### In The Name OF GOD, The Merciful, The Beneficent

### **Report:**

**Third Project OF Machine Learning** 

**Project Title:** 

**SVM Classifier (Linear and RBF kernels)** 

Programming language used:

**Python** 

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January 2021

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#### importing libraries:

import numpy as np from sklearn.model\_selection import train\_test\_split import matplotlib.pyplot as plt import pandas as pd from sklearn.svm import SVC

#### load dataset:

```
# load att as dataframe:
att = pd.read_csv('Diabetes_att.txt', header = None)# load class_att as dataframe:
class_att = pd.read_csv('Diabetes_class.txt', header = None)att = np.array(att)
class_att = np.array(class_att)# change the class values "tested_positive" and "tested_negative" t
o +1 and -1, respectively:
class_att = np.where((class_att == 'tested_positive'),1,-1)
```

#### normalize data:

att = (att - np.mean(att , axis=0)) / (np.std(att , axis=0)) # normalize data

#### split data to train, validation and test:

 $x_{train\_validation}$ ,  $x_{test}$ ,  $y_{train\_validation}$ ,  $y_{test}$  =  $train\_test\_split(att, class\_att, test\_size=0.2$ ,  $random\_state=0$ , shuffle=True) $x_{train}$ ,  $x_{validation}$ ,  $y_{train}$ ,  $y_{validation}$  =  $train\_test\_split(x_{train\_validation}$ ,  $y_{train\_validation}$ ,  $y_{trai$ 

#### Linear kernel SVC:

#### tuning hyperparameters:

```
# diffrent values for C(hyperparameter)
best validation acc = 0
best validation C linear = 0
train acc best C = 0
for i in c:
 Linear_kernel = SVC(C=i , kernel='linear')
 Linear kernel.fit(x train, y train)
 train acc = Linear kernel.score(x train,y train)
 validation_acc = Linear_kernel.score(x_validation,y_validation)
 if validation acc > best validation acc:
  train_acc_best_C = train_acc
  best validation acc = validation acc
  best validation C linear = i
 print('for C={}: train_acc: {}, validation_acc:{}'.format(i, train_acc, validation_acc))
print('train_acc_best_C: {} , best_validation_acc: {} , best_validation_C_linear: {}'.format(tra
in_acc_best_C,best_validation_acc,best_validation_C_linear))
```

#### searching for best C:

for C=0.0001 : train\_acc: 0.6434782608695652 , validation\_acc: 0.6298701298701299 for C=0.001 : train\_acc: 0.6434782608695652 , validation\_acc: 0.6298701298701299 for C=0.01 : train\_acc: 0.7695652173913043 , validation\_acc: 0.7467532467532467 for C=0.1 : train\_acc: 0.7695652173913043 , validation\_acc: 0.7402597402597403 for C=1 : train\_acc: 0.7695652173913043478 , validation\_acc: 0.7467532467532467 for C=10 : train\_acc: 0.7652173913043478 , validation\_acc: 0.7467532467532467 for C=100 : train\_acc: 0.7652173913043478 , validation\_acc: 0.7467532467532467 for C=1000 : train\_acc: 0.7652173913043478 , validation\_acc: 0.7467532467532467

# This search found this result for best C: C = 0.01

 $train\_acc\_best\_C: 0.7695652173913043 \ , \ best\_validation\_acc: 0.7467532467532467 \ , best\_validation\_C\_linear: 0.01$ 

#### Now search deeper for best C in an interval:

```
c = np.linspace(0.005, 0.05, 50) # searching C in best interval
best_validation_acc = 0
best_validation_C_linear_new = 0
train acc best C = 0
for i in c:
 Linear_kernel = SVC(C=i , kernel='linear')
 Linear kernel.fit(x train, y train)
 train acc = Linear kernel.score(x train,y train)
 validation acc = Linear kernel.score(x validation, y validation)
 if validation acc > best validation acc:
  train acc best C = train acc
  best validation acc = validation acc
  best_validation_C_linear_new = i
 print('for C={}: train acc: {}, validation acc:{}'.format(i, train acc, validation acc))
print('train acc best C: {}, best validation acc: {}, best validation C linear new: {}'.form
at(train_acc_best_C,best_validation_acc,best_validation_C_linear_new))
```

