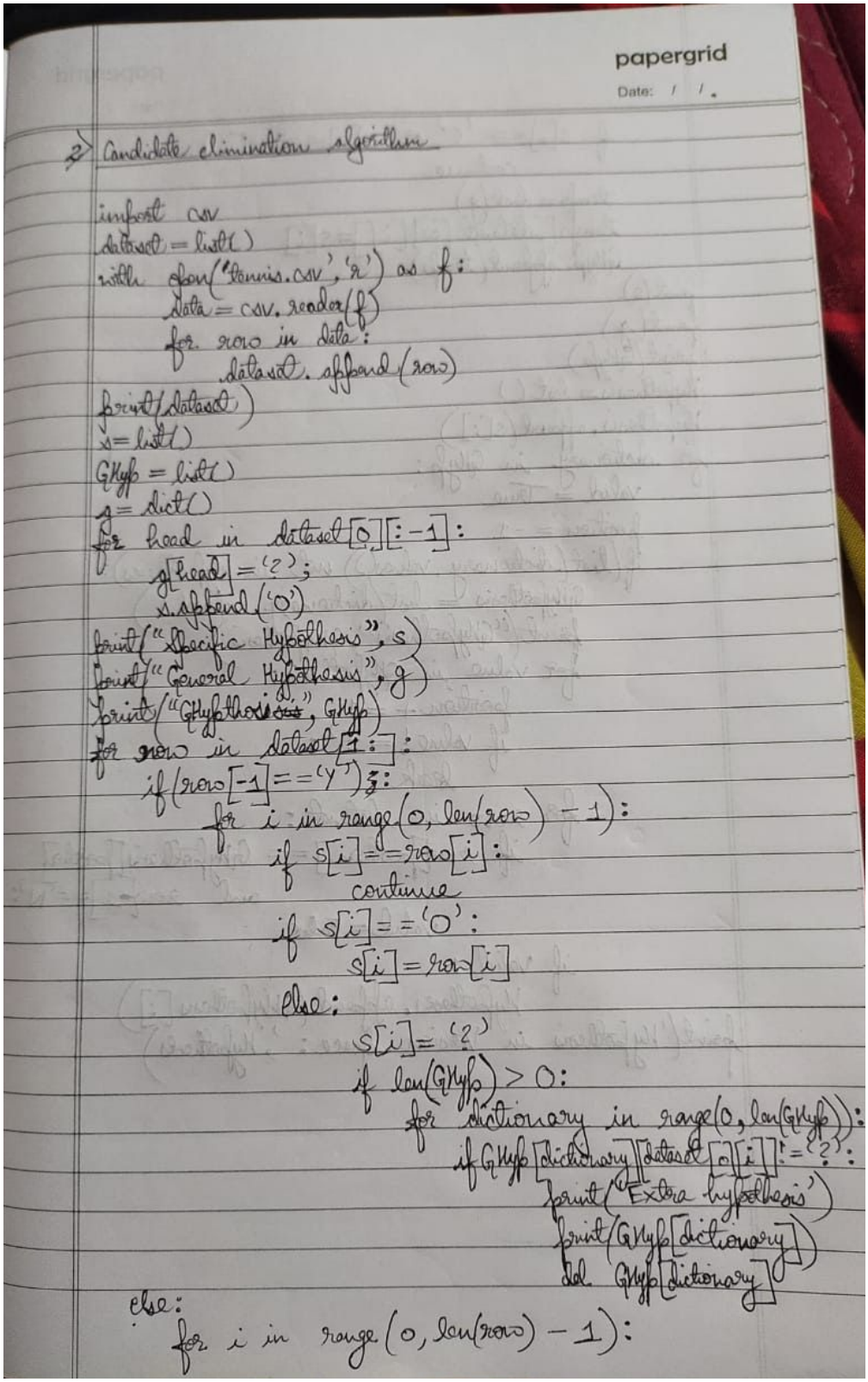
Candidate Elimination



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2) Candidate elimination algorithm

```
import csv
dataset = list()
with open('tennis.csv', 'r') as f:
    data = csv.reader(f)
    for row in data:
        dataset.append(row)
print(dataset)
s = list()
GHyp = list()
g = dict()
for head in dataset[0][:-1]:
    g[head] = '?'
    s.append('0')
print("Specific Hypothesis", s)
print("General Hypothesis", g)
print("Hypothesis", GHyp)
for row in dataset[1:]:
    if(row[-1] == 'Y'):
        for i in range(0, len(row) - 1):
            if s[i] == row[i]:
                continue
            if s[i] == '0':
                s[i] = row[i]
            else:
                s[i] = '?'
