import the libraries required

```
In [4]:
```

```
import numpy as np
import pandas as pd
```

read the csv file

```
In [5]:
```

```
a_csv=pd.read_csv('5_a.csv')
print(a_csv.head(10))
a_csv.shape
    У
          proba
 1.0 0.637387
0
1 1.0 0.635165
2 1.0 0.766586
3 1.0 0.724564
4 1.0 0.889199
5 1.0 0.601600
6 1.0 0.666323
7 1.0 0.567012
8 1.0 0.650230
9 1.0 0.829346
Out[5]:
```

(10100, 2)

change the prob values to binary values.using thresholds.

```
In [6]:
df=a_csv['proba']
In [7]:
print(len(df))
10100
```

convert probabilistic values to either 0 or 1 based on threshold

```
In [8]:
```

```
count=0
count1=0
for i in range(0,len(df)):
    if df.loc[i]>0.5:
        count+=1
        df=df.replace(df.loc[i],1)
    elif df.loc[i]<=0.5:
        count1+=1
        df=df.replace(df.loc[i],0)
print(df.head(10))
print('positive points count',count)
print('positive points count',count1)
0
     1.0
1
     1.0
2
     1.0
3
     1.0
4
     1.0
5
     1.0
6
     1.0
7
     1.0
8
     1.0
9
     1.0
Name: proba, dtype: float64
positive points count 10100
positive points count 0
In [9]:
df.describe()
Out[9]:
count
         10100.0
mean
             1.0
             0.0
std
min
             1.0
25%
             1.0
50%
             1.0
75%
             1.0
max
             1.0
Name: proba, dtype: float64
```

create column in the dataset to store yhat values

```
In [10]:
a_csv['yhat']=df.values
```

```
In [11]:
```

```
a_csv.head(10)
```

Out[11]:

	у	proba	yhat
0	1.0	0.637387	1.0
1	1.0	0.635165	1.0
2	1.0	0.766586	1.0
3	1.0	0.724564	1.0
4	1.0	0.889199	1.0
5	1.0	0.601600	1.0
6	1.0	0.666323	1.0
7	1.0	0.567012	1.0
8	1.0	0.650230	1.0
9	1.0	0.829346	1.0

calculate total number of positive and negative points in the dataset

```
In [12]:
```

positive points count(p) 10000
negative points count(n) 100

In [13]:

print(pos)
print(neg)

10000 100

observations

1)there are 100 negative points (0) in 'y' that have been falsely classifed as positive points(1) in yhat.

CONFUSION MATRIX CALCULATION

In [14]:

```
confusion_matrix=[]
TN=0
FN=0
FP=0
TP=0
for i in range(0,len(a_csv)):
    global TN
    global TP
    global FP
    global FN
    if a_csv['y'].loc[i]==a_csv['yhat'].loc[i]:
        if a_csv['y'].loc[i]==0:
            TN+=1
        elif a_csv['y'].loc[i]==1:
            TP+=1
    elif a_csv['y'].loc[i]!=a_csv['yhat'].loc[i]:
        if a_csv['y'].loc[i]==0 and a_csv['yhat'].loc[i]==1:
        elif a_csv['y'].loc[i]==1 and a_csv['yhat'].loc[i]==0:
            FN+=1
print('TP',TP)
print('TN',TN)
print('FP',FP)
print('FN',FN)
confusion_matrix.append(TN)
confusion_matrix.append(FN)
confusion_matrix.append(FP)
confusion_matrix.append(TP)
x=np.reshape(confusion_matrix,(2, 2))
#print(confusion_matrix)
print('CONFUSION MATRIX \n',x)
TP 10000
TN 0
FP 100
FN 0
CONFUSION MATRIX
 [[
  100 10000]]
```

PRECISION, RECALL, F1-SCORE calculation

In [15]:

```
precision=((TP)/(TP+FP))
recall=((TP)/(TP+FN))
print('precision \n',precision)
print('recall \n',recall)
F1_score=2*(precision*recall)/(precision+recall)
print('F1-score \n',F1_score)
```

precision
 0.9900990099009901
recall
 1.0
F1-score
 0.9950248756218906

ACCURACY SCORE

In [16]:

```
accuracy_score=(TP+TN)/(TP+FP+FN+TN)
print('accuracy score \n',accuracy_score)
```

accuracy score 0.990099009901

COMPUTE AUC by considering each probability value in yhat as threshold and compute TPR and FPR

In [30]:

```
tpr_lst=[]
fpr_lst=[]
fn_lst=[]
tn_lst=[]
from tqdm import tqdm
a_csv=pd.read_csv('5_a.csv')
#a_csv['proba']=sorted(a_csv['proba'])
sorted_data=a_csv.sort_values('proba',ascending=True)
for threshold in tqdm(sorted_data['proba']):
    y hat=[]
    for value in sorted_data['proba']:
        if (value<=threshold):</pre>
            y_hat.append(0.0)
        else:
            y_hat.append(1.0)
    #print(y_hat[:10])
    sorted_data['y_pred']=y_hat
    #print(a_csv.head(10))
    for k in a_csv:
        tp = (((sorted_data['y'])==1.0) & ((sorted_data['y_pred']) == 1.0)).sum()
        fp = (((sorted_data['y'])==0.0) & ((sorted_data['y_pred']) == 1.0)).sum()
        tn=(((sorted_data['y'])==0.0) & ((sorted_data['y_pred']) == 0.0)).sum()
        fn=(((sorted_data['y'])==1.0) & ((sorted_data['y_pred']) == 0.0)).sum()
    tpr_lst.append(tp/(tp+fn))
    fpr_lst.append(fp/(fp+tn))
    #print('TPR\n',tpr_lst[:])
    #print('FPR\n',fpr_lst[:])
    tn_lst.append(tn)
    fn_lst.append(fn)
x=sorted(tpr_lst)
y=sorted(fpr lst)
auc = np.trapz(x,y)
print('AUC score is : ',auc)
print('TP',tp)
print('FP',fp)
print('TN',tn)
print('FN',fn)
```

```
0%|
| 0/10100 [00:00<?, ?it/s]
 0%|
| 9/10100 [00:00<01:56, 86.57it/s]
 0%||
| 19/10100 [00:00<01:52, 89.98it/s]
 0%||
| 28/10100 [00:00<01:52, 89.47it/s]
 0%|
| 38/10100 [00:00<01:49, 92.14it/s]
 0%|
| 48/10100 [00:00<01:47, 93.85it/s]
  1%|
| 59/10100 [00:00<01:43, 96.90it/s]
  1%|
| 70/10100 [00:00<01:40, 99.68it/s]
```

```
1%|
| 81/10100 [00:00<01:39, 100.89it/s]
 1%|
| 92/10100 [00:00<01:37, 102.90it/s]
 1%|
| 103/10100 [00:01<01:35, 104.65it/s]
 1%|
| 114/10100 [00:01<01:34, 105.30it/s]
 1%|
| 125/10100 [00:01<01:34, 105.76it/s]
 1%|
| 136/10100 [00:01<01:35, 104.88it/s]
 1%|
| 147/10100 [00:01<01:33, 106.08it/s]
 2%
| 158/10100 [00:01<01:38, 100.49it/s]
 2%
| 169/10100 [00:01<01:39, 99.81it/s]
```

file:///D:/ASSIGNMENT 5a html.html

```
2%
| 180/10100 [00:01<01:37, 102.10it/s]
 2%|
| 191/10100 [00:01<01:36, 103.20it/s]
 2%|
| 202/10100 [00:01<01:34, 104.56it/s]
 2%|
| 213/10100 [00:02<01:34, 104.94it/s]
 2%|
| 224/10100 [00:02<01:34, 104.61it/s]
 2%|
| 236/10100 [00:02<01:32, 106.49it/s]
 2%|
| 247/10100 [00:02<01:36, 101.87it/s]
 3%|
| 258/10100 [00:02<01:35, 103.32it/s]
```

3%| 269/10100 [00:02<01:34, 103.76it/s]

```
3%|
| 280/10100 [00:02<01:34, 103.78it/s]
 3%|
| 291/10100 [00:02<01:34, 103.80it/s]
 3%|
| 302/10100 [00:02<01:33, 104.40it/s]
 3%|
| 313/10100 [00:03<01:32, 105.73it/s]
| 324/10100 [00:03<01:31, 106.37it/s]
| 335/10100 [00:03<01:32, 105.60it/s]
| 346/10100 [00:03<01:32, 105.67it/s]
| 357/10100 [00:03<01:32, 105.12it/s]
```

| 368/10100 [00:03<01:32, 105.32it/s]

```
4%| 390/10100 [00:03<01:31, 106.01it/s]
```

```
4%| 4%| 402/10100 [00:03<01:30, 107.22it/s]
```

```
4%| 4%| 413/10100 [00:03<01:30, 106.49it/s]
```

```
4%| 4%| 424/10100 [00:04<01:33, 103.59it/s]
```

```
4%| 4%| 435/10100 [00:04<01:36, 99.99it/s]
```