#### searching for best C in best interval:

```
for C=0.005 : train_acc: 0.7326086956521739 , validation_acc: 0.7272727272727273
for C=0.005918367346938775: train_acc: 0.741304347826087, validation_acc: 0.7662337662337663
for C=0.0068367346938775515: train_acc: 0.7608695652173914, validation_acc: 0.7597402597402597
for C=0.007755102040816327: train_acc: 0.7673913043478261, validation_acc: 0.7467532467532467
for C=0.008673469387755102: train_acc: 0.7717391304347826, validation_acc: 0.7467532467532467
for C=0.009591836734693878: train_acc: 0.7717391304347826, validation_acc: 0.7467532467532467
for \ C=0.010510204081632654: train\_acc: 0.7695652173913043 \ , \ validation\_acc: 0.740259740259740313043 \ , \ validation\_acc: 0.740259740313043 \ , \ validation\_acc: 0.74025974031404 \ , \ validation\_a
for C=0.01142857142857143: train_acc: 0.7652173913043478, validation_acc: 0.7402597402597403
for C=0.012346938775510205: train_acc: 0.7695652173913043, validation_acc: 0.7402597402597403
for C=0.013265306122448979: train_acc: 0.7695652173913043, validation_acc: 0.7402597402597403
for C=0.014183673469387755 : train_acc: 0.7695652173913043 , validation_acc: 0.7402597402597403
for C=0.015102040816326531: train_acc: 0.7739130434782608, validation_acc: 0.7402597402597403
for C=0.016020408163265307: train_acc: 0.7717391304347826, validation_acc: 0.7337662337662337
for C=0.016938775510204084: train acc: 0.7739130434782608, validation acc: 0.7337662337662337
for C=0.018775510204081632: train_acc: 0.7739130434782608, validation_acc: 0.7402597402597403
for C=0.01969387755102041 : train_acc: 0.7695652173913043 , validation_acc: 0.7402597402597403
for C=0.020612244897959184: train_acc: 0.7695652173913043, validation_acc: 0.7402597402597403
for C=0.02153061224489796: train\_acc: 0.7695652173913043 \ , validation\_acc: 0.7402597402597403 \ , validation\_acc: 0.7402597403 \
```

```
for C=0.022448979591836737: train_acc: 0.7695652173913043, validation_acc: 0.7402597402597403
for C=0.023367346938775513 : train_acc: 0.7695652173913043 , validation_acc: 0.7337662337662337
for C=0.02428571428571429: train_acc: 0.7695652173913043, validation_acc: 0.7337662337662337
for C=0.025204081632653065: train_acc: 0.7695652173913043, validation_acc: 0.7337662337662337
for C=0.026122448979591838 : train_acc: 0.7717391304347826 , validation_acc: 0.7337662337662337
for C=0.027040816326530614: train_acc: 0.7739130434782608, validation_acc: 0.7402597402597403
for C=0.02795918367346939: train_acc: 0.7739130434782608, validation_acc: 0.7402597402597403
for C=0.028877551020408166: train_acc: 0.7717391304347826, validation_acc: 0.7467532467532467
for C=0.029795918367346942 : train_acc: 0.7739130434782608 , validation_acc: 0.7467532467532467
for C=0.03071428571428572: train_acc: 0.7739130434782608, validation_acc: 0.7532467532467533
for C=0.03163265306122449: train_acc: 0.7739130434782608, validation_acc: 0.7532467532467533
for C=0.03255102040816327: train_acc: 0.7739130434782608, validation_acc: 0.7467532467532467
for C=0.03346938775510204: train_acc: 0.7739130434782608, validation_acc: 0.7467532467532467
for C=0.03438775510204082 : train_acc: 0.7739130434782608 , validation_acc: 0.7467532467532467
for C=0.03530612244897959: train_acc: 0.7717391304347826, validation_acc: 0.7467532467532467
for C=0.03622448979591837 : train_acc: 0.7695652173913043 , validation_acc: 0.7467532467532467
for C=0.037142857142857144: train_acc: 0.7695652173913043, validation_acc: 0.7467532467532467
for C=0.038979591836734696: train_acc: 0.7695652173913043, validation_acc: 0.7467532467532467
for C=0.03989795918367347: train_acc: 0.7717391304347826, validation_acc: 0.7467532467532467
for C=0.04081632653061224: train_acc: 0.7717391304347826, validation_acc: 0.7532467532467533
for C=0.04173469387755102: train_acc: 0.7739130434782608, validation_acc: 0.7532467532467533
for C=0.042653061224489794: train_acc: 0.7760869565217391, validation_acc: 0.7467532467532467
for C=0.04357142857142857 : train acc: 0.7760869565217391 , validation acc: 0.7467532467532467
for C=0.044489795918367346: train_acc: 0.7760869565217391, validation_acc: 0.7402597402597403
for C=0.045408163265306126: train_acc: 0.7760869565217391, validation_acc: 0.7402597402597403
for C=0.0463265306122449 : train_acc: 0.7760869565217391 , validation_acc: 0.7402597402597403
for C=0.04724489795918367: train_acc: 0.7760869565217391, validation_acc: 0.7402597402597403
for C=0.04816326530612245 : train_acc: 0.7760869565217391 , validation_acc: 0.7337662337662337
for C=0.04908163265306122: train_acc: 0.7760869565217391, validation_acc: 0.7337662337662337
for C=0.05: train_acc: 0.7739130434782608, validation_acc: 0.7337662337662337
```