                if len(GHyp) > 0:
                    for dictionary in range(0, len(GHyp)):
                        if GHyp[dictionary][dataset[0][i]] != '?':
                            print('Extra hypothesis')
                            print(GHyp[dictionary])
                            del GHyp[dictionary]
    else:
        for i in range(0, len(row) - 1):
```

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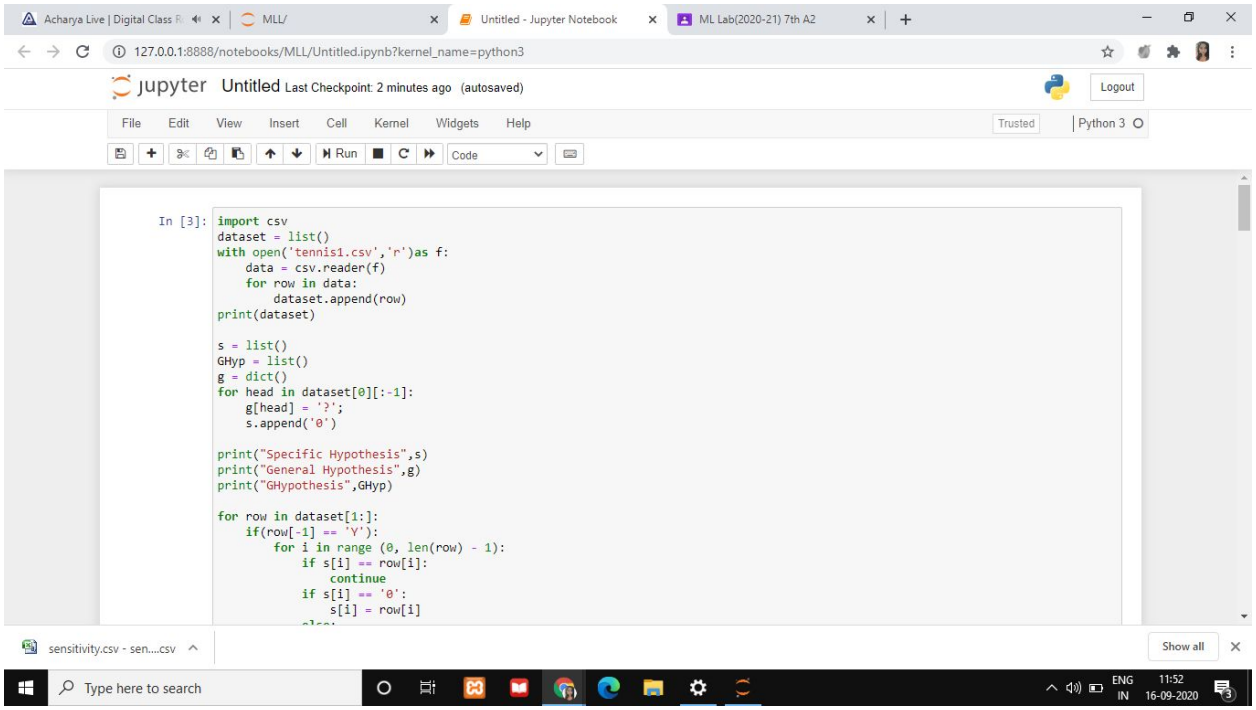
```
    if s[i]== '?' or s[i]==row[i]:
        continue
    temp=dict(g)
    temp[dataset[0][i]]=s[i]
    GHyp.append(temp)
print(s)
print(g)
print(GHyp)
Hypothesis=list()
Hypothesis.append(s[:])
for dictionary in GHyp:
    valid=True
    position=-1
    if(list(dictionary.values()) not in Hypotheses):
        GHypothesis=list(dictionary.values())
        print("GHypothesis",GHypothesis)
        for value in GHypothesis:
            position+=1
            if value!='?':
                break
        for row in dataset:
            if row[position]==GHypothesis[position]
                                and row[-1]=='N':
                valid=False
        if valid:
            Hypotheses.append(GHypothesis[:])
print('Hypothesis in Version Space:',Hypotheses)
```

Output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Python 3
Run
Code
In [3]:
import csv
dataset = list()
