0, 28.5, 70.0, 80.0, 28.9, 130.0, 140.0, 35.2, 30.0, 62.0, 120.0, 13.0, 85.0, 23.0, 38.0, 85.0, 55.0, 44.0, 26.0, 150.0, 54.0, 98.0, 70.0, 82.0, 110.0, 35.0, 54.0, 12.9, 55.0, 11.0, 95.0, 28.0, 85.0, 40.0, 82.0, 70.0, 50.5, 56.0, 18.0, 52.0, 19.0, 34.3, 85.0, 68. 0, 11.0, 110.0, 110.0, 56.0, 56.3, 63.0, 90.0, 130.0, 62.0, 31.6, 42.0, 29.2, 80.0, 47.0, 46.0, 50.0, 84.9, 93. 0, 52.0, 140.0, 75.0, 140.0, 130.0, 52.0, 42.5, 49.0, 40.0, 35.0, 55.0, 18.0, 52.1, 90.0, 110.0, 140.0, 48.5, 3 2.5, 26.1, 69.6, 64.0, 72.0, 66.0, 15.0, 31.4, 80.0, 180.0, 49.7, 50.0, 71.0, 38.0, 140.0, 54.0, 16.6, 32.0, 3 0.5, 150.0, 45.2, 190.0, 21.0, 44.0, 54.0, 150.0, 31.0, 74.0, 62.0, 40.0, 55.0, 45.0, 35.3, 130.0, 21.0, 42.0, 68.0, 180.0, 100.0, 59.0, 18.0, 22.7, 36.5, 20.0, 16.4, 49.0, 54.0, 25.5, 93.0, 100.0, 10.0, 89.0, 82.0, 180.0, 42.0, 43.5, 58.0, 87.0, 42.5, 89.9, 87.0, 30.0, 45.0, 55.8, 150.0, 95.0, 20.0, 35.0, 39.1, 47.0, 41.1, 30.5, 3 0.0, 30.0, 65.0, 45.0, 41.7, 80.1, 51.0, 58.0, 71.5, 85.0, 35.0, 68.0, 100.0, 100.0, 56.0, 160.0, 110.0, 70.0, 150.0, 75.0, 60.0, 13.5, 47.0, 110.0, 30.0, 52.8, 22.0, 170.0, 43.4, 52.0, 50.0, 33.6, 190.0, 96.0, 150.0, 26. 0, 11.0, 64.0, 67.0, 41.0, 26.2, 72.1, 140.0, 94.0, 80.0, 150.0, 68.0, 120.0, 60.4, 170.0, 15.0, 32.0, 160.0, 5 5.0, 33.7, 25.5, 55.9, 77.0, 27.0, 70.0, 12.0, 35.0, 17.0, 60.0, 67.0, 30.0, 63.0, 170.0, 90.0, 26.0, 120.0, 5 4.0, 58.0, 19.9, 87.3, 66.2, 43.9, 15.0, 70.0, 110.0, 46.0, 39.8, 48.1, 45.0, 80.0, 85.0, 72.0, 36.0, 30.0, 35. 5, 180.0, 100.0, 66.0, 26.0, 100.0, 97.0, 51.0, 36.5, 64.0, 42.0, 43.0, 140.0, 110.0, 130.0, 82.0, 12.0, 14.0, 48.0, 58.0, 58.5, 110.0, 90.0, 34.0, 59.0, 130.0, 67.5, 180.0, 13.0, 26.0, 31.9, 72.0, 65.0, 43.0, 57.0, 85.0, 59.9, 120.0, 25.0, 34.0, 45.0, 37.0, 50.0, 32.0, 160.0, 50.0, 190.0, 23.0, 81.0, 160.0, 110.0, 49.0, 52.0, 55. 0, 170.0, 28.0, 12.5, 46.0, 120.0, 70.0, 41.0, 57.8, 66.0, 36.0, 45.0, 40.0, 81.0, 35.7, 15.0, 190.0, 18.0, 40. 0, 10.0, 90.0, 15.0, 41.0, 70.0, 64.5, 28.0, 130.0, 24.0, 61.0, 49.5, 20.0, 45.0, 48.5, 100.0, 18.0, 40.0, 72. 0, 160.0, 60.0, 50.0, 62.0, 92.0, 160.0, 74.0, 9.5, 110.0, 46.6, 43.0, 31.0, 43.4, 71.0, 69.0, 20.0, 67.0, 21. 0, 81.0, 48.0, 75.0, 65.0, 49.0, 59.5, 51.0, 20.0, 40.0, 17.0, 45.0, 57.0, 59.3, 160.0, 57.5, 68.0, 60.9, 75.2, 45.0, 62.0, 16.0, 130.0, 40.0, 28.0, 77.9, 34.9, 23.1, 72.0, 110.0, 59.5, 100.0, 19.5, 73.0, 110.0, 38.0, 55.0, 42.0, 90.0, 58.5, 43.0, 130.0, 65.0, 41.5, 85.0, 42.8, 56.0, 43.0, 46.0, 81.0, 80.0, 40.2, 86.0, 39.9, 91.0, 4 42.5, 20.0, 84.5, 160.0, 68.0, 25.0, 37.2, 34.0, 70.5, 77.1, 45.0, 23.8, 38.0, 100.0, 40.0, 28.0, 4.0, 61.2, 47.0, 60.0, 70.0, 40.0, 85.0, 67.9, 48.0, 16.5, 32.0, 46.0, 53.0, 53.7, 110.0, 70.0, 120.0, 110.0, 7 5.0, 83.0, 87.5, 26.9, 67.0, 71.5, 110.0, 45.0, 43.9, 53.0, 100.0, 57.0, 25.0, 72.0, 31.5, 16.0, 44.5, 66.0, 3 8.0, 66.5, 67.0, 45.0, 100.0, 23.8, 22.0, 90.0, 65.0, 83.0, 43.0, 43.9, 28.0, 18.0, 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19.0, 45.7, 180.0, 140.0, 25. 8, 160.0, 13.0, 30.0, 86.0, 35.0, 77.5, 170.0, 75.0, 24.0, 110.0, 60.0, 45.0, 130.0, 88.0, 35.0, 50.0, 170.0, 3 4.0, 120.0, 72.0, 49.9, 100.0, 150.0, 29.2, 52.0, 45.0, 60.0, 180.0, 130.0, 59.0, 65.0, 26.9, 59.1, 32.5, 38.0, 160.0, 82.0, 85.5, 160.0, 65.0, 42.0, 48.1, 14.2, 97.0, 42.0, 56.0, 50.2, 28.0, 24.0, 90.8, 33.3, 22.0, 42.0, 4  $6.0,\ 27.5,\ 25.0,\ 78.0,\ 20.0,\ 70.0,\ 60.0,\ 32.5,\ 37.3,\ 18.4,\ 46.5,\ 64.0,\ 78.1,\ 46.0,\ 45.0,\ 42.8,\ 32.9,\ 130.0,\ 48.$ 7, 100.0, 68.0, 59.0, 58.5, 73.8, 110.0, 130.0, 40.0, 27.0, 55.0, 95.0, 55.4, 69.2, 17.0, 37.0, 36.0, 85.0, 32. 