# This search found this result for best C: C = 0.005918367346938775

 $train\_acc\_best\_C: 0.741304347826087 \ , \ best\_validation\_acc: 0.7662337662337663 \ , best\_validation\_C\_linear\_new: 0.005918367346938775$ 

#### **RBF\_kernel\_SVC**:

#### tuning hyperparameters:

```
# diffrent values for C(hyperparameter)
# diffrent values for gamma(hyperparameter)
best validation acc = 0
best validation C RBF = 0
best_gamma_RBF = None
train_acc_best_C_gamma = 0
for j in g:
 for i in c:
  RBF_kernel = SVC(C=i, kernel='rbf',gamma=j)
  RBF_kernel.fit(x_train, y_train)
  train acc = RBF kernel.score(x train,y train)
  validation_acc = RBF_kernel.score(x_validation,y_validation)
  if validation_acc > best_validation_acc:
   train acc best C gamma = train acc
   best_validation_acc = validation_acc
   best validation C RBF = i
```

```
best\_gamma\_RBF = j \\ print('for\ gamma=\{\}\ and\ C=\{\}\ : train\_acc: \{\}\ , validation\_acc: \{\}'.format(j\ , i\ , train\_acc\ , validation\_acc)) \\ print('train\_acc\_best\_C\_gamma: \{\}\ , best\_validation\_acc: \{\}\ , best\_validation\_C\_RBF: \{\}'.format(train\_acc\_best\_C\_gamma,best\_validation\_acc,best\_validation\_C\_RBF,best\_gamma\_RBF))
```

#### searching for best C and gamma:

```
for gamma=0.0001 and C=0.0001 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=0.0001 and C=0.001 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=0.0001 and C=0.01 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=0.0001 and C=0.1 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=0.0001 and C=1 : train\_acc: 0.6434782608695652, validation_acc: 0.6298701298701299
for gamma=0.0001 and C=10 : train_acc: 0.6434782608695652, validation_acc: 0.6298701298701299
for gamma=0.0001 and C=100 : train_acc: 0.7695652173913043 , validation_acc: 0.7402597402597403
for gamma=0.0001 and C=1000 : train_acc: 0.7652173913043478 , validation_acc: 0.7467532467532467
for gamma=0.001 and C=0.0001 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=0.001 and C=0.001 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=0.001 and C=0.01 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=0.001 and C=0.1 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=0.001 and C=1 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=0.001 and C=10 : train_acc: 0.7695652173913043, validation_acc: 0.7337662337662337
for gamma=0.001 and C=100 : train_acc: 0.7717391304347826, validation_acc: 0.7467532467532467
for gamma=0.001 and C=1000 : train_acc: 0.7782608695652173 , validation_acc: 0.77272727272727272727
for gamma=0.01 and C=0.0001 : train acc: 0.6434782608695652, validation acc: 0.6298701298701299
for gamma=0.01 and C=0.001 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=0.01 and C=0.01 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=0.01 and C=0.1 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=0.01 and C=1 : train_acc: 0.7695652173913043 , validation_acc: 0.7532467532467533
for gamma=0.01 and C=10 : train_acc: 0.7760869565217391 , validation_acc: 0.7792207792207793
for gamma=0.01 and C=100 : train_acc: 0.8152173913043478 , validation_acc: 0.7597402597402597
for gamma=0.01 and C=1000 : train_acc: 0.8434782608695652 , validation_acc: 0.7597402597402597
for gamma=0.1 and C=0.0001 :train_acc: 0.6434782608695652, validation_acc: 0.6298701298701299
for gamma=0.1 and C=0.001 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=0.1 and C=0.01 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=0.1 and C=0.1 : train_acc: 0.7304347826086957 , validation_acc: 0.7077922077922078
for gamma=0.1 and C=1 : train_acc: 0.8065217391304348 , validation_acc: 0.7792207792207792
for gamma=0.1 and C=10 : train_acc: 0.8652173913043478, validation_acc:0.7727272727272727
for gamma=0.1 and C=100 : train_acc: 0.9369565217391305 , validation_acc: 0.7272727272727273
for gamma=0.1 and C=1000 : train_acc: 0.9869565217391304, validation_acc: 0.7012987012987013
for gamma=1 and C=0.0001 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=1 and C=0.001 : train acc: 0.6434782608695652, validation acc: 0.6298701298701299
for gamma=1 and C=0.01 : train_acc: 0.6434782608695652, validation_acc: 0.6298701298701299
for gamma=1 and C=0.1 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=1 and C=1 : train_acc: 0.9630434782608696, validation_acc: 0.7142857142857143
for gamma=1 and C=10 : train acc: 1.0, validation acc:0.7272727272727273
for gamma=1 and C=100 : train_acc: 1.0 , validation_acc:0.7272727272727273
for gamma=1 and C=1000 : train_acc: 1.0, validation_acc:0.7272727272727273
for gamma=10 and C=0.0001 : train_acc: 0.6434782608695652, validation_acc: 0.6298701298701299
for gamma=10 and C=0.001 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=10 and C=0.01 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=10 and C=0.1 : train_acc: 0.6434782608695652, validation_acc: 0.6298701298701299
for gamma=10 and C=1 : train_acc: 1.0 , validation_acc:0.6298701298701299
for gamma=10 and C=10 : train_acc: 1.0, validation_acc: 0.6298701298701299
for gamma=10 and C=100 : train_acc: 1.0 , validation_acc: 0.6298701298701299
for gamma=10 and C=1000 : train_acc: 1.0, validation_acc: 0.6298701298701299
for gamma=100 and C=0.0001 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=100 and C=0.001 : train_acc: 0.6434782608695652, validation_acc: 0.6298701298701299
for gamma=100 and C=0.01 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=100 and C=0.1 : train_acc: 0.6434782608695652 , validation_acc: 0.6298701298701299
for gamma=100 and C=1 : train acc: 1.0, validation acc: 0.6298701298701299
for gamma=100 and C=10 \, : train_acc: 1.0 , validation_acc:0.6298701298701299 \,
for gamma=100 and C=100 : train_acc: 1.0, validation_acc: 0.6298701298701299
```

```
for gamma=100 and C=1000 : train_acc: 1.0 , validation_acc:0.6298701298701299 for gamma=1000 and C=0.0001 : train_acc: 0.6434782608695652 , validation_acc:0.6298701298701299 for gamma=1000 and C=0.001 : train_acc: 0.6434782608695652 , validation_acc:0.6298701298701299 for gamma=1000 and C=0.01 : train_acc: 0.6434782608695652 , validation_acc:0.6298701298701299 for gamma=1000 and C=0.1 : train_acc: 0.6434782608695652 , validation_acc:0.6298701298701299 for gamma=1000 and C=1 : train_acc: 1.0 , validation_acc:0.6298701298701299 for gamma=1000 and C=10 : train_acc: 1.0 , validation_acc:0.6298701298701299 for gamma=1000 and C=100 : train_acc: 1.0 , validation_acc:0.6298701298701299 for gamma=1000 and C=100 : train_acc: 1.0 , validation_acc:0.6298701298701299
```