with open('tennis1.csv','r')as f:
data = csv.reader(f)
for row in data:
dataset.append(row)
print(dataset)
s = list()
GHyp = list()
g = dict()
for head in dataset[0][:-1]:
g[head] = '?';
s.append('0')
print("Specific Hypothesis",s)
print("General Hypothesis",g)
print("GHypothesis",GHyp)
for row in dataset[1:]:
if(row[-1] == 'Y'):
for i in range (0, len(row) - 1):
if s[i] == row[i]:
continue
if s[i] == '0':
s[i] = row[i]
sensitivity.csv - sen....csv
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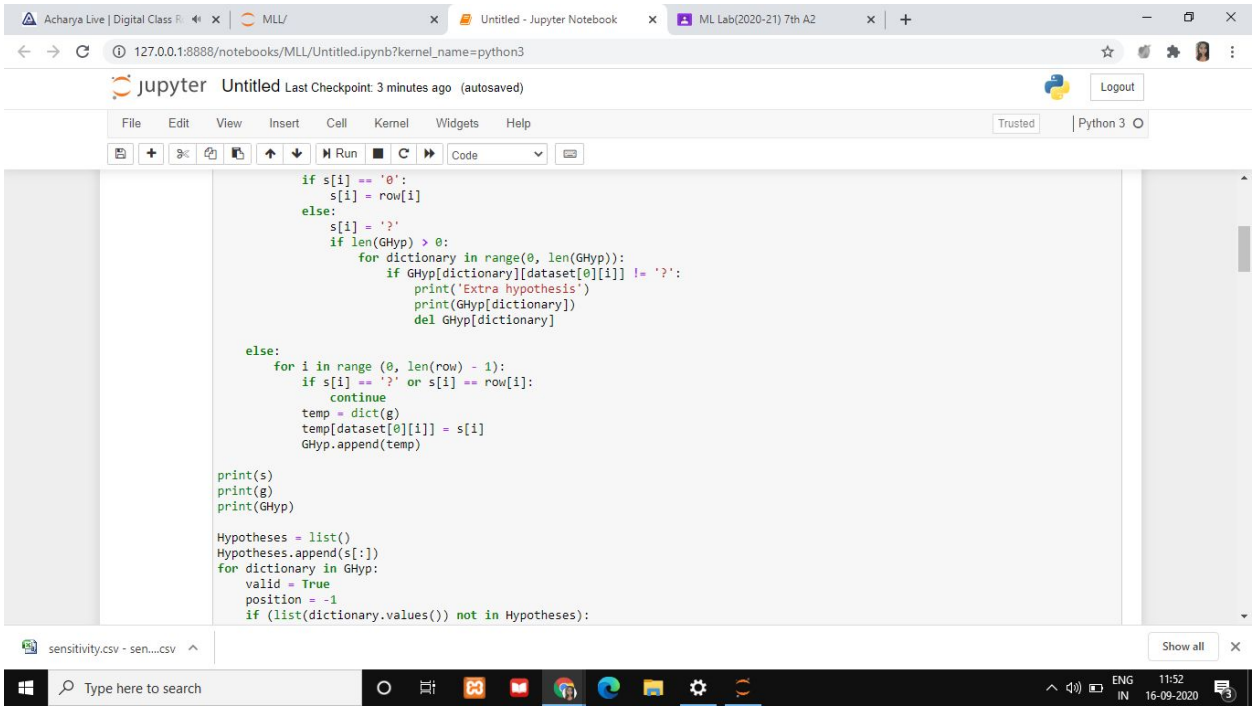
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Python 3
Run
Code
if s[i] == '0':
s[i] = row[i]
else:
s[i] = '?'
if len(GHyp) > 0:
for dictionary in range(0, len(GHyp)):
if GHyp[dictionary][dataset[0][i]] != '?':
print('Extra hypothesis')
print(GHyp[dictionary])
del GHyp[dictionary]
else:
for i in range (0, len(row) - 1):
if s[i] == '?' or s[i] == row[i]:
continue
temp = dict(g)
temp[dataset[0][i]] = s[i]
GHyp.append(temp)
print(s)
print(g)
print(GHyp)
Hypotheses = list()
Hypotheses.append(s[:])
for dictionary in GHyp:
valid = True
position = -1
if (list(dictionary.values()) not in Hypotheses):
sensitivity.csv - sen....csv
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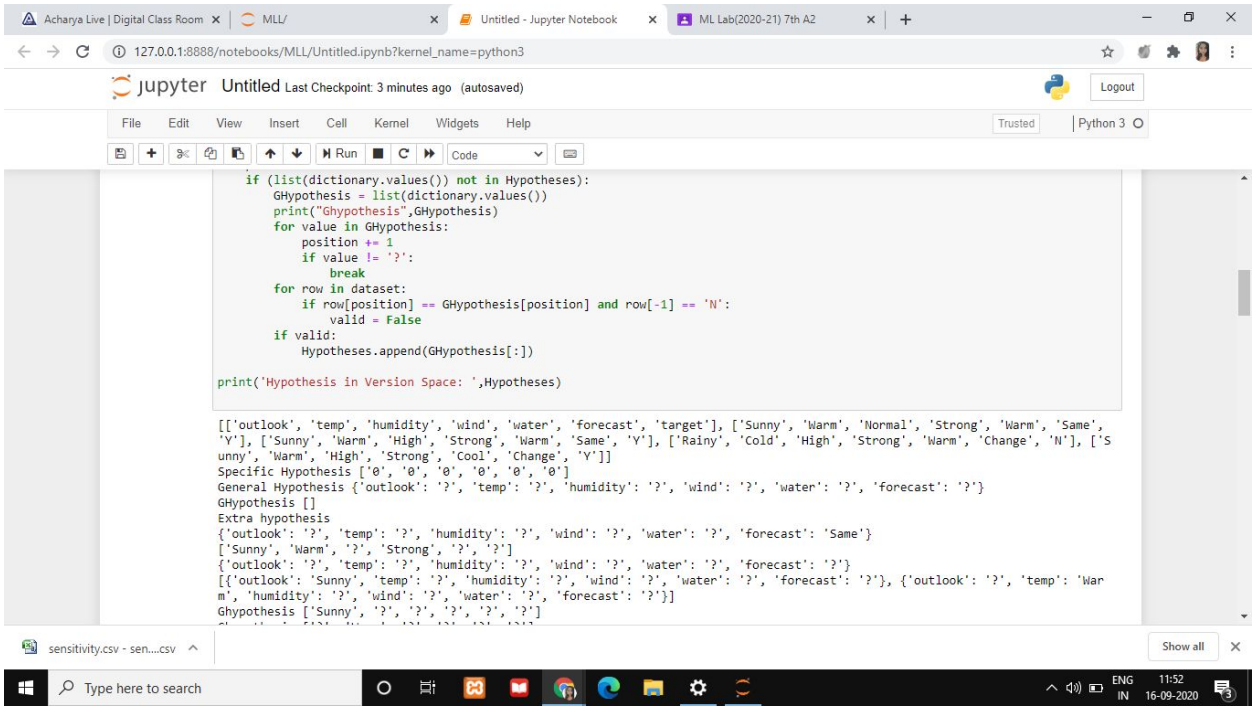
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Python 3
Run
Code