0, 58.2, 28.0, 60.0, 36.4, 50.0, 42.0, 38.0, 42.0, 74.0, 36.0, 55.0, 90.0, 110.0, 100.0, 180.0, 160.0, 41.6, 3 4.7, 160.0, 61.3, 85.0, 43.0, 40.0, 170.0, 70.0, 60.0, 180.0, 14.0, 75.0, 75.0, 58.0, 47.3, 28.0, 57.9, 130.0, 110.0, 90.0, 80.0, 17.9, 100.0, 44.5, 42.0, 23.0, 85.0, 52.0, 55.0, 140.0, 29.0, 70.0, 55.0, 120.0, 76.9, 23.5, 55.0, 100.0, 57.0, 76.0, 52.0, 60.0, 130.0, 45.0, 140.0, 75.0, 36.0, 40.0, 19.0, 12.5, 110.0, 56.1, 35.0, 85.0, 35.0, 26.0, 42.0, 170.0, 16.5, 48.0, 130.0, 33.2, 40.0, 70.0, 91.0, 120.0, 52.9, 50.0, 41.0, 95.0, 87.0, 50.0, 96.9, 7.5, 50.0, 19.0, 65.0, 31.8, 18.0, 190.0, 45.0, 150.0, 60.0, 24.0, 68.0, 12.2, 84.3, 49.5, 18.9, 8 5.0, 32.1, 55.0, 59.0, 32.0, 17.1, 100.0, 48.0, 70.0, 30.0, 71.0, 35.5, 33.5, 38.0, 50.7, 100.0, 64.4, 73.9, 9 7.6, 130.0, 64.0, 34.2, 23.8, 14.5, 44.8, 130.0, 160.0, 31.9, 45.0, 100.0, 54.0, 90.0, 25.0, 24.0, 110.0, 100. 0, 57.9, 40.0, 120.0, 58.5, 22.0, 23.0, 46.0, 33.7, 45.0, 160.0, 16.6, 48.5, 130.0, 38.0, 93.0, 26.4, 55.2, 13 0.0, 42.0, 86.0, 16.5, 23.0, 27.9, 69.0, 51.0, 28.0, 49.0, 70.0, 60.0, 90.0, 14.0, 78.0, 86.0, 65.0, 21.0, 77. 1, 56.0, 85.0, 32.5, 33.0, 27.0, 55.0, 52.0, 85.0, 63.0, 60.0, 24.2, 18.0, 95.0, 25.2, 40.6, 32.0, 41.0, 170.0, 110.0, 26.0, 150.0, 85.0, 31.0, 51.5, 16.8, 80.0, 43.0, 23.5, 60.0, 45.0, 22.0, 80.0, 47.0, 95.0, 39.5, 26.3, 2 8.5, 28.0, 33.7, 26.0, 54.5, 110.0, 120.0, 47.0, 53.0, 67.6, 140.0, 65.0, 80.0, 63.3, 94.0, 20.2, 31.0, 82.1, 6 3.2, 83.4, 50.0, 100.0, 53.0, 53.9, 70.0, 27.9, 55.0, 170.0, 47.3, 48.0, 120.0, 28.0, 75.0, 110.0, 110.0, 37.8, 42.5, 27.5, 110.0, 110.0, 40.0, 130.0, 26.0, 120.0, 60.0, 20.0, 110.0, 60.0, 170.0, 120.0, 80.0, 67.0, 120.0, 7 0.0, 85.0, 62.0, 33.5, 66.0, 43.0, 47.1, 24.0, 95.0, 90.0, 36.0, 70.0, 80.0, 22.1, 140.0, 120.0, 34.0, 86.0, 7  $6.0,\ 13.0,\ 32.9,\ 82.0,\ 14.4,\ 100.0,\ 80.0,\ 110.0,\ 59.4,\ 62.0,\ 36.0,\ 110.0,\ 160.0,\ 38.0,\ 74.5,\ 70.0,\ 74.0,\ 86.0,\ 10.0$ 86.0, 52.0, 85.0, 33.0, 61.0, 110.0, 85.0, 40.0, 110.0, 10.5, 36.0, 39.7, 24.5, 27.0, 78.0, 110.0, 17.5, 70.9, 88.0, 100.0, 55.0, 130.0, 62.0, 57.0, 110.0, 90.0, 25.4, 42.0, 53.7, 140.0, 30.0, 150.0, 44.2, 65.0, 47.5, 30. 0, 31.0, 62.0, 85.0, 14.0, 47.1, 95.0, 50.0, 21.6, 90.0, 45.0, 130.0, 91.0, 65.0, 62.5, 47.7, 180.0, 46.0, 25. 0, 75.0, 45.0, 85.0, 49.0, 68.0, 50.5, 34.0, 26.3, 78.0, 130.0, 50.0, 45.0, 150.0, 95.0, 73.0, 40.0, 35.9, 39. 9, 91.0, 49.8, 65.0, 42.0, 100.0, 22.5, 57.0, 31.0, 100.0, 45.0, 90.0, 92.0, 130.0, 120.0, 72.8, 48.5, 60.0, 3 5.0, 30.0, 68.0, 72.0, 60.0, 69.2, 32.1, 48.0, 27.0, 130.0, 48.0, 32.0, 58.0, 67.0, 110.0, 14.9, 120.0, 65.0, 2 2.0, 68.0, 95.0, 130.0, 56.5, 55.0, 65.0, 17.0, 78.0, 120.0, 42.0, 42.0, 35.0, 80.0, 48.1, 45.0, 60.0, 30.0, 3 2.0, 160.0, 170.0, 35.3, 190.0, 39.0, 8.0, 52.0, 90.0, 42.1, 130.0, 46.0, 60.3, 18.2, 7.0, 45.0, 37.6, 35.5, 0.0, 140.0, 51.2, 83.5, 23.0, 20.4, 55.0, 24.9, 78.1, 48.0, 130.0, 28.0, 100.0, 100.0, 40.8, 49.0, 41.0, 54.0, 72.0, 78.0, 63.9, 60.0, 41.4, 72.0, 130.0, 17.5, 56.0, 100.0, 72.0, 65.0, 66.0, 7.5, 130.0, 45.9, 82.0, 24.0, 6 5.0, 35.0, 28.0, 43.0, 29.0, 170.0, 40.0, 75.0, 160.0, 35.0, 31.9, 37.4, 100.0, 88.0, 96.0, 150.0, 140.0, 79.0, 73.0, 130.0, 40.0, 57.0, 41.0, 41.5, 32.0, 140.0, 26.0, 78.0, 18.9, 37.5, 95.0, 68.0, 90.0, 45.0, 21.5, 90.0, 3 3.3, 150.0, 62.0, 33.5, 76.0, 62.0, 37.0, 120.0, 48.5, 83.7, 56.8, 50.0, 23.4, 20.0, 61.2, 70.0, 67.0, 140.0, 3 1.0, 48.0, 41.0, 180.0, 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62.0, 110.0, 8.0, 190.0, 110.0, 33.0, 41.9, 95.0, 80.7, 36.0, 46.5, 21.0, 85.5, 32.0, 140.0, 91.0, 96.0, 77.0, 110.0, 95.0, 40.0, 55.0, 150.0, 110.0, 69.0, 16.8, 55.0, 85.0, 45.0, 75.0, 60.0, 15.0, 38.0, 80.0, 180.0, 110.0, 28.0, 110.0, 110.0, 160.0, 88.0, 160.0, 140.0, 77.9, 42.0, 87.3, 48.0, 95.0, 160.0, 26.0, 9 5.0, 78.0, 47.5, 75.0, 21.0, 55.0, 85.0, 17.3, 58.4, 150.0, 15.9, 18.0, 110.0, 35.9, 120.0, 28.0, 170.0, 52.0, 52.0, 16.0, 75.0, 110.0, 31.0, 9.0, 41.9, 78.0, 40.1, 71.7, 120.0, 70.0, 78.0, 46.0, 160.0, 120.0, 170.0, 75.0, 8.7, 85.0, 69.0, 30.0, 70.0, 35.0, 45.0, 95.0, 19.0, 53.0, 47.2, 17.0, 86.0, 85.0, 35.0, 48.0, 75.0, 87.0, 85. 