5%| 457/10100 [00:04<01:36, 100.03it/s]

```
468/10100 [00:04<01:34, 102.26it/s]
| 479/10100 [00:04<01:33, 103.02it/s]
| 490/10100 [00:04<01:33, 102.97it/s]
 5%
| 501/10100 [00:04<01:32, 103.23it/s]
| 512/10100 [00:04<01:36, 98.95it/s]
| 523/10100 [00:05<01:34, 100.94it/s]
| 534/10100 [00:05<01:39, 96.19it/s]
| 545/10100 [00:05<01:36, 99.08it/s]
```

```
6%|
| 567/10100 [00:05<01:33, 102.13it/s]
 6%|
| 578/10100 [00:05<01:35, 99.83it/s]
 6%|
| 589/10100 [00:05<01:34, 100.18it/s]
 6%|
| 600/10100 [00:05<01:33, 102.09it/s]
 6%|
| 612/10100 [00:05<01:30, 104.39it/s]
 6%
| 623/10100 [00:06<01:30, 104.81it/s]
| 634/10100 [00:06<01:29, 106.03it/s]
| 645/10100 [00:06<01:31, 103.58it/s]
```

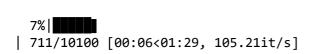
6%| 656/10100 [00:06<01:29, 105.14it/s]

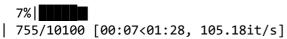
```
7%| 667/10100 [00:06<01:29, 105.34it/s]

7%| 678/10100 [00:06<01:29, 105.19it/s]

7%| 689/10100 [00:06<01:29, 105.68it/s]

7%| 7%| 700/10100 [00:06<01:29, 104.52it/s]
```





```
8%| 766/10100 [00:07<01:29, 104.48it/s]
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```
8%|
| 855/10100 [00:08<01:27, 106.23it/s]
 9%
| 866/10100 [00:08<01:27, 105.50it/s]
 9%|
| 877/10100 [00:08<01:27, 105.00it/s]
 9%|
| 888/10100 [00:08<01:32, 99.26it/s]
| 899/10100 [00:08<01:31, 100.87it/s]
| 910/10100 [00:08<01:29, 102.59it/s]
 9%|
| 921/10100 [00:08<01:28, 103.54it/s]
 9%|
| 932/10100 [00:09<01:27, 105.11it/s]
```

9%| 943/10100 [00:09<01:27, 104.43it/s]

9%| 9%| 954/10100 [00:09<01:32, 98.65it/s]

10%| [00:09<01:30, 100.69it/s]

10%| 977/10100 [00:09<01:28, 103.36it/s]

10%| 988/10100 [00:09<01:28, 102.92it/s]

10%| 999/10100 [00:09<01:29, 101.20it/s]

10%| 100 [00:09<01:30, 100.86it/s]

10%| 10%| 100 [00:09<01:28, 102.87it/s]

| 1043/10100 [00:10<01:26, 104.96it/s]

10%|

| 1054/10100 [00:10<01:25, 105.22it/s]

11%|

| 1065/10100 [00:10<01:26, 104.50it/s]

11%|

| 1076/10100 [00:10<01:27, 103.41it/s]

11%|

| 1087/10100 [00:10<01:26, 104.73it/s]

11%|

| 1098/10100 [00:10<01:25, 105.66it/s]

11%

| 1109/10100 [00:10<01:26, 104.51it/s]

11%

| 1120/10100 [00:10<01:27, 102.55it/s]

| 1131/10100 [00:10<01:27, 102.64it/s]

11% | 1142/10100 [00:11<01:29, 100.46it/s] 11% | 1153/10100 [00:11<01:27, 102.30it/s] | 1164/10100 [00:11<01:26, 103.62it/s] 12% | 1176/10100 [00:11<01:24, 105.50it/s] 12% | 1188/10100 [00:11<01:23, 106.85it/s] | 1199/10100 [00:11<01:23, 106.54it/s] | 1210/10100 [00:11<01:22, 107.26it/s] | 1221/10100 [00:11<01:23, 106.83it/s]

| 1233/10100 [00:11<01:22, 107.80it/s]

12%|

| 1244/10100 [00:12<01:22, 107.84it/s]

12%|

| 1255/10100 [00:12<01:21, 108.18it/s]

13%|

| 1266/10100 [00:12<01:21, 108.42it/s]

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| 1277/10100 [00:12<01:21, 108.58it/s]

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13%

| 1312/10100 [00:12<01:20, 109.61it/s]

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| 1335/10100 [00:12<01:20, 109.53it/s]

13%| 1347/10100 [00:12<01:19, 110.02it/s]

13%| 13%| 1359/10100 [00:13<01:18, 110.67it/s]

14%| 1371/10100 [00:13<01:19, 109.61it/s]

14%| 1382/10100 [00:13<01:19, 109.39it/s]

14%| 1393/10100 [00:13<01:25, 102.29it/s]

14%| 14%| 100 [00:13<01:23, 103.91it/s]

14%| 1415/10100 [00:13<01:22, 104.77it/s]

14%| ■ 14%

14%| 1437/10100 [00:13<01:22, 105.37it/s]

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| 1448/10100 [00:13<01:21, 106.12it/s]

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| 1459/10100 [00:14<01:27, 98.89it/s]

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| 1470/10100 [00:14<01:25, 101.43it/s]

15%

| 1481/10100 [00:14<01:23, 103.00it/s]

15%

| 1492/10100 [00:14<01:23, 103.54it/s]

15%|

| 1503/10100 [00:14<01:22, 104.51it/s]

15%

| 1514/10100 [00:14<01:25, 100.05it/s]

15%|

| 1525/10100 [00:14<01:24, 101.99it/s]

15%| | 1536/10100 [00:14<01:26, 99.21it/s]

15%| 1547/10100 [00:14<01:24, 101.11it/s]

15%| 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 1

16%| 1568/10100 [00:15<01:30, 94.66it/s]

16%| 1579/10100 [00:15<01:26, 98.01it/s]

16%| 1590/10100 [00:15<01:24, 100.50it/s]

16%| 1601/10100 [00:15<01:22, 102.62it/s]

16%| 1612/10100 [00:15<01:21, 104.15it/s]

16%| 1623/10100 [00:15<01:20, 105.55it/s]

| 1634/10100 [00:15<01:20, 105.64it/s] 16% | 1645/10100 [00:15<01:19, 106.00it/s] 16% | 1656/10100 [00:15<01:19, 106.26it/s] 17% | 1667/10100 [00:16<01:19, 106.12it/s] | 1678/10100 [00:16<01:18, 106.65it/s] | 1689/10100 [00:16<01:19, 106.40it/s]

| 1701/10100 [00:16<01:18, 107.50it/s]

17%| 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 17% | 1

| 1723/10100 [00:16<01:18, 107.17it/s]

17%|

| 1734/10100 [00:16<01:19, 105.84it/s]

17%|

| 1745/10100 [00:16<01:19, 104.93it/s]

17%|

| 1756/10100 [00:16<01:19, 104.60it/s]

17%

| 1767/10100 [00:16<01:18, 105.57it/s]

18%

| 1778/10100 [00:17<01:18, 106.26it/s]

18%

| 1789/10100 [00:17<01:18, 106.44it/s]

18%

| 1800/10100 [00:17<01:18, 106.26it/s]

18%

| 1811/10100 [00:17<01:18, 105.82it/s]

| 1822/10100 [00:17<01:17, 106.44it/s] | 1833/10100 [00:17<01:17, 107.19it/s] | 1844/10100 [00:17<01:17, 106.77it/s] | 1855/10100 [00:17<01:17, 106.49it/s] | 1866/10100 [00:17<01:19, 103.30it/s] | 1877/10100 [00:18<01:22, 99.53it/s] | 1888/10100 [00:18<01:20, 102.19it/s]

| 1900/10100 [00:18<01:18, 104.45it/s]

| 1911/10100 [00:18<01:22, 98.93it/s]

19%| 1922/10100 [00:18<01:20, 101.46it/s]

19%| 1933/10100 [00:18<01:18, 103.60it/s]

19%| 1944/10100 [00:18<01:17, 105.16it/s]

19%| 19%| 1955/10100 [00:18<01:17, 105.05it/s]

19%| 1966/10100 [00:18<01:17, 104.98it/s]

20%| 1978/10100 [00:19<01:16, 106.48it/s]

20%| 1989/10100 [00:19<01:16, 106.29it/s]

20%| 2000/10100 [00:19<01:16, 106.15it/s]