if (list(dictionary.values()) not in Hypotheses):
GHypothesis = list(dictionary.values())
print("Ghypothesis",GHypothesis)
for value in GHypothesis:
position += 1
if value != '?':
break
for row in dataset:
if row[position] == GHypothesis[position] and row[-1] == 'N':
valid = False
if valid:
Hypotheses.append(GHypothesis[:])
print('Hypothesis in Version Space: ',Hypotheses)
[['outlook', 'temp', 'humidity', 'wind', 'water', 'forecast', 'target'], ['Sunny', 'Warm', 'Normal', 'Strong', 'Warm', 'Same', 'Y'], ['Sunny', 'Warm', 'High', 'Strong', 'Warm', 'Same', 'Y'], ['Rainy', 'Cold', 'High', 'Strong', 'Warm', 'Change', 'N'], ['Sunny', 'Warm', 'High', 'Strong', 'Cool', 'Change', 'Y']]
Specific Hypothesis ['0', '0', '0', '0', '0', '0']
General Hypothesis {'outlook': '?', 'temp': '?', 'humidity': '?', 'wind': '?', 'water': '?', 'forecast': '?'}
GHypothesis []
Extra hypothesis
{'outlook': '?', 'temp': '?', 'humidity': '?', 'wind': '?', 'water': '?', 'forecast': 'Same'}
['Sunny', 'Warm', '?', 'Strong', '?', '?']
{'outlook': '?', 'temp': '?', 'humidity': '?', 'wind': '?', 'water': '?', 'forecast': '?'}
[{'outlook': 'Sunny', 'temp': '?', 'humidity': '?', 'wind': '?', 'water': '?', 'forecast': '?'}, {'outlook': '?', 'temp': 'Warm', 'humidity': '?', 'wind': '?', 'water': '?', 'forecast': '?'}]
Ghypothesis ['Sunny', '?', '?', '?', '?', '?']