0, 110.0, 90.9, 28.0, 75.0, 170.0, 35.0, 120.0, 150.0, 85.0, 55.0, 40.0, 35.0, 18.0, 37.8, 120.0, 120.0, 68.4, 40.4, 70.0, 180.0, 14.3, 64.6, 96.4, 28.7, 63.1, 30.0, 40.0, 23.0, 50.0, 30.0, 32.0, 42.0, 85.0, 42.0, 41.0, 17 0.0, 63.0, 55.0, 53.5, 67.6, 15.4, 83.0, 39.0, 21.0, 55.0, 45.8, 54.0, 93.0, 110.0, 17.5, 57.0, 30.0, 130.0, 5 3.0, 72.0, 13.5, 85.0, 39.0, 85.0, 32.0, 34.0, 72.0, 60.0, 150.0, 66.0, 140.0, 46.0, 25.0, 76.0, 68.0, 38.4, 8 9.1, 52.5, 31.9, 25.0, 78.0, 110.0, 40.0, 95.0, 120.0, 68.0, 75.0, 41.0, 19.0, 45.0, 130.0, 100.0, 180.0, 62.0, 21.5, 62.0, 110.0, 42.5, 140.0, 59.7, 100.0, 99.0, 55.0, 68.0, 86.0, 12.0, 40.0, 13.0, 75.0, 55.0, 60.0, 79.9, 43.2, 60.0, 110.0, 190.0, 60.0, 23.4, 75.0, 37.0, 40.0, 80.0, 95.5, 25.5, 56.0, 12.5, 32.0, 57.1, 70.0, 50.0, 6 2.0, 49.0, 66.0, 53.0, 110.0, 50.0, 50.0, 110.0, 83.8, 46.5, 28.0, 95.0, 55.0, 20.0, 99.0, 120.0, 17.3, 32.0, 1 20.0, 50.0, 150.0, 62.0, 20.0, 43.0, 46.8, 85.0, 81.0, 18.0, 32.2, 85.0, 19.0, 140.0, 130.0, 78.0, 24.0, 86.0, 35.0, 25.0, 100.0, 54.5, 13.5, 180.0, 50.0, 95.0, 60.0, 33.0, 25.0, 170.0, 36.0, 62.6, 30.9, 52.0, 49.0, 50.8, 100.0, 45.0, 14.5, 65.0, 40.0, 70.0, 18.5, 120.0, 37.0, 38.0, 52.0, 180.0, 20.0, 57.9, 73.0, 21.5, 45.0, 80.0, 100.0, 35.0, 68.0, 38.7, 33.9, 43.0, 150.0, 64.0, 40.0, 60.0, 69.3, 42.8, 25.0, 120.0, 70.0, 71.0, 38.5, 41.0, 50.0, 190.0, 31.5, 120.0, 60.0, 17.0, 25.0, 150.0, 89.5, 89.0, 180.0, 52.0, 42.3, 31.0, 55.9, 0, 21.5, 35.0, 39.5, 60.0, 85.0, 48.0, 56.0, 62.4, 54.0, 27.4, 140.0, 45.0, 74.0, 39.0, 60.0, 42.0, 81.2, 45.0, 75.0, 47.0, 72.0, 64.0, 16.0, 25.0, 90.0, 41.2, 32.0, 55.0, 14.0, 83.6, 160.0, 31.5, 120.0, 120.0, 39.0, 39.0, 65.0, 110.0, 4.9, 66.0, 90.0, 32.0, 34.0, 58.0, 160.0, 24.9, 110.0, 67.0, 37.0, 13.0, 19.8, 78.0, 18.0, 78.0, 6  $0.0,\ 85.0,\ 23.5,\ 49.0,\ 29.0,\ 60.0,\ 42.0,\ 90.0,\ 37.0,\ 23.0,\ 53.0,\ 70.0,\ 90.0,\ 42.0,\ 59.0,\ 29.0,\ 85.0,\ 43.0,\ 4$ 7, 85.0, 36.0, 52.0, 45.0, 110.0, 93.7, 120.0, 60.0, 27.0, 45.5, 40.0, 16.0, 140.0, 48.0, 59.0, 45.0, 14.5, 50. 0, 11.9, 95.0, 55.0, 57.0, 24.0, 120.0, 34.0, 53.5, 58.7, 25.5, 60.0, 71.5, 63.5, 36.0, 120.0, 58.7, 36.2, 100. 0, 35.0, 120.0, 53.0, 51.0, 35.0, 57.0, 42.0, 140.0, 48.0, 18.5, 62.0, 150.0, 54.6, 21.0, 150.0, 76.9, 82.0, 2 4.0, 47.5, 150.0, 42.0, 140.0, 32.0, 55.0, 120.0, 150.0, 62.0, 75.0, 45.0, 70.6, 56.4, 40.5, 50.0, 54.0, 110.0, 21.2, 50.0, 100.0, 110.0, 26.0, 93.6, 89.0, 69.5, 78.0, 36.5, 46.0, 25.0, 120.0, 54.0, 38.0, 29.3, 60.0, 58.0, 41.0, 52.1, 78.0, 37.8, 67.9, 120.0, 170.0, 31.5, 60.0, 50.0, 130.0, 150.0, 35.6, 45.8, 22.5, 130.0, 75.0, 70. 0, 28.0, 58.0, 68.4, 27.2, 30.0, 53.0, 30.0, 44.8, 100.0, 80.0, 27.0, 99.0, 52.6, 100.0, 66.0, 17.0, 130.0, 61. 0, 30.0, 51.0, 100.0, 120.0, 62.0, 6.0, 160.0, 87.0, 22.0, 25.0, 65.0, 110.0, 130.0, 60.0, 130.0, 79.0, 76.0, 3 4.1, 170.0, 190.0, 30.0, 72.0, 24.5, 14.5, 34.0, 42.0, 110.0, 40.0, 120.0, 84.1, 42.0, 17.3, 38.8, 37.0, 54.2, 55.0, 190.0, 22.0, 54.8, 35.0, 100.0, 110.0, 42.1, 35.5, 75.0, 29.0, 23.4, 180.0, 82.0, 76.2, 150.0, 170.0, 13 0.0, 82.0, 100.0, 26.8, 36.0, 35.0, 48.0, 52.0, 23.0, 68.5, 36.0, 75.0, 18.0, 41.0, 65.0, 65.0, 75.0, 75.0, 15. 0, 190.0, 25.0, 25.0, 130.0, 45.0, 31.0, 91.1, 80.0, 100.0, 21.5, 41.0, 34.9, 120.0, 100.0, 100.0, 110.0, 150. 