20%| 2011/10100 [00:19<01:16, 105.75it/s]

20%

| 2022/10100 [00:19<01:22, 98.14it/s]

20%|

| 2032/10100 [00:19<01:22, 97.26it/s]

20%|

| 2043/10100 [00:19<01:20, 99.69it/s]

20%

| 2054/10100 [00:19<01:19, 101.45it/s]

20%

| 2065/10100 [00:19<01:19, 101.03it/s]

21%

| 2076/10100 [00:19<01:21, 98.04it/s]

21%

| 2087/10100 [00:20<01:20, 99.71it/s]

21%|

| 2098/10100 [00:20<01:20, 99.01it/s]

21%|

| 2110/10100 [00:20<01:18, 102.10it/s]

21%|

| 2121/10100 [00:20<01:16, 103.78it/s]

21%

| 2132/10100 [00:20<01:15, 105.29it/s]

21%|

2143/10100 [00:20<01:15, 106.06it/s]

21%

| 2154/10100 [00:20<01:15, 105.08it/s]

21%|

| 2165/10100 [00:20<01:15, 105.61it/s]

22%|

| 2176/10100 [00:20<01:14, 106.59it/s]

22%

| 2187/10100 [00:21<01:18, 100.81it/s]

22%

| 2198/10100 [00:21<01:16, 102.84it/s]

22%| 2209/10100 [00:21<01:16, 103.43it/s]

22%| 2220/10100 [00:21<01:15, 104.73it/s]

22%| 2231/10100 [00:21<01:14, 105.97it/s]

22%| 2242/10100 [00:21<01:13, 106.54it/s]

22%| 2253/10100 [00:21<01:13, 106.64it/s]

22%| 2264/10100 [00:21<01:13, 106.71it/s]

23%| 2275/10100 [00:21<01:19, 98.71it/s]

23%| 23%| 2286/10100 [00:22<01:17, 100.74it/s]

23%| 23%| 2297/10100 [00:22<01:16, 101.93it/s]

| 2308/10100 [00:22<01:15, 103.66it/s] | 2319/10100 [00:22<01:14, 104.89it/s] 23% | 2330/10100 [00:22<01:14, 104.87it/s] | 2341/10100 [00:22<01:13, 105.16it/s] | 2352/10100 [00:22<01:13, 105.36it/s] | 2363/10100 [00:22<01:12, 106.42it/s]

24%| 2374/10100 [00:22<01:12, 106.86it/s]

24%| 2385/10100 [00:22<01:12, 106.24it/s]

24%|

| 2396/10100 [00:23<01:13, 105.50it/s]

24%

| 2407/10100 [00:23<01:13, 104.70it/s]

24%

| 2418/10100 [00:23<01:17, 99.62it/s]

24%

| 2429/10100 [00:23<01:15, 101.12it/s]

24%

| 2440/10100 [00:23<01:14, 103.36it/s]

24%

| 2451/10100 [00:23<01:13, 104.68it/s]

24%

| 2462/10100 [00:23<01:12, 105.02it/s]

24%

| 2473/10100 [00:23<01:12, 105.87it/s]

25%

2484/10100 [00:23<01:11, 106.47it/s]

25% | 2495/10100 [00:23<01:10, 107.21it/s] 25% | 2506/10100 [00:24<01:10, 107.42it/s] | 2517/10100 [00:24<01:11, 105.70it/s] 25% | 2528/10100 [00:24<01:11, 105.75it/s] 25% | 2539/10100 [00:24<01:11, 105.77it/s] | 2550/10100 [00:24<01:11, 105.48it/s] | 2561/10100 [00:24<01:13, 102.35it/s] | 2572/10100 [00:24<01:13, 103.08it/s]

2583/10100 [00:24<01:14, 101.31it/s]

26%| | 2594/10100 [00:24<01:14, 100.93it/s] 26%| | 2605/10100 [00:25<01:13, 102.07it/s] 26%| | 2616/10100 [00:25<01:12, 102.59it/s] 26%| | 2627/10100 [00:25<01:12, 103.25it/s] 26%| | 2638/10100 [00:25<01:11, 104.01it/s] 26% 2649/10100 [00:25<01:11, 103.96it/s] 26% 2660/10100 [00:25<01:11, 104.51it/s] | 2671/10100 [00:25<01:13, 101.14it/s]

27%| 2682/10100 [00:25<01:13, 101.37it/s]

27%|

| 2693/10100 [00:25<01:12, 102.67it/s]

27%| | 2704/10100 [00:26<01:11, 103.30it/s]

27% | 2715/10100 [00:26<01:10, 104.35it/s]

27%| | 2726/10100 [00:26<01:09, 105.39it/s]

27%| | 2738/10100 [00:26<01:08, 107.06it/s]

27% | 2749/10100 [00:26<01:08, 107.63it/s]

27%| 2760/10100 [00:26<01:08, 107.71it/s]

27%| 2771/10100 [00:26<01:08, 107.77it/s]

2782/10100 [00:26<01:09, 105.64it/s]

28%|

2793/10100 [00:26<01:09, 104.79it/s]

28%|

2804/10100 [00:26<01:08, 106.01it/s]

28%|

2815/10100 [00:27<01:08, 106.57it/s]

28%

| 2826/10100 [00:27<01:08, 106.97it/s]

28%|

| 2837/10100 [00:27<01:09, 105.10it/s]

28%

| 2848/10100 [00:27<01:08, 105.62it/s]

28%

2859/10100 [00:27<01:12, 100.48it/s]

28%

2870/10100 [00:27<01:10, 102.31it/s]

29%| | 2881/10100 [00:27<01:12, 99.15it/s] 29%| | 2892/10100 [00:27<01:11, 101.34it/s] 29%| | 2903/10100 [00:27<01:10, 102.65it/s] 29% | 2914/10100 [00:28<01:08, 104.17it/s] 29% | 2925/10100 [00:28<01:08, 105.26it/s] | 2936/10100 [00:28<01:07, 106.04it/s] | 2947/10100 [00:28<01:08, 105.07it/s] 29% | 2958/10100 [00:28<01:07, 106.21it/s]

29%| 2970/10100 [00:28<01:06, 107.36it/s]

| 2982/10100 [00:28<01:05, 108.19it/s] 30%| | 2993/10100 [00:28<01:06, 107.47it/s] 30% | 3004/10100 [00:28<01:06, 107.28it/s] | 3015/10100 [00:28<01:06, 107.16it/s] | 3026/10100 [00:29<01:06, 106.14it/s] | 3037/10100 [00:29<01:06, 106.97it/s] | 3048/10100 [00:29<01:05, 107.56it/s] | 3059/10100 [00:29<01:05, 107.04it/s]

30%|

| 3070/10100 [00:29<01:05, 107.29it/s]

31%

| 3081/10100 [00:29<01:05, 107.80it/s]

31%

| 3093/10100 [00:29<01:04, 108.49it/s]

31%

| 3104/10100 [00:29<01:04, 108.31it/s]

31%

| 3115/10100 [00:29<01:05, 107.24it/s]

31%|

| 3126/10100 [00:30<01:05, 107.13it/s]

31%

| 3137/10100 [00:30<01:05, 107.04it/s]

31%

| 3148/10100 [00:30<01:05, 105.76it/s]

31%|

| 3159/10100 [00:30<01:05, 106.39it/s]

31% | 3170/10100 [00:30<01:05, 105.61it/s] 31%| | 3181/10100 [00:30<01:04, 106.60it/s] | 3192/10100 [00:30<01:04, 106.99it/s] | 3203/10100 [00:30<01:04, 106.64it/s] 32%| | 3214/10100 [00:30<01:04, 106.39it/s] | 3225/10100 [00:30<01:04, 106.84it/s] | 3236/10100 [00:31<01:08, 100.42it/s] | 3247/10100 [00:31<01:07, 101.98it/s]

32%| 3258/10100 [00:31<01:05, 103.99it/s]

32%| | 3269/10100 [00:31<01:05, 104.53it/s] 32%| | 3280/10100 [00:31<01:11, 95.62it/s] 33%| | 3291/10100 [00:31<01:09, 97.68it/s] 33%| | 3301/10100 [00:31<01:11, 95.02it/s] 33%| | 3311/10100 [00:31<01:11, 95.10it/s] 33% | 3322/10100 [00:31<01:09, 98.08it/s] 33%| | 3333/10100 [00:32<01:07, 100.01it/s] | 3344/10100 [00:32<01:06, 100.85it/s]

33%| 3355/10100 [00:32<01:05, 102.87it/s]