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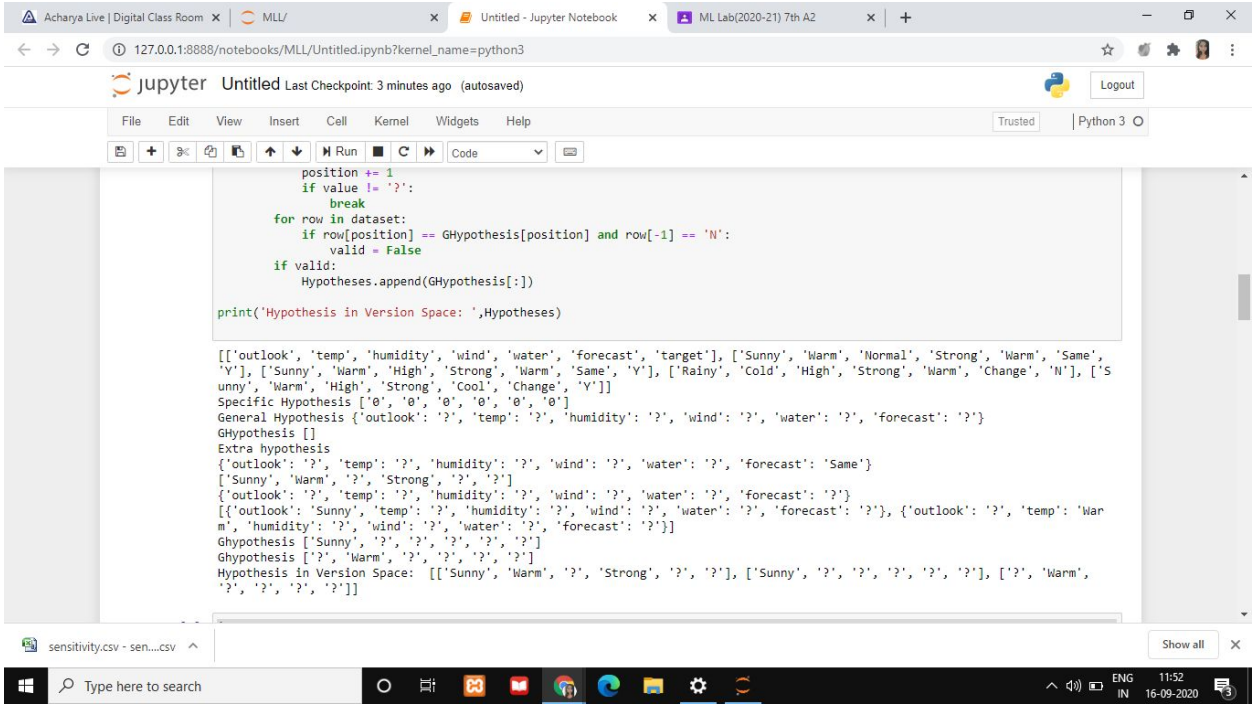
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Python 3
Run
Code
position += 1
if value != '?':
break
for row in dataset:
if row[position] == GHypothesis[position] and row[-1] == 'N':
valid = False
if valid:
Hypotheses.append(GHypothesis[:])
print('Hypothesis in Version Space: ',Hypotheses)
[['outlook', 'temp', 'humidity', 'wind', 'water', 'forecast', 'target'], ['Sunny', 'Warm', 'Normal', 'Strong', 'Warm', 'Same', 'Y'], ['Sunny', 'Warm', 'High', 'Strong', 'Warm', 'Same', 'Y'], ['Rainy', 'Cold', 'High', 'Strong', 'Warm', 'Change', 'N'], ['Sunny', 'Warm', 'High', 'Strong', 'Cool', 'Change', 'Y']]
Specific Hypothesis ['0', '0', '0', '0', '0', '0']
General Hypothesis {'outlook': '?', 'temp': '?', 'humidity': '?', 'wind': '?', 'water': '?', 'forecast': '?'}
GHypothesis []
Extra hypothesis
{'outlook': '?', 'temp': '?', 'humidity': '?', 'wind': '?', 'water': '?', 'forecast': 'Same'}
['Sunny', 'Warm', '?', 'Strong', '?', '?']
{'outlook': '?', 'temp': '?', 'humidity': '?', 'wind': '?', 'water': '?', 'forecast': '?'}
[{'outlook': 'Sunny', 'temp': '?', 'humidity': '?', 'wind': '?', 'water': '?', 'forecast': '?'}, {'outlook': '?', 'temp': 'Warm', 'humidity': '?', 'wind': '?', 'water': '?', 'forecast': '?'}]
Ghypothesis ['Sunny', '?', '?', '?', '?', '?']
Ghypothesis ['?', 'Warm', '?', '?', '?', '?']
Hypothesis in Version Space: [['Sunny', 'Warm', '?', 'Strong', '?', '?'], ['Sunny', '?', '?', '?', '?', '?'], ['?', 'Warm', '?', '?', '?', '?']]
sensitivity.csv - sen....csv
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Output for mushroom dataset