0, 43.9, 130.0, 32.5, 96.0, 46.3, 86.0, 50.0, 36.0, 100.0, 120.0, 80.0, 100.0, 28.0, 81.0, 45.0, 37.0, 150.0, 3 9.0, 77.5, 75.0, 36.0, 170.0, 36.0, 130.0, 38.0, 31.9, 30.0, 53.5, 180.0, 49.9, 55.0, 57.9, 77.0, 55.0, 30.0, 1 10.0, 55.0, 30.0, 120.0, 55.3, 65.0, 75.0, 120.0, 50.0, 39.0, 50.0, 150.0, 22.0, 72.2, 62.3, 150.0, 27.0, 30.0, 70.0, 17.5, 45.0, 180.0, 42.0, 68.0, 73.0, 43.5, 66.9, 85.0, 99.0, 46.5, 22.0, 94.0, 190.0, 170.0, 55.0, 73.0, 40.0, 110.0, 28.0, 80.0, 32.5, 53.0, 100.0, 160.0, 56.0, 77.0, 22.0, 85.0, 35.4, 25.0, 55.0, 17.0, 65.0, 90.0, 130.0, 140.0, 49.0, 24.7, 90.0, 120.0, 38.0, 25.8, 65.0, 100.0, 50.0, 44.0, 170.0, 57.3, 65.0, 120.0, 170.0, 2 8.0, 49.0, 40.0, 140.0, 190.0, 130.0, 28.5, 100.0, 65.0, 87.0, 110.0, 48.0, 38.9, 75.0, 40.0, 16.0, 81.0, 22.0, 30.0, 54.5, 100.0, 130.0, 62.9, 40.9, 76.9, 54.0, 38.0, 44.0, 35.0, 36.0, 46.0, 46.0, 98.9, 16.0, 40.0, 44.5, 1 60.0, 41.0, 43.0, 140.0, 31.0, 98.9, 59.0, 65.0, 36.0, 67.0, 45.0, 100.0, 30.0, 67.0, 24.4, 42.5, 45.0, 15.0, 1 00.0, 170.0, 32.0, 18.0, 69.3, 87.6, 45.0, 100.0, 72.0, 130.0, 29.0, 38.5, 72.5, 71.0, 30.0, 100.0, 45.5, 43.5, 120.0, 46.1, 65.0, 100.0, 150.0, 10.0, 80.0, 45.0, 120.0, 26.0, 100.0, 110.0, 90.0, 38.2, 37.0, 50.0, 80.0, 25. 9, 15.0, 100.0, 24.5, 28.0, 22.9, 41.0, 45.0, 54.0, 72.8, 78.0, 52.0, 54.0, 26.0, 89.0, 130.0, 49.0, 140.0, 10 0.0, 39.2, 7.2, 35.5, 56.0, 81.9, 43.9, 89.0, 110.0, 160.0, 120.0, 32.8, 100.0, 27.0, 63.0, 55.0, 74.5, 55.0, 7 1.0, 120.0, 72.4, 90.0, 60.0, 40.0, 65.0, 110.0, 79.0, 80.5, 17.3, 180.0, 120.0, 30.0, 42.4, 16.9, 34.0, 16.0, 65.0, 30.0, 26.0, 60.0, 26.0, 55.0, 90.0, 26.9, 53.0, 7.5, 32.0, 110.0, 120.0, 69.0, 60.0, 130.0, 21.5, 35.0, 1 10.0, 27.3, 130.0, 85.0, 78.0, 47.0, 29.0, 31.0, 63.5, 50.9, 51.0, 33.0, 120.0, 55.0, 140.0, 34.0, 47.0, 75.0, 81.0, 79.5, 34.0, 81.0, 55.0, 130.0, 70.0, 18.0, 73.0, 95.8, 100.0, 52.0, 29.7, 80.0, 84.5, 27.0, 29.0, 13.2, 2 5.0, 70.0, 27.9, 35.0, 45.5, 79.0, 80.0, 90.0, 110.0, 62.0, 130.0, 77.9, 140.0, 17.6, 130.0, 75.0, 100.0, 36.0, 75.4, 110.0, 130.0, 62.0, 25.11, 85.0, 4.0, 30.0, 190.0, 140.0, 100.0, 73.5, 170.0, 29.0, 75.0, 55.0, 52.0, 85. 0, 65.0, 15.4, 26.0, 130.0, 26.5, 72.5, 83.3, 31.0, 15.0, 85.5, 68.4, 100.0, 28.7, 14.0, 52.0, 26.0, 24.7, 190. 0, 15.0, 43.0, 100.0, 24.0, 25.0, 75.0, 120.0, 31.9, 50.0, 43.3, 45.0, 83.0, 40.0, 50.0, 54.6, 65.8, 81.0, 28. 5, 64.8, 49.0, 46.0, 85.0, 35.0, 61.0, 61.6, 38.8, 90.0, 95.0, 45.9, 73.0, 56.4, 140.0, 70.0, 72.5, 45.2, 190. 0, 56.0, 36.0, 96.0, 130.0, 29.5, 25.0, 45.0, 59.0, 130.0, 40.0, 45.0, 21.5, 130.0, 76.0, 93.0, 68.8, 27.0, 15  $0.0,\ 45.0,\ 38.0,\ 87.0,\ 34.2,\ 75.0,\ 89.0,\ 76.0,\ 70.0,\ 74.0,\ 19.0,\ 12.0,\ 45.0,\ 110.0,\ 60.0,\ 17.0,\ 25.0,\ 77.8,\ 15.0,\ 110.0,\$ 0.0, 55.0, 79.0, 67.0, 30.0, 63.0, 25.0, 110.0, 83.0, 61.5, 66.0, 38.0, 110.0, 37.0, 34.0, 55.0, 75.0, 45.9, 6 4.0, 40.0, 18.0, 65.7, 45.0, 69.9, 70.0, 94.0, 43.0, 110.0, 26.0, 100.0, 47.2, 36.0, 170.0, 22.0, 35.0, 45.0, 6 2.0, 84.0, 85.0, 52.0, 70.1, 64.9, 43.0, 100.0, 40.0, 140.0, 38.5, 37.5, 73.9, 23.0, 65.0, 110.0, 100.0, 42.0, 55.0, 140.0, 68.0, 28.0, 22.0, 56.0, 31.0, 19.0, 170.0, 77.0, 75.0, 62.5, 85.1, 55.0, 110.0, 29.0, 77.4, 15.7, 48.0, 31.9, 22.0, 82.0, 75.0, 100.0, 68.0, 130.0, 86.0, 28.0, 52.1, 23.0, 26.5, 13.0, 20.0, 60.0, 35.0, 130.0, 75.6, 99.0, 25.0, 55.0, 92.2, 19.0, 45.0, 23.5, 50.5, 51.1, 170.0, 12.0, 75.0, 45.0, 97.0, 27.5, 17.5, 60.0, 5 3.0, 42.0, 100.0, 24.0, 100.0, 180.0, 34.0, 45.6, 160.0, 55.0, 26.5, 50.0, 100.0, 79.2, 33.1, 32.5, 80.0, 51.0, 71.0, 120.0, 40.0, 51.0, 85.0, 83.7, 46.7, 160.0, 55.0, 45.0, 45.0, 160.0, 67.0, 71.0, 110.0, 190.0, 22.0, 58. 