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33%| | 3366/10100 [00:32<01:04, 104.33it/s] 33% | 3377/10100 [00:32<01:03, 105.38it/s] 34%| | 3388/10100 [00:32<01:03, 105.52it/s] 34% | 3399/10100 [00:32<01:03, 106.22it/s] 34% | 3410/10100 [00:32<01:03, 105.79it/s] 34% | 3421/10100 [00:32<01:02, 106.11it/s] 34% | 3432/10100 [00:32<01:04, 103.93it/s] 34%|

| 3443/10100 [00:33<01:03, 105.39it/s]

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34%| 3454/10100 [00:33<01:02, 106.13it/s]

34%| 3465/10100 [00:33<01:02, 106.66it/s]

34%| 3477/10100 [00:33<01:01, 107.68it/s]

35%| 3488/10100 [00:33<01:01, 108.06it/s]

35%| 3500/10100 [00:33<01:00, 108.69it/s]

35%| 3511/10100 [00:33<01:01, 107.81it/s]

35%| 3522/10100 [00:33<01:00, 108.16it/s]

35%| 3534/10100 [00:33<01:00, 109.05it/s]

35%| 3545/10100 [00:34<01:00, 108.71it/s]

35%| | 3557/10100 [00:34<00:59, 109.13it/s] 35% | 3569/10100 [00:34<00:59, 109.74it/s] 35% | 3580/10100 [00:34<00:59, 109.51it/s] 36% | 3591/10100 [00:34<00:59, 109.03it/s] 36% | 3602/10100 [00:34<01:00, 107.41it/s] 36% | 3613/10100 [00:34<01:00, 107.88it/s] 36% | 3624/10100 [00:34<01:00, 107.26it/s] 36% | 3635/10100 [00:34<01:00, 106.51it/s] 36%

| 3646/10100 [00:34<01:01, 105.69it/s]

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| 3657/10100 [00:35<01:00, 105.73it/s] 36%| | 3668/10100 [00:35<01:01, 104.56it/s] 36% | 3679/10100 [00:35<01:00, 105.54it/s] | 3690/10100 [00:35<01:00, 106.55it/s] | 3701/10100 [00:35<01:00, 106.02it/s] | 3712/10100 [00:35<01:00, 106.27it/s] | 3723/10100 [00:35<00:59, 107.07it/s] | 3734/10100 [00:35<00:59, 106.39it/s]

37%|

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| 3745/10100 [00:35<00:59, 107.15it/s]

37%

| 3756/10100 [00:35<00:59, 107.06it/s]

37%

| 3767/10100 [00:36<00:59, 107.00it/s]

37%|

| 3778/10100 [00:36<00:59, 106.03it/s]

38%|

| 3789/10100 [00:36<00:59, 105.66it/s]

38%|

| 3800/10100 [00:36<01:00, 103.92it/s]

38%|

| 3811/10100 [00:36<01:01, 101.59it/s]

| 3822/10100 [00:36<01:01, 102.83it/s]

38%

| 3833/10100 [00:36<01:00, 103.13it/s]

38% | 3844/10100 [00:36<01:00, 104.22it/s] 38%| | 3855/10100 [00:36<00:59, 105.00it/s] | 3866/10100 [00:37<00:59, 105.55it/s] 38% | 3877/10100 [00:37<00:58, 106.24it/s] 38%| | 3888/10100 [00:37<00:58, 106.74it/s] | 3899/10100 [00:37<00:58, 106.46it/s] | 3910/10100 [00:37<00:57, 107.20it/s] | 3921/10100 [00:37<00:57, 107.73it/s]

| 3932/10100 [00:37<00:57, 106.84it/s]

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39%| | 3943/10100 [00:37<00:57, 107.16it/s] 39%| | 3954/10100 [00:37<00:58, 105.83it/s] 39%| | 3965/10100 [00:37<00:57, 105.83it/s] 39%| | 3976/10100 [00:38<00:58, 105.22it/s] 39%| | 3987/10100 [00:38<00:58, 105.10it/s] 40%| | 3998/10100 [00:38<00:57, 106.24it/s] | 4009/10100 [00:38<00:57, 106.11it/s] | 4020/10100 [00:38<00:56, 106.96it/s]

40%| 4032/10100 [00:38<00:56, 107.61it/s]

40%| | 4043/10100 [00:38<00:56, 106.75it/s] 40% | 4054/10100 [00:38<00:56, 107.32it/s] 40%| | 4065/10100 [00:38<00:57, 105.33it/s] 40% | 4076/10100 [00:39<00:59, 101.97it/s] 40%| | 4087/10100 [00:39<00:58, 103.10it/s] 41%| | 4098/10100 [00:39<00:57, 103.90it/s] 41%| 4109/10100 [00:39<00:57, 103.59it/s] 41%| 4120/10100 [00:39<00:58, 102.50it/s]

41%| 4131/10100 [00:39<00:57, 103.77it/s]

41%| 4142/10100 [00:39<01:00, 99.03it/s]

41%| 4153/10100 [00:39<00:58, 101.53it/s]

41%| 4164/10100 [00:39<00:58, 101.64it/s]

41%| 4175/10100 [00:39<00:57, 102.29it/s]

41%| 4186/10100 [00:40<00:56, 103.91it/s]

42%| 4197/10100 [00:40<00:56, 103.89it/s]

42%| 4208/10100 [00:40<00:56, 104.47it/s]

42%| 4219/10100 [00:40<00:55, 105.78it/s]

42%| | 4230/10100 [00:40<00:55, 105.19it/s] 42% | 4241/10100 [00:40<00:55, 105.99it/s] 42% | 4252/10100 [00:40<00:55, 104.43it/s] 42% | 4263/10100 [00:40<00:55, 104.85it/s] 42% | 4274/10100 [00:40<00:54, 106.05it/s] | 4285/10100 [00:41<00:55, 105.07it/s] 43% 4296/10100 [00:41<00:54, 105.91it/s] 43% | 4307/10100 [00:41<00:58, 99.56it/s] 43%

4318/10100 [00:41<00:56, 101.92it/s]

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| 4329/10100 [00:41<00:56, 102.78it/s] 43% | 4340/10100 [00:41<00:56, 102.80it/s] 43% | 4351/10100 [00:41<00:55, 104.28it/s] | 4362/10100 [00:41<00:55, 103.85it/s] 4373/10100 [00:41<00:54, 105.34it/s] | 4384/10100 [00:41<00:53, 106.40it/s] | 4395/10100 [00:42<00:53, 106.23it/s] 44%

44%|

| 4406/10100 [00:42<00:53, 106.42it/s]

4417/10100 [00:42<00:54, 104.72it/s]

| 4428/10100 [00:42<00:53, 105.35it/s]

| 4439/10100 [00:42<00:53, 105.19it/s]

| 4450/10100 [00:42<00:53, 104.78it/s]

| 4461/10100 [00:42<00:53, 105.70it/s]

| 4472/10100 [00:42<00:53, 105.13it/s]

| 4483/10100 [00:42<00:53, 105.95it/s]

| 4494/10100 [00:43<00:53, 105.01it/s]

| 4505/10100 [00:43<00:53, 105.25it/s]

45% 4516/10100 [00:43<00:57, 97.58it/s] | 4527/10100 [00:43<00:55, 100.18it/s] | 4538/10100 [00:43<00:54, 101.25it/s] 45% | 4550/10100 [00:43<00:53, 103.77it/s] | 4561/10100 [00:43<00:53, 104.09it/s] | 4572/10100 [00:43<00:53, 104.00it/s] | 4583/10100 [00:43<00:52, 104.25it/s] | 4594/10100 [00:44<00:53, 103.83it/s] | 4605/10100 [00:44<00:52, 105.32it/s]

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46%| | 4616/10100 [00:44<00:52, 105.17it/s] 46%| | 4627/10100 [00:44<00:51, 105.98it/s] 46%| | 4638/10100 [00:44<00:51, 106.24it/s] 46%| | 4649/10100 [00:44<00:51, 106.12it/s] 46%| | 4661/10100 [00:44<00:50, 107.30it/s] 46%| | 4672/10100 [00:44<00:50, 107.47it/s] 46% 4683/10100 [00:44<00:50, 107.60it/s] | 4694/10100 [00:44<00:51, 105.83it/s]

47%| 47%| 4705/10100 [00:45<00:50, 106.14it/s]

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47%| | 4716/10100 [00:45<00:50, 106.66it/s] 47%| | 4727/10100 [00:45<00:51, 104.00it/s] 47% 4738/10100 [00:45<00:51, 104.84it/s] | 4749/10100 [00:45<00:50, 105.44it/s] 47% 4760/10100 [00:45<00:50, 106.16it/s] 47%| 4771/10100 [00:45<00:49, 106.68it/s] 47%| 4782/10100 [00:45<00:49, 106.73it/s] 47%| 4793/10100 [00:45<00:50, 105.54it/s]

48%| 4804/10100 [00:45<00:50, 105.63it/s]