0, 30.0, 20.0, 27.2, 108.0, 62.0, 4.0, 5.0, 55.0, 52.0, 48.4, 36.0, 52.0, 30.0, 150.0, 130.0, 95.0, 54.2, 64.5, 180.0, 42.1, 51.5, 180.0, 17.0, 80.0, 65.2, 46.4, 180.0, 66.0, 64.0, 71.0, 76.0, 140.0, 47.5, 24.0, 40.0, 130. 0, 68.0, 80.0, 110.0, 29.0, 14.8, 29.0, 48.1, 90.0, 45.0, 58.0, 85.0, 130.0, 49.0, 45.0, 34.7, 40.0, 56.0, 15. 0, 110.0, 17.1, 52.0, 35.0, 110.0, 80.0, 90.0, 27.0, 39.7, 65.0, 52.9, 62.0, 67.0, 91.0, 30.0, 130.0, 23.0, 27. 5, 82.0, 75.0, 33.0, 140.0, 27.0, 14.0, 190.0, 37.0, 110.0, 40.0, 40.3, 54.7, 34.0, 80.0, 180.0, 45.0, 62.0, 2 3.1, 75.0, 52.0, 65.0, 28.8, 80.0, 85.0, 130.0, 63.0, 160.0, 69.0, 120.0, 41.5, 76.0, 160.0, 17.5, 48.0, 54.0, 120.0, 67.5, 71.5, 90.0, 120.0, 42.9, 31.3, 65.0, 68.0, 48.0, 24.2, 78.2, 31.8, 60.0, 36.0, 40.0, 38.0, 51.0, 1 4.0, 53.0, 50.5, 29.4, 46.0, 49.0, 26.5, 45.0, 57.6, 62.8, 33.0, 80.0, 23.0, 81.0, 21.0, 110.0, 51.0, 46.0, 35. 0, 45.0, 190.0, 44.2, 65.0, 59.6, 70.8, 26.6, 100.0, 57.3, 30.0, 51.0, 63.0, 33.0, 29.9, 70.6, 120.0, 55.0, 11  $0.0,\ 55.0,\ 72.0,\ 85.0,\ 27.9,\ 72.0,\ 150.0,\ 30.5,\ 47.0,\ 80.9,\ 42.0,\ 130.0,\ 71.5,\ 35.5,\ 35.0,\ 40.0,\ 15.9,\ 32.0,\ 20.0,\$ 7.3, 33.0, 30.2, 65.0, 41.0, 80.0, 68.0, 99.8, 110.0, 41.0, 28.0, 110.0, 37.0, 59.9, 170.0, 27.0, 26.6, 95.0, 3 8.0, 180.0, 35.0, 75.0, 39.0, 18.0, 35.0, 45.0, 37.0, 84.0, 43.0, 27.0, 17.0, 22.0, 70.0, 82.0, 32.0, 65.0, 11 0.0, 110.0, 130.0, 49.5, 17.5, 52.0, 23.0, 47.9, 35.0, 84.0, 17.0, 55.0, 71.5, 75.0, 55.0, 30.0, 32.7, 87.0, 3 9.0, 42.0, 85.0, 72.0, 69.8, 26.0, 85.0, 47.5, 120.0, 57.0, 18.0, 69.0, 55.5, 50.0, 85.0, 120.0, 24.1, 120.0, 3 7.8, 78.3, 27.0, 34.0, 95.0, 160.0, 32.4, 46.5, 45.0, 66.5, 28.5, 170.0, 70.0, 140.0, 39.0, 110.0, 110.0, 38.9, 50.0, 85.0, 27.0, 58.0, 28.0, 93.5, 52.0, 150.0, 40.0, 78.5, 26.0, 33.5, 98.5, 88.9, 73.0, 38.0, 33.0, 140.0, 1 80.0, 65.0, 36.0, 120.0, 85.0, 23.8, 68.0, 67.0, 80.0, 35.5, 49.5, 48.0, 110.0, 86.0, 23.5, 90.0, 58.0, 50.0, 4 7.0, 45.0, 80.0, 35.0, 19.7, 53.0, 45.0, 140.0, 120.0, 87.0, 46.5, 78.0, 88.0, 35.0, 40.0, 120.0, 72.0, 52.12, 17.0, 65.0, 40.0, 29.5, 54.0, 50.0, 26.0, 45.0, 160.0, 92.0, 120.0, 150.0, 100.0, 32.0, 73.0, 120.0, 15.0, 27. 0, 72.0, 72.0, 50.0, 75.0, 100.0, 27.0, 43.0, 13.9, 120.0, 55.0, 84.0, 66.0, 160.0, 72.0, 48.0, 50.0, 60.0, 84. 0, 50.0, 110.0, 89.0, 97.0, 140.0, 31.0, 70.5, 37.0, 62.0, 32.3, 95.0, 70.0, 36.0, 190.0, 85.0, 50.0, 55.9, 28. 9, 41.0, 61.4, 42.0, 30.0, 95.0, 42.0, 44.0, 50.0, 34.0, 26.0, 32.0, 23.0, 85.0, 45.0, 22.0, 36.0, 65.0, 78.0, 34.1, 70.0, 63.9, 37.0, 17.0, 98.0, 63.0, 40.0, 63.0, 65.0, 29.0, 38.0, 60.0, 35.0, 50.0, 57.0, 42.0, 160.0, 3 1.0, 26.0, 35.0, 60.0, 170.0, 55.0, 82.0, 46.0, 24.5, 70.0, 70.5, 32.0, 170.0, 64.0, 15.0, 13.5, 90.0, 39.0, 6 5.0, 55.0, 31.0, 65.0, 110.0, 99.0, 42.0, 76.0, 68.0, 46.0, 39.5, 180.0, 99.0, 22.7, 30.0, 75.0, 52.0, 180.0, 3 5.0, 62.0, 75.0, 130.0, 130.0, 61.0, 35.0, 18.2, 42.5, 110.0, 44.1, 75.0, 43.0, 49.9, 39.3, 36.5, 51.0, 70.0, 0.85, 37.8, 65.0, 26.4, 14.5, 47.0, 17.3, 38.0, 47.7, 10.5, 85.0, 29.0, 81.9, 57.0, 46.0, 78.0, 0, 30.0, 46.4, 51.0, 120.0, 35.0, 81.2, 120.0, 180.0, 79.0, 87.0, 40.5, 55.0, 65.0, 42.9, 62.0, 59.9, 82.0, 23. 5, 74.0, 180.0, 42.0, 43.0, 100.0, 57.0, 35.0, 60.0, 190.0, 190.0, 68.0, 160.0, 88.0, 38.0, 36.0, 57.0, 50.0, 1 90.0, 64.0, 120.0, 39.6, 50.0, 42.0, 83.6, 46.0, 59.9, 110.0, 40.0, 170.0, 22.0, 170.0, 59.0, 39.0, 37.0, 65.0, 72.0, 62.5, 170.0, 13.0, 49.0, 50.0, 110.0, 27.0, 35.0, 45.0, 50.0, 44.8, 180.0, 73.0, 21.4, 100.0, 85.0, 78.0, 33.7, 17.3, 60.0, 60.0, 69.0, 47.0, 46.0, 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98.0, 65.0, 70.4, 71.0, 170.0, 68.0, 35.0, 170.0, 26.0, 45.0, 62.0, 8.0, 3 9.0, 35.0, 98.0, 130.0, 85.7, 80.0, 92.5, 72.0, 160.0, 16.0, 180.0, 51.3, 36.0, 53.0, 48.0, 26.6, 42.0, 50.0, 1 90.0, 19.9, 17.0, 40.0, 51.5, 30.1, 45.0, 85.0, 100.0, 25.2, 32.0, 40.0, 52.0, 110.0, 52.8, 55.0, 100.0, 15.1, 68.0, 84.0, 50.0, 66.5, 50.0, 95.0, 82.0, 54.0, 85.0, 31.7, 52.0, 110.0, 100.0, 59.2, 25.0, 140.0, 120.0, 80.0, 43.0, 19.4, 14.0, 72.5, 170.0, 44.5, 90.0, 51.0, 40.0, 45.8, 60.0, 90.2, 41.2, 50.0, 45.5, 38.0, 140.0, 50.0, 4 4.5, 60.0, 170.0, 130.0, 49.0, 17.0, 120.0, 89.0, 80.0, 53.0, 26.0, 43.0, 50.8, 62.0, 180.0, 20.0, 60.0, 35.0, 140.0, 66.1, 58.8, 30.0, 110.0, 36.0, 34.0, 21.0, 60.0, 97.6, 30.0, 130.0, 70.0, 140.0, 180.0, 84.0, 30.2, 12. 9, 81.8, 120.0, 140.0, 60.0, 89.0, 94.0, 35.0, 120.0, 35.0, 80.0, 160.0, 130.0, 48.0, 42.0, 24.0, 110.0, 48.0, 30.0, 160.0, 70.0, 42.0, 110.0, 31.4, 50.0, 26.3, 31.3, 45.0, 110.0, 67.0, 110.0, 82.0, 52.0, 45.0, 72.0, 51.0, 61.6, 160.0, 120.0, 100.0, 73.0, 35.0, 40.6, 19.6, 150.0, 43.0, 32.6, 88.0, 43.0, 110.0, 160.0, 190.0, 29.9, 4 5.0, 110.0, 35.0, 80.0, 33.7, 45.0, 60.0, 42.0, 77.9, 54.8, 52.0, 98.9, 130.0, 87.1, 100.0, 23.0, 35.0, 95.0, 5 0.4, 39.0, 170.0, 130.0, 72.6, 45.5, 11.0, 90.0, 15.0, 15.5, 25.0, 20.0, 20.6, 34.0, 60.6, 61.7, 85.0, 120.0, 4 8.0, 32.0, 85.0, 25.0, 49.0, 130.0, 55.0, 30.0, 35.0, 28.0, 16.5, 41.0, 35.9, 46.6, 27.0, 60.4, 48.0, 45.0, 14 0.0, 150.0, 78.0, 97.0, 15.0, 110.0, 160.0, 99.0, 95.0, 55.0, 58.0, 58.5, 27.0, 28.0, 29.0, 19.5, 150.0, 20.4, 57.0, 130.0, 77.5, 190.0, 80.0, 180.0, 57.0, 120.0, 180.0, 37.5, 50.0, 18.1, 80.0, 17.0, 35.0, 26.0, 65.0, 60. 0, 130.0, 66.9, 65.0, 32.0, 39.0, 45.5, 38.0, 46.6, 70.0, 52.0, 85.0, 32.0, 31.2, 36.0, 130.0, 38.0, 44.0, 66. 0, 25.8, 46.0, 43.0, 60.0, 35.0, 32.0, 110.0, 56.0, 64.7, 28.0, 60.0, 65.0, 90.0, 42.0, 50.0, 30.0, 65.0, 62.5, 45.0, 77.5, 45.0, 46.0, 82.0, 70.0, 42.0, 140.0, 82.8, 68.7, 46.0, 13.0, 81.0, 61.0, 160.0, 120.0, 82.0, 30.0, 46.0, 33.0, 100.0, 53.0, 54.0, 130.0, 9.0, 98.0, 52.0, 14.0, 26.9, 28.0, 85.0, 30.0, 36.0, 95.0, 56.9, 100.0, 5 2.4, 16.0, 32.5, 160.0, 29.0, 86.0, 49.0, 31.5, 34.9, 59.0, 76.0, 62.0, 120.0, 46.0, 22.0, 63.0, 42.0, 140.0, 1 5.0, 120.0, 180.0, 25.3, 30.0, 65.0, 60.0, 25.5, 110.0, 65.0, 100.0, 71.0, 31.0, 36.0, 33.0, 84.0, 23.0, 44.5, 60.9, 90.0, 27.0, 65.0, 33.0, 19.0, 54.0, 27.5, 43.3, 47.0, 42.0, 20.0, 110.0, 53.0, 31.0, 95.0, 48.0, 28.0, 2 9.0, 180.0, 48.0, 90.0, 16.0, 47.5, 33.0, 65.0, 59.0, 51.1, 20.0, 86.0, 68.2, 190.0, 89.0, 53.5, 100.0, 57.0, 3 5.0, 65.0, 24.9, 50.0, 88.0, 95.0, 150.0, 60.0, 55.0, 120.0, 55.0, 85.0, 170.0, 36.0, 25.0, 81.7, 100.0, 45.0, 85.0, 140.0, 40.0, 83.5, 43.0, 130.0, 43.0, 170.0, 42.0, 60.0, 16.0, 26.0, 140.0, 160.0, 26.8, 26.0, 32.0, 84. 0, 30.0, 46.0, 23.0, 95.0, 12.0, 75.0, 80.0, 96.0, 24.5, 58.0, 42.0, 19.0, 170.0, 32.5, 25.0, 110.0, 12.5, 85. 0, 13.0, 180.0, 40.0, 25.0, 47.0, 29.3, 130.0, 35.0, 75.0, 45.1, 8.2, 96.0, 120.0, 94.0, 52.0, 25.5, 120.0, 20. 0, 24.5, 50.0, 91.1, 160.0, 80.0, 22.0, 42.0, 100.0, 23.0, 22.0, 75.0, 32.6, 64.0, 80.0, 100.0, 76.9, 150.0, 6 5.0, 63.0, 180.0, 11.1, 190.0, 82.0, 68.2, 130.0, 89.2, 85.0, 54.0, 60.0, 50.0, 19.0, 170.0, 25.0, 86.0, 61.0, 92.0, 12.0, 17.0, 65.0, 52.0, 42.0, 160.0, 13.0, 58.0, 190.0, 32.0, 110.0, 75.0, 65.0, 51.5, 16.5, 9.0, 70.0, 1 20.0, 190.0, 55.4, 100.0, 50.66, 150.0, 80.0, 80.0, 110.0, 120.0, 110.0, 91.2, 21.0, 18.0, 100.0, 120.0, 30.0, 92.0, 81.0, 25.0, 50.0, 91.0, 40.0, 79.0, 110.0, 120.0, 55.0, 22.0, 130.0, 80.0, 55.0, 55.0, 80.0, 44.2, 70.0, 29.5, 14.0, 52.0, 95.5, 32.0, 130.0, 72.0, 160.0, 90.0, 35.0, 65.0, 45.7, 50.0, 180.0, 28.0, 140.0, 70.0, 95.0, 48.0, 45.0, 47.0, 75.0, 170.0, 54.5, 48.0, 73.0, 35.0, 25.0, 31.5, 56.5, 50.0, 26.0, 13.0, 160.0, 50.0, 25.5, 3 1.5, 45.0, 50.0, 79.7, 44.8, 46.2, 40.0, 76.0, 78.0, 28.6, 40.0, 35.0, 35.0, 28.5, 42.8, 65.0, 40.0, 57.0, 110. 