48%| 4815/10100 [00:46<00:49, 106.30it/s]

48%| 4826/10100 [00:46<00:51, 102.60it/s]

48%| 4837/10100 [00:46<00:52, 100.71it/s]

48%| 4848/10100 [00:46<00:51, 101.62it/s]

48%| 4859/10100 [00:46<00:50, 102.85it/s]

48%| 4870/10100 [00:46<00:49, 104.61it/s]

48%| 4881/10100 [00:46<00:49, 105.88it/s]

48%| 4892/10100 [00:46<00:48, 106.79it/s]

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49%
| 4904/10100 [00:46<00:48, 107.78it/s]
49%
| 4915/10100 [00:47<00:48, 107.19it/s]
49%
| 4926/10100 [00:47<00:48, 106.78it/s]
49%
| 4938/10100 [00:47<00:47, 107.77it/s]
49%
| 4949/10100 [00:47<00:47, 107.81it/s]
49%
| 4960/10100 [00:47<00:47, 107.52it/s]
49%
4971/10100 [00:47<00:48, 104.87it/s]
49%
| 4982/10100 [00:47<00:48, 106.07it/s]
4993/10100 [00:47<00:47, 106.61it/s]
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| 5004/10100 [00:47<00:47, 107.31it/s] 50% | 5016/10100 [00:47<00:47, 108.15it/s] 50% | 5027/10100 [00:48<00:48, 104.98it/s] | 5038/10100 [00:48<00:47, 106.15it/s] | 5050/10100 [00:48<00:47, 107.32it/s] | 5061/10100 [00:48<00:46, 107.81it/s] | 5073/10100 [00:48<00:46, 108.50it/s] | 5084/10100 [00:48<00:46, 108.01it/s]

50%|

60/111

| 5096/10100 [00:48<00:45, 108.93it/s]

| 5107/10100 [00:48<00:46, 108.30it/s]

| 5118/10100 [00:48<00:46, 107.87it/s]

| 5129/10100 [00:49<00:49, 99.95it/s]

| 5140/10100 [00:49<00:48, 101.64it/s]

| 5151/10100 [00:49<00:49, 100.60it/s]

| 5162/10100 [00:49<00:48, 102.12it/s]

| 5173/10100 [00:49<00:47, 103.49it/s]

| 5184/10100 [00:49<00:47, 103.89it/s]

| 5195/10100 [00:49<00:46, 105.06it/s] | 5206/10100 [00:49<00:46, 105.59it/s] | 5217/10100 [00:49<00:46, 105.37it/s] 52% | 5228/10100 [00:50<00:46, 105.50it/s] 52%| | 5239/10100 [00:50<00:45, 106.21it/s] | 5250/10100 [00:50<00:48, 100.57it/s] | 5261/10100 [00:50<00:47, 102.38it/s] | 5272/10100 [00:50<00:46, 102.81it/s] | 5283/10100 [00:50<00:46, 104.29it/s]

file:///D:/ASSIGNMENT 5a html.html 62/111

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| 5305/10100 [00:50<00:45, 104.47it/s]
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| 5316/10100 [00:50<00:45, 104.57it/s]
53%|
| 5327/10100 [00:50<00:45, 105.55it/s]
53%|
| 5338/10100 [00:51<00:45, 103.84it/s]
53%|
| 5349/10100 [00:51<00:45, 105.03it/s]
| 5360/10100 [00:51<00:44, 105.88it/s]
| 5371/10100 [00:51<00:44, 106.48it/s]
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| 5382/10100 [00:51<00:44, 105.97it/s]

file:///D:/ASSIGNMENT 5a html.html 63/111

53%| | 5394/10100 [00:51<00:43, 107.20it/s] 54% | 5405/10100 [00:51<00:43, 107.41it/s] 54% | 5416/10100 [00:51<00:43, 107.23it/s] 54%| | 5427/10100 [00:51<00:46, 100.66it/s] 54%| | 5438/10100 [00:52<00:45, 101.88it/s] 54%| | 5449/10100 [00:52<00:45, 103.32it/s] 54%| 5460/10100 [00:52<00:44, 104.66it/s] 54%| | 5471/10100 [00:52<00:44, 105.00it/s]

54% | 5482/10100 [00:52<00:43, 106.16it/s] 54% | 5494/10100 [00:52<00:42, 107.33it/s] 55% | 5505/10100 [00:52<00:42, 107.50it/s] | 5516/10100 [00:52<00:42, 107.62it/s] 55% | 5527/10100 [00:52<00:42, 107.39it/s] 55% | 5538/10100 [00:52<00:42, 107.86it/s] 55% | 5549/10100 [00:53<00:42, 108.19it/s] 55% | 5560/10100 [00:53<00:41, 108.11it/s]

| 5571/10100 [00:53<00:41, 108.37it/s]

file:///D:/ASSIGNMENT 5a html.html 65/111

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55%
| 5582/10100 [00:53<00:42, 107.28it/s]
55%
| 5593/10100 [00:53<00:41, 107.78it/s]
55%
| 5605/10100 [00:53<00:41, 108.48it/s]
56%
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56%
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56%
| 5638/10100 [00:53<00:42, 105.89it/s]
56%
| 5649/10100 [00:53<00:42, 105.88it/s]
56%
| 5660/10100 [00:54<00:41, 106.78it/s]
| 5671/10100 [00:54<00:41, 105.58it/s]
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file:///D:/ASSIGNMENT 5a html.html 66/111

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| 5693/10100 [00:54<00:42, 103.67it/s]
56%
| 5704/10100 [00:54<00:41, 105.21it/s]
| 5715/10100 [00:54<00:41, 106.31it/s]
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| 5737/10100 [00:54<00:40, 107.02it/s]
| 5748/10100 [00:54<00:43, 99.98it/s]
| 5759/10100 [00:55<00:42, 102.23it/s]
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57%|

| 5770/10100 [00:55<00:42, 101.85it/s]

57%| 5781/10100 [00:55<00:41, 103.89it/s]

57%| 5792/10100 [00:55<00:41, 103.87it/s]

58%| 5814/10100 [00:55<00:41, 103.12it/s]

58%| 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6

| 5859/10100 [00:55<00:39, 106.48it/s]

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| 5903/10100 [00:56<00:40, 102.65it/s]
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| 5958/10100 [00:56<00:39, 104.25it/s]
```

file:///D:/ASSIGNMENT 5a html.html 69/111

```
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| 5969/10100 [00:57<00:39, 104.72it/s]
59%|
| 5980/10100 [00:57<00:39, 104.45it/s]
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| 5991/10100 [00:57<00:38, 105.47it/s]
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| 6002/10100 [00:57<00:38, 106.49it/s]
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| 6013/10100 [00:57<00:38, 106.30it/s]
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| 6024/10100 [00:57<00:38, 105.24it/s]
60%|
| 6035/10100 [00:57<00:38, 106.02it/s]
| 6046/10100 [00:57<00:37, 106.89it/s]
| 6058/10100 [00:57<00:37, 108.43it/s]
```

file:///D:/ASSIGNMENT 5a html.html 70/111

```
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60%
| 6080/10100 [00:58<00:36, 108.70it/s]
60%
| 6092/10100 [00:58<00:36, 109.44it/s]
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61%|
| 6126/10100 [00:58<00:37, 105.17it/s]
61%|
| 6137/10100 [00:58<00:37, 105.67it/s]
61%|
| 6148/10100 [00:58<00:37, 106.03it/s]
```

61%| | 6160/10100 [00:58<00:36, 107.81it/s] 61% 6172/10100 [00:58<00:36, 108.80it/s] 61%| | 6183/10100 [00:59<00:36, 107.57it/s] 61% | 6195/10100 [00:59<00:35, 108.63it/s] 61%| | 6206/10100 [00:59<00:35, 108.73it/s] 62% 6217/10100 [00:59<00:35, 108.48it/s] 62% | 6228/10100 [00:59<00:36, 107.36it/s] 62% | 6239/10100 [00:59<00:36, 107.21it/s] | 6250/10100 [00:59<00:36, 105.57it/s]

file:///D:/ASSIGNMENT 5a html.html 72/111

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62%
| 6273/10100 [00:59<00:35, 108.20it/s]
62%
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62%
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| 6307/10100 [01:00<00:34, 108.42it/s]
63%
| 6318/10100 [01:00<00:34, 108.27it/s]
63%|
| 6330/10100 [01:00<00:34, 109.43it/s]
63%
| 6342/10100 [01:00<00:34, 109.94it/s]
6353/10100 [01:00<00:34, 108.68it/s]
```

file:///D:/ASSIGNMENT 5a html.html 73/111

```
| 6364/10100 [01:00<00:34, 107.49it/s]
63%
| 6376/10100 [01:00<00:34, 108.27it/s]
63%
| 6387/10100 [01:00<00:34, 107.85it/s]
| 6398/10100 [01:01<00:34, 106.92it/s]
| 6410/10100 [01:01<00:34, 107.87it/s]
| 6421/10100 [01:01<00:34, 106.94it/s]
| 6432/10100 [01:01<00:34, 107.23it/s]
| 6444/10100 [01:01<00:33, 108.09it/s]
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file:///D:/ASSIGNMENT.5a.html.html

74/111

| 6456/10100 [01:01<00:33, 109.00it/s]

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64%| 6479/10100 [01:01<00:33, 108.15it/s]

64%| 6490/10100 [01:01<00:35, 102.07it/s]

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65%| 6547/10100 [01:02<00:33, 105.76it/s]

file:///D:/ASSIGNMENT 5a html.html

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| 6571/10100 [01:02<00:32, 108.36it/s]
| 6582/10100 [01:02<00:32, 108.54it/s]
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65%
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| 6617/10100 [01:03<00:31, 109.61it/s]
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| 6652/10100 [01:03<00:31, 109.55it/s]
```

file:///D:/ASSIGNMENT 5a html.html

76/111

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| 6676/10100 [01:03<00:30, 110.89it/s]
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| 6688/10100 [01:03<00:30, 110.98it/s]
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| 6700/10100 [01:03<00:30, 109.82it/s]
 66%|
| 6711/10100 [01:03<00:30, 109.56it/s]
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| 6722/10100 [01:04<00:30, 109.39it/s]
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| 6734/10100 [01:04<00:30, 110.52it/s]
| 6746/10100 [01:04<00:30, 110.72it/s]
```

| 6758/10100 [01:04<00:30, 109.94it/s]

file:///D:/ASSIGNMENT 5a html.html 77/111

```
67%
| 6769/10100 [01:04<00:30, 109.33it/s]
67%|
| 6780/10100 [01:04<00:30, 109.21it/s]
67%
| 6792/10100 [01:04<00:30, 110.10it/s]
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| 6804/10100 [01:04<00:29, 110.42it/s]
67%|
| 6816/10100 [01:04<00:30, 109.14it/s]
68%|
| 6827/10100 [01:04<00:30, 108.76it/s]
68%|
6839/10100 [01:05<00:29, 109.47it/s]
68%|
| 6851/10100 [01:05<00:29, 109.68it/s]
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68% | 6863/10100 [01:05<00:29, 110.12it/s] 68% 6875/10100 [01:05<00:29, 108.93it/s] 68%| | 6887/10100 [01:05<00:29, 109.30it/s] 68%| 6899/10100 [01:05<00:29, 110.16it/s] 68% | 6911/10100 [01:05<00:29, 109.55it/s] 69% | 6923/10100 [01:05<00:28, 110.34it/s] 69% | 6935/10100 [01:05<00:28, 109.98it/s] 69% | 6947/10100 [01:06<00:28, 110.33it/s] | 6959/10100 [01:06<00:28, 110.58it/s]

file:///D:/ASSIGNMENT 5a html.html 79/111

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69%|
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69%
| 6983/10100 [01:06<00:28, 110.88it/s]
69%
| 6995/10100 [01:06<00:28, 110.67it/s]
69%
| 7007/10100 [01:06<00:27, 110.82it/s]
69%
| 7019/10100 [01:06<00:30, 102.41it/s]
| 7031/10100 [01:06<00:29, 105.17it/s]
| 7042/10100 [01:06<00:29, 102.43it/s]
70%
| 7053/10100 [01:07<00:29, 104.31it/s]
7065/10100 [01:07<00:28, 106.55it/s]
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file:///D:/ASSIGNMENT 5a html.html

80/111

```
| 7077/10100 [01:07<00:28, 107.61it/s]
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| 7089/10100 [01:07<00:27, 108.66it/s]
70%|
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| 7112/10100 [01:07<00:28, 104.01it/s]
| 7123/10100 [01:07<00:28, 105.14it/s]
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| 7146/10100 [01:07<00:27, 107.19it/s]
| 7157/10100 [01:08<00:27, 107.72it/s]
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71%|

file:///D:/ASSIGNMENT 5a html.html 81/111

| 7169/10100 [01:08<00:26, 108.73it/s]

| 7181/10100 [01:08<00:26, 109.45it/s]

| 7193/10100 [01:08<00:26, 109.66it/s]

71%|

| 7205/10100 [01:08<00:26, 109.81it/s]

7216/10100 [01:08<00:26, 108.91it/s]

72%|

7228/10100 [01:08<00:26, 109.88it/s]

72%|

7239/10100 [01:08<00:26, 109.28it/s]

72%|

7251/10100 [01:08<00:25, 109.84it/s]

/251/10100 [01:08<00:25, 109.841t/s]

72%|

| 7263/10100 [01:09<00:25, 109.93it/s]

```
72%
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72%|
| 7285/10100 [01:09<00:25, 109.44it/s]
| 7297/10100 [01:09<00:25, 109.96it/s]
72%
| 7309/10100 [01:09<00:25, 110.93it/s]
72%
| 7321/10100 [01:09<00:25, 110.70it/s]
| 7333/10100 [01:09<00:25, 110.53it/s]
| 7345/10100 [01:09<00:24, 111.03it/s]
| 7357/10100 [01:09<00:24, 109.86it/s]
| 7368/10100 [01:09<00:25, 108.62it/s]
```

file:///D:/ASSIGNMENT 5a html.html 83/111

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73%|
| 7391/10100 [01:10<00:25, 107.02it/s]
73%|
| 7403/10100 [01:10<00:24, 108.53it/s]
73%|
| 7415/10100 [01:10<00:24, 109.01it/s]
74%|
| 7426/10100 [01:10<00:24, 109.00it/s]
74%|
| 7438/10100 [01:10<00:24, 109.34it/s]
74%|
| 7450/10100 [01:10<00:24, 109.59it/s]
| 7462/10100 [01:10<00:23, 110.06it/s]
| 7474/10100 [01:10<00:23, 110.70it/s]
```

file:///D:/ASSIGNMENT 5a html.html 84/111

```
74%|
| 7486/10100 [01:11<00:23, 110.23it/s]
74%|
| 7498/10100 [01:11<00:25, 102.85it/s]
74%|
| 7510/10100 [01:11<00:24, 105.21it/s]
74%|
| 7522/10100 [01:11<00:24, 106.93it/s]
75%|
| 7533/10100 [01:11<00:23, 107.22it/s]
75%|
| 7545/10100 [01:11<00:23, 108.38it/s]
75%|
| 7557/10100 [01:11<00:23, 109.20it/s]
75%|
| 7568/10100 [01:11<00:23, 106.91it/s]
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file:///D:/ASSIGNMENT 5a html.html 85/111

75%| | 7579/10100 [01:11<00:24, 104.76it/s] 75% 7590/10100 [01:12<00:23, 105.98it/s] 75%| 7602/10100 [01:12<00:23, 107.49it/s] | 7614/10100 [01:12<00:22, 108.57it/s] 75% | 7625/10100 [01:12<00:22, 108.37it/s] 76% | 7637/10100 [01:12<00:22, 109.49it/s] 76% | 7649/10100 [01:12<00:22, 109.99it/s] 76% | 7661/10100 [01:12<00:22, 109.74it/s] 76% | 7673/10100 [01:12<00:22, 110.17it/s]

file:///D:/ASSIGNMENT 5a html.html 86/111

```
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| 7685/10100 [01:12<00:21, 110.47it/s]
76%
| 7697/10100 [01:13<00:21, 109.77it/s]
76%
| 7708/10100 [01:13<00:21, 109.53it/s]
76%
| 7719/10100 [01:13<00:22, 107.44it/s]
| 7730/10100 [01:13<00:22, 106.95it/s]
| 7742/10100 [01:13<00:21, 108.19it/s]
| 7754/10100 [01:13<00:21, 109.36it/s]
77%|
| 7766/10100 [01:13<00:21, 109.90it/s]
7778/10100 [01:13<00:21, 110.28it/s]
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file:///D:/ASSIGNMENT 5a html.html 87/111

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| 7790/10100 [01:13<00:20, 110.24it/s]
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| 7802/10100 [01:13<00:20, 110.52it/s]
77%|
| 7814/10100 [01:14<00:20, 110.41it/s]
| 7826/10100 [01:14<00:20, 110.03it/s]
| 7838/10100 [01:14<00:20, 110.68it/s]
| 7850/10100 [01:14<00:20, 109.61it/s]
| 7862/10100 [01:14<00:20, 109.78it/s]
| 7874/10100 [01:14<00:20, 109.89it/s]
```

file:///D:/ASSIGNMENT 5a html.html

78%

| 7885/10100 [01:14<00:20, 108.96it/s]

78%| 7896/10100 [01:14<00:20, 108.00it/s]

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79%| 7942/10100 [01:15<00:19, 109.49it/s]

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| 7965/10100 [01:15<00:19, 109.88it/s]

79%| 7977/10100 [01:15<00:19, 109.96it/s]

file:///D:/ASSIGNMENT 5a html.html