0, 17.0, 100.0, 43.0, 27.0, 90.0, 92.0, 33.0, 52.8, 70.5, 36.0, 28.0, 32.5, 54.0, 71.0, 69.0, 45.4, 160.0, 160. 0, 180.0, 170.0, 54.0, 57.0, 31.0, 70.0, 41.1, 31.0, 83.5, 130.0, 60.0, 85.0, 20.0, 45.0, 47.0, 24.5, 21.0, 10 0.0, 23.0, 56.0, 71.0, 28.5, 42.0, 20.1, 68.0, 26.5, 41.5, 25.0, 87.0, 65.0, 40.0, 38.79, 24.0, 140.0, 150.0, 7 3.0, 150.0, 62.1, 42.0, 18.9, 100.0, 72.0, 16.0, 110.0, 58.6, 19.0, 110.0, 32.0, 140.0, 120.0, 57.0, 87.0, 65. 0, 55.0, 66.0, 100.0, 10.5, 25.8, 48.0, 34.0, 73.0, 120.0, 16.5, 47.0, 140.0, 40.0, 69.5, 160.0, 55.0, 25.0, 1 8.0, 140.0, 85.0, 22.0, 99.0, 35.0, 78.0, 35.0, 150.0, 110.0, 22.0, 36.0, 100.0, 28.0, 60.0, 46.0, 36.5, 34.5, 170.0, 100.0, 33.0, 62.0, 55.0, 110.0, 52.0, 33.0, 80.0, 74.0, 55.0, 48.0, 15.5, 17.0, 94.0, 47.0, 33.5, 42.9, 29.0, 50.9, 170.0, 150.0, 100.0, 13.0, 110.0, 77.0, 39.0, 45.0, 28.0, 100.0, 26.0, 77.0, 140.0, 26.0, 45.0, 98. 0, 30.0, 55.0, 32.0, 50.1, 24.0, 54.3, 11.0, 14.0, 25.0, 85.0, 60.0, 12.0, 100.0, 21.0, 34.0, 40.0, 35.0, 30.0, 75.0, 120.0, 16.7, 60.0, 88.0, 160.0, 55.0, 85.0, 53.0, 40.0, 25.0, 70.0, 40.0, 32.0, 25.0, 90.0, 36.7, 92.0, 6 0.0, 94.6, 85.0, 44.0, 21.0, 45.0, 75.0, 45.9, 29.0, 93.2, 30.9, 45.0, 95.0, 77.6, 68.0, 100.0, 130.0, 32.0, 6 2.9, 35.9, 80.0, 39.9, 120.0, 60.0, 34.0, 17.0, 75.0, 170.0, 100.0, 24.5, 100.0, 16.0, 75.0, 130.0, 120.0, 69. 3, 30.0, 50.0, 30.0, 180.0, 22.0, 34.8, 27.0, 90.0, 25.0, 170.0, 69.7, 54.0, 78.5, 27.0, 190.0, 42.6, 190.0, 6 4.0, 160.0, 52.5, 50.0, 60.0, 47.0, 63.0, 17.9, 190.0, 84.0, 45.0, 77.0, 32.0, 54.0, 87.0, 46.0, 130.0, 31.0, 5 2.0, 73.5, 25.5, 75.0, 45.0, 61.2, 35.0, 76.8, 66.5, 11.5, 190.0, 42.5, 180.0, 46.0, 35.0, 110.0, 40.5, 100.0, 79.6, 39.0, 50.0, 190.0, 65.0, 84.0, 80.0, 47.0, 170.0, 120.0, 43.0, 56.0, 45.0, 90.0, 67.0, 70.0, 40.0, 190.0, 80.0, 56.0, 44.9, 28.0, 130.0, 28.0, 79.0, 100.0, 44.5, 90.0, 20.0, 13.0, 35.0, 60.0, 42.0, 180.0, 130.0, 38.0, 75.0, 100.0, 95.0, 65.0, 60.0, 140.0, 45.0, 21.5, 30.0, 59.2, 75.0, 38.0, 90.0, 150.0, 140.0, 35.0, 65.0, 95.0, 45.0, 110.0, 91.0, 70.0, 43.3, 85.0, 74.0, 22.0, 12.0, 87.8, 23.0, 86.0, 160.0, 32.0, 100.0, 31.0, 38.0, 58.0, 120.0, 72.0, 30.0, 37.5, 55.0, 69.0, 120.0, 130.0, 76.0, 90.0, 110.0, 32.0, 190.0, 52.0, 35.0, 90.0, 28.0, 160. 0, 38.5, 58.0, 65.0, 52.0, 55.0, 58.5, 51.0, 19.8, 39.0, 50.0, 65.4, 53.5, 99.0, 160.0, 20.0, 25.0, 150.0, 140. 0, 58.0, 99.0, 31.0, 79.5, 140.0, 47.0, 86.8, 100.0, 120.0, 70.0, 82.0, 65.0, 50.0, 34.0, 33.7, 30.6, 45.0, 12 0.0, 95.0, 160.0, 160.0, 18.2, 23.5, 70.0, 76.0, 73.5, 42.0, 150.0, 27.0, 180.0, 52.0, 50.0, 130.0, 43.0, 64.0, 93.0, 33.0, 31.5, 72.0, 87.0, 28.0, 25.0, 42.0, 18.0, 160.0, 21.0, 84.2, 120.0, 44.7, 14.0, 35.0, 50.0, 60.0, 2 2.0, 120.0, 25.0, 150.0, 24.0, 64.5, 27.3, 68.0, 42.0, 45.0, 25.9, 80.0, 66.0, 55.0, 31.0, 110.0, 64.0, 20.5, 1 70.0, 110.0, 30.0, 43.7, 93.8, 55.0, 40.0, 85.0, 47.0, 96.0, 46.5, 180.0, 66.0, 9.5, 65.0, 22.0, 65.0, 66.0, 6 85.0, 35.0, 120.0, 33.0, 76.9, 160.0, 120.0, 60.0, 35.0, 70.0, 65.0, 50.4, 42.0,  $0.0,\ 24.9,\ 90.0,\ 40.0,\ 75.0,\ 50.0,\ 190.0,\ 81.0,\ 34.9,\ 150.0,\ 14.0,\ 70.0,\ 20.0,\ 40.0,\ 110.0,\ 69.0,\ 21.9,\ 100.0,\ 100$ 71.9, 75.0, 39.7, 140.0, 50.0, 36.0, 150.0, 19.2, 42.0, 33.0, 180.0, 110.0, 33.0, 160.0, 100.0, 21.0, 75.0, 52. 