```
79%
| 7988/10100 [01:15<00:19, 106.18it/s]
79%|
| 8000/10100 [01:15<00:19, 107.91it/s]
79%
| 8012/10100 [01:15<00:19, 108.58it/s]
79%
| 8024/10100 [01:15<00:19, 109.05it/s]
80%|
| 8035/10100 [01:16<00:18, 109.03it/s]
80%|
| 8046/10100 [01:16<00:18, 109.01it/s]
| 8058/10100 [01:16<00:18, 109.35it/s]
| 8070/10100 [01:16<00:18, 109.89it/s]
| 8082/10100 [01:16<00:18, 110.58it/s]
```

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```
80%|
| 8094/10100 [01:16<00:18, 109.54it/s]
80%|
| 8106/10100 [01:16<00:18, 110.03it/s]
80%|
| 8118/10100 [01:16<00:17, 110.37it/s]
80%|
| 8130/10100 [01:16<00:18, 109.10it/s]
81%|
| 8141/10100 [01:17<00:18, 108.74it/s]
81%|
| 8153/10100 [01:17<00:17, 109.46it/s]
81%|
| 8164/10100 [01:17<00:17, 108.99it/s]
| 8176/10100 [01:17<00:17, 109.34it/s]
| 8187/10100 [01:17<00:17, 109.22it/s]
```

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```
81%|
| 8198/10100 [01:17<00:17, 108.50it/s]
 81%|
| 821<mark>0/10100 [01:17<00:17, 109.29it/s]</mark>
 81%|
| 8221/10100 [01:17<00:17, 108.55it/s]
 82%|
| 8232/10100 [01:17<00:17, 108.04it/s]
 82%|
| 8244/10100 [01:18<00:17, 108.96it/s]
 82%|
| 8256/10100 [01:18<00:16, 109.32it/s]
 82%|
| 8267/10100 [01:18<00:16, 109.21it/s]
 82%|
| 8279/10100 [01:18<00:16, 110.10it/s]
```

82%| | 8291/10100 [01:18<00:16, 110.12it/s] 82% | 8303/10100 [01:18<00:16, 110.73it/s] 82%| 8315/10100 [01:18<00:16, 110.26it/s] 82% | 8327/10100 [01:18<00:15, 110.84it/s] 83% | 8339/10100 [01:18<00:16, 109.12it/s] 83% | 8350/10100 [01:18<00:16, 105.32it/s] 83%| | 8361/10100 [01:19<00:16, 106.08it/s] 83%| | 8372/10100 [01:19<00:16, 106.93it/s] | 8384/10100 [01:19<00:15, 108.46it/s]

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```
83%|
| 8395/10100 [01:19<00:15, 108.62it/s]
83%
| 8406/10100 [01:19<00:15, 108.72it/s]
83%
| 8417/10100 [01:19<00:15, 108.80it/s]
83%
| 8429/10100 [01:19<00:15, 109.50it/s]
84%
| 8440/10100 [01:19<00:15, 109.01it/s]
84%
| 8452/10100 [01:19<00:15, 109.65it/s]
84%|
| 8464/10100 [01:20<00:14, 109.80it/s]
84%|
| 8475/10100 [01:20<00:14, 108.58it/s]
8487/10100 [01:20<00:14, 109.35it/s]
```

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```
| 8498/10100 [01:20<00:14, 109.23it/s]
84%
| 8510/10100 [01:20<00:14, 109.81it/s]
84%|
| 8521/10100 [01:20<00:14, 108.59it/s]
| 8533/10100 [01:20<00:14, 109.35it/s]
| 8544/10100 [01:20<00:14, 109.24it/s]
| 8555/10100 [01:20<00:14, 109.16it/s]
| 8566/10100 [01:20<00:14, 109.10it/s]
| 8578/10100 [01:21<00:13, 109.42it/s]
```

85%|

| 8589/10100 [01:21<00:13, 108.96it/s]

| 8600/10100 [01:21<00:13, 108.96it/s]

| 8611/10100 [01:21<00:13, 108.97it/s]

| 8622/10100 [01:21<00:13, 108.32it/s]

| 8634/10100 [01:21<00:13, 109.16it/s]

| 8645/10100 [01:21<00:13, 108.78it/s]

| 8656/10100 [01:21<00:13, 108.52it/s]

| 8667/10100 [01:21<00:13, 108.65it/s]

8678/10100 [01:21<00:13, 107.79it/s]

```
86%
| 8689/10100 [01:22<00:13, 108.14it/s]
86%
| 8701/10100 [01:22<00:12, 109.33it/s]
86%|
| 8713/10100 [01:22<00:12, 110.18it/s]
86%
| 8725/10100 [01:22<00:12, 110.18it/s]
87%|
| 8737/10100 [01:22<00:12, 110.78it/s]
| 8749/10100 [01:22<00:12, 110.90it/s]
| 8761/10100 [01:22<00:12, 110.98it/s]
| 8773/10100 [01:22<00:11, 111.35it/s]
| 8785/10100 [01:22<00:11, 109.77it/s]
```

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```
87%|
| 8796/10100 [01:23<00:11, 109.53it/s]
87%|
| 8808/10100 [01:23<00:11, 109.71it/s]
87%|
| 8820/10100 [01:23<00:11, 110.45it/s]
87%|
| 8832/10100 [01:23<00:11, 108.86it/s]
88%|
| 8844/10100 [01:23<00:11, 109.55it/s]
88%
| 8856/10100 [01:23<00:11, 110.33it/s]
88%|
| 8868/10100 [01:23<00:11, 110.89it/s]
| 8880/10100 [01:23<00:10, 111.28it/s]
| 8892/10100 [01:23<00:10, 111.25it/s]
```

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```
88%|
| 8904/10100 [01:24<00:10, 110.31it/s]
88%|
8916/10100 [01:24<00:10, 110.87it/s]
88%|
| 8928/10100 [01:24<00:10, 110.97it/s]
89%|
| 8940/10100 [01:24<00:10, 110.72it/s]
89%|
| 8952/10100 [01:24<00:10, 110.55it/s]
89%|
| 8964/10100 [01:24<00:10, 111.04it/s]
89%|
| 8976/10100 [01:24<00:10, 110.78it/s]
89%|
| 8988/10100 [01:24<00:10, 110.89it/s]
```

89%| 9000/10100 [01:24<00:09, 110.98it/s] 89% | | 9012/10100 [01:25<00:09, 110.43it/s] 89%| 9036/10100 [01:25<00:09, 110.90it/s] 90%| 9048/10100 [01:25<00:09, 110.37it/s] 90% 9060/10100 [01:25<00:09, 109.70it/s] 90%| 9071/10100 [01:25<00:09, 108.83it/s] 90% | 9083/10100 [01:25<00:09, 109.82it/s] 9095/10100 [01:25<00:09, 110.23it/s]

file:///D:/ASSIGNMENT 5a html.html

```
90%|
| 9107/10100 [01:25<00:09, 109.90it/s]
90%|
9118/10100 [01:25<00:08, 109.62it/s]
90%|
| 9130/10100 [01:26<00:08, 108.59it/s]
91%
9141/10100 [01:26<00:08, 108.38it/s]
91%
| 9153/10100 [01:26<00:08, 109.21it/s]
91%
9165/10100 [01:26<00:08, 109.79it/s]
91%|
9177/10100 [01:26<00:08, 110.20it/s]
91%
     9189/10100 [01:26<00:08, 105.54it/s]
     9201/10100 [01:26<00:08, 107.46it/s]
```

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```
| 9213/10100 [01:26<00:08, 108.25it/s]
91%
       9225/10100 [01:26<00:08, 108.81it/s]
91%
       9236/10100 [01:27<00:07, 108.86it/s]
      9247/10100 [01:27<00:07, 107.62it/s]
       | 9258/10100 [01:27<00:07, 107.70it/s]
92%|
       | 9270/10100 [01:27<00:07, 108.72it/s]
       | 9281/10100 [01:27<00:07, 108.80it/s]
       | 9292/10100 [01:27<00:07, 108.21it/s]
```

92%|

22/02/2020 ASSIGNMENT 5a | 9303/10100 [01:27<00:07, 107.17it/s]

| 9314/10100 [01:27<00:07, 107.71it/s] 9326/10100 [01:27<00:07, 108.72it/s] | 9338/10100 [01:28<00:06, 109.15it/s] 9350/10100 [01:28<00:06, 109.75it/s] | 9361/10100 [01:28<00:06, 109.19it/s] | 9373/10100 [01:28<00:06, 109.78it/s] 93%| | 9384/10100 [01:28<00:06, 107.93it/s] | 9396/10100 [01:28<00:06, 109.18it/s]