0, 72.0, 65.0, 58.0, 76.5, 14.0, 33.5, 37.0, 29.9, 54.5, 170.0, 59.5, 30.3, 35.0, 72.0, 68.0, 58.0, 23.0, 87.0, 70.0, 130.0, 50.0, 53.0, 100.0, 74.0, 38.0, 44.1, 130.0, 65.0, 28.0, 24.0, 50.0, 44.0, 22.5, 40.0, 22.0, 42.0, 30.4, 23.0, 110.0, 32.0, 23.0, 98.0, 44.0, 33.0, 48.0, 99.0, 76.0, 22.0, 150.0, 47.8, 85.0, 34.4, 65.0, 87.4, 5 5.0, 120.0, 52.0, 49.0, 69.5, 33.0, 33.3, 54.7, 62.0, 33.0, 64.0, 45.0, 85.0, 42.5, 88.0, 82.4, 95.0, 60.0, 28. 5, 46.7, 27.0, 87.0, 45.0, 120.0, 37.2, 100.0, 100.0, 85.0, 99.0, 52.0, 45.0, 40.0, 120.0, 85.0, 98.0, 28.0, 7  $8.0,\ 77.0,\ 55.0,\ 25.0,\ 120.0,\ 35.0,\ 43.0,\ 55.0,\ 36.5,\ 30.0,\ 45.0,\ 190.0,\ 48.0,\ 26.0,\ 49.5,\ 49.5,\ 32.0,\ 45.0,\ 190.0,\ 49.5,$  $0.0,\ 140.0,\ 26.0,\ 45.0,\ 90.0,\ 35.2,\ 34.0,\ 90.0,\ 27.0,\ 18.0,\ 160.0,\ 22.0,\ 31.0,\ 38.7,\ 27.9,\ 15.0,\ 24.7,\ 90.0,\ 90.0,\ 90.0$ 1.0, 150.0, 54.0, 75.0, 61.0, 65.4, 80.0, 130.0, 57.8, 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70.0,\ 170.0,\ 160.0,\ 180.0,\ 100.0,\ 36.0,\ 40.0,\ 40.0,\ 53.0,\ 95.0,\ 46.0,\ 120.$ 0, 160.0, 110.0, 73.0, 72.0, 24.0, 110.0, 27.0, 110.0, 130.0, 48.0, 100.0, 80.0, 63.0, 79.9, 92.0, 24.5, 76.0, 100.0, 130.0, 77.0, 54.0, 55.2, 60.9, 32.0, 150.0, 73.6, 24.5, 120.0, 37.5, 120.0, 80.0, 55.0, 35.0, 69.0, 190. 0, 27.0, 45.0, 150.0, 110.0, 45.0, 120.0, 40.0, 40.0, 120.0, 110.0, 58.7, 18.7, 53.0, 40.0, 120.0, 37.5, 11.6, 19.5, 21.5, 42.0, 100.0, 18.1, 60.0, 38.5, 24.4, 39.9, 24.0, 22.0, 150.0, 44.8, 87.0, 65.0, 36.0, 140.0, 43.7, 31.2, 34.5, 13.0, 82.0, 59.0, 120.0, 120.0, 29.0, 23.0, 26.0, 60.0, 34.7, 70.0, 52.0, 43.1, 81.0, 150.0, 130.0, 63.0, 68.0, 82.0, 180.0, 77.0, 25.0, 75.0, 24.9, 18.5, 100.0, 160.0, 22.5, 30.4, 40.0, 80.0, 25.5, 24.5, 15.6, 58.1, 95.0, 55.0, 40.0, 22.9, 16.0, 24.9, 140.0, 92.0, 47.5, 11.0, 45.0, 59.9, 90.0, 25.9, 31.0, 80.0, 100.0, 2 3.0, 31.8, 21.8, 27.0, 59.6, 110.0, 31.0, 30.4, 42.0, 26.6, 70.0, 49.5, 45.0, 34.0, 170.0, 52.3, 53.0, 19.4, 5 8.2, 110.0, 50.0, 35.0, 29.0, 130.0, 27.0, 71.5, 29.5, 68.0, 43.0, 22.7, 79.0, 80.0, 82.0, 190.0, 35.0, 95.0, 1 40.0, 13.9, 48.0, 31.2, 110.0, 55.0, 71.0, 170.0, 120.0, 78.5, 42.0, 48.0, 38.0, 61.0, 92.0, 22.0, 140.0, 70.0, 22.0, 95.0, 67.1, 45.0, 42.2, 16.0, 20.0, 110.0, 33.0, 45.0, 85.0, 150.0, 19.0, 26.0, 26.7, 35.0, 80.0, 170.0, 14.0, 46.6, 40.0, 62.0, 90.0, 46.0, 81.0, 50.0, 92.0, 160.0, 75.1, 37.0, 80.2, 31.0, 120.0, 69.0, 160.0, 55.0, 120.0, 32.8, 190.0, 73.0, 26.1, 36.0, 29.5, 34.9, 65.0, 26.5, 86.0, 85.0, 55.0, 54.0, 26.0, 110.0, 36.5, 17.1, 20.0, 40.0, 38.0, 95.0, 65.0, 83.9, 120.0, 54.0, 150.0, 36.2, 37.0, 52.0, 35.0, 70.0, 190.0, 38.0, 17.5, 16.2, 35.0, 85.0, 42.0, 30.0, 75.0, 25.9, 45.5, 72.0, 55.0, 45.0, 51.0, 130.0, 75.0, 24.0, 130.0, 24.0, 28.1, 66.0, 2 4.0, 87.3, 38.9, 68.0, 21.0, 41.6, 42.0, 130.0, 24.0, 58.0, 25.0, 150.0, 35.0, 100.0, 20.0, 100.0, 29.3, 65.0, 46.0, 79.3, 24.1, 100.0, 80.0, 53.0, 40.0, 92.0, 42.7, 110.0, 16.0, 55.0, 20.5, 130.0, 27.0, 22.0, 110.0, 38.0, 49.1, 37.5, 120.0, 44.9, 29.0, 57.0, 23.5, 190.0, 120.0, 180.0, 85.0, 100.0, 40.9, 22.8, 150.0, 41.9, 45.0, 97. 0, 85.0, 45.0, 68.0, 25.0, 40.0, 30.0, 58.0] final rmse In [85]: 25.35352113879704 Out[85]: In [86]: prepared data[0] array([-0.66480119, -1.70676813, -1.43494573, 0.37673988]) Out[86]:

In [87]: #from joblib import dump,load
#import numpy as np

#model.predict(input)

0.07956222]])

#model=load('HousePricePridiction.joblib')

#input=np.array([[-0.6530879 , -0.46803365, -0.68300252, 0.65289198, -0.02686704, # -0.01066568, 0.46803365, 0.27446248, -1.48593816, -1.35187528,

ADDRESS

For 0 : ['Agartala']
For 1 : ['Agra']

For 2 : ['Ahmednagar']
For 3 : ['Ajmer']
For 4 : ['Akola']
For 5 : ['Aligarh']
For 6 : ['Allahabad']
For 7 : ['Alwar']
For 8 : ['Ambala']
For 9 : ['Amravati']
For 10 : ['Amritsar']
For 11 : ['Amroha']
For 12 : ['Anand']