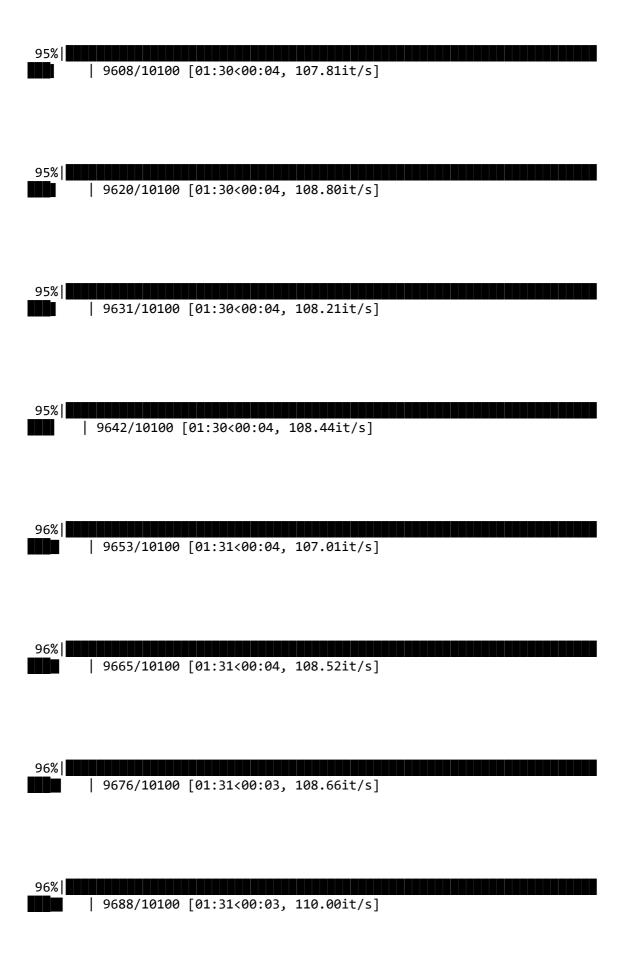
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file:///D:/ASSIGNMENT 5a html.html 104/111

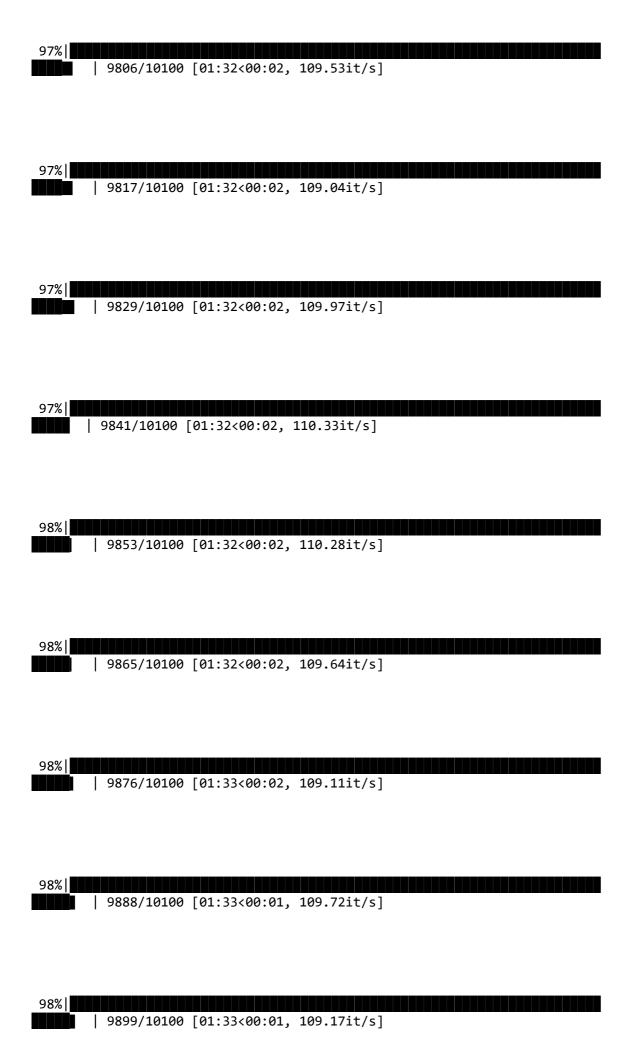
```
94%|
          9507/10100 [01:29<00:06, 93.20it/s]
94%|
         9517/10100 [01:29<00:06, 92.52it/s]
94%|
        | 9527/10100 [01:29<00:06, 90.55it/s]
94%|
        | 9538/10100 [01:29<00:05, 95.52it/s]
95%
        | 9549/10100 [01:30<00:05, 99.19it/s]
95%
       | 9561/10100 [01:30<00:05, 102.50it/s]
95%
      | 9573/10100 [01:30<00:05, 104.68it/s]
      | 9585/10100 [01:30<00:04, 106.55it/s]
       | 9596/10100 [01:30<00:04, 106.03it/s]
```

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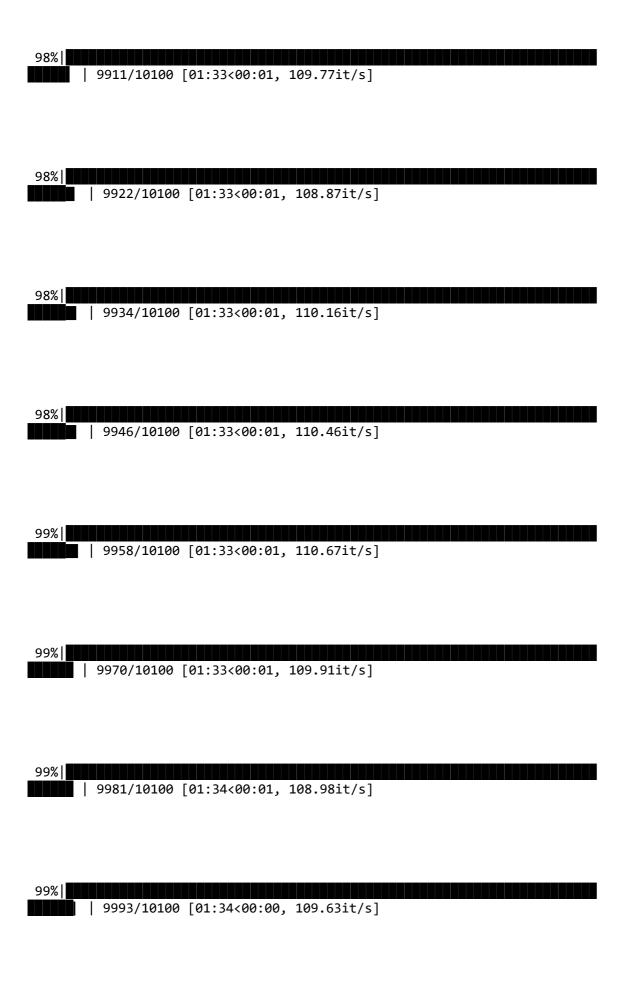


96% 9700/10100 [01:31<00:03, 103.51it/s] 9712/10100 [01:31<00:03, 105.97it/s] 96%| | 9723/10100 [01:31<00:03, 106.23it/s] 9735/10100 [01:31<00:03, 107.67it/s] 9747/10100 [01:31<00:03, 108.40it/s] 9758/10100 [01:32<00:03, 108.57it/s] 9770/10100 [01:32<00:03, 109.04it/s] | 9782/10100 [01:32<00:02, 109.67it/s] 9794/10100 [01:32<00:02, 110.12it/s]

file:///D:/ASSIGNMENT 5a html.html



file:///D:/ASSIGNMENT 5a html.html 108/111



file:///D:/ASSIGNMENT 5a html.html

109/111

99%

22/02/2020 ASSIGNMENT 5a | 10005/10100 [01:34<00:00, 110.09it/s]

| | 10017/10100 [01:34<00:00, 110.72it/s] | | 10029/10100 [01:34<00:00, 110.85it/s] | 10041/10100 [01:34<00:00, 110.34it/s] | 10053/10100 [01:34<00:00, 110.59it/s] | | 10065/10100 [01:34<00:00, 109.86it/s] | 10076/10100 [01:34<00:00, 109.59it/s] | 10088/10100 [01:35<00:00, 109.75it/s] | 10100/10100 [01:35<00:00, 106.18it/s]

file:///D:/ASSIGNMENT 5a html.html

AUC score is : 0.48829900000000004

TP 0

FP 0

TN 100 FN 10000