# This search found this result for best C and gamma: C = 10 and gamma=0.01

```
train\_acc\_best\_C\_gamma: 0.7760869565217391 \ , \ best\_validation\_acc: 0.7792207792207793 \ , best\_validation\_C\_RBF: 10 \ , best\_gamma\_RBF: 0.01
```

#### Now search deeper for best C and gamma in best intervals:

```
c = np.linspace(5,15,50)
                            # searching C in best interval
g = np.linspace(0.005, 0.5, 50) # searching gamma in best interval
best_validation_acc = 0
best_validation_C_RBF_new = 0
best gamma RBF new = None
train_acc_best_C_gamma = 0
for j in g:
 for i in c:
  RBF kernel = SVC(C=i, kernel='rbf', gamma=j)
  RBF kernel.fit(x train, y train)
  train acc = RBF kernel.score(x train,y train)
  validation acc = RBF kernel.score(x validation, y validation)
  if validation acc > best validation acc:
   train_acc_best_C_gamma = train_acc
   best validation acc = validation acc
   best validation C RBF new = i
   best gamma RBF new = i
  print('for gamma={} and C={} : train_acc: {}, validation_acc:{}'.format(j, i, train_acc, val
idation acc))
print('train_acc_best_C_gamma: {} , best_validation_acc: {} , best_validation_C_RBF_new:
{}, best_gamma_RBF_new: {}'.format(train_acc_best_C_gamma,best_validation_acc,best_val
idation_C_RBF_new,best_gamma_RBF_new))
```

### searching for best C and gamma in best intervals:

```
for gamma=0.005 and C=5.0 : train_acc: 0.7739130434782608 , validation_acc: 0.7597402597402597 for gamma=0.005 and C=5.204081632653061 : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597 for gamma=0.005 and C=5.40816326530612245 : train_acc: 0.7739130434782608 , validation_acc: 0.7597402597402597 for gamma=0.005 and C=5.816326530612245 : train_acc: 0.7739130434782608 , validation_acc: 0.7597402597402597 for gamma=0.005 and C=6.020408163265306 : train_acc: 0.7739130434782608 , validation_acc: 0.7597402597402597 for gamma=0.005 and C=6.224489795918368 : train_acc: 0.7739130434782608 , validation_acc: 0.7597402597402597 for gamma=0.005 and C=6.224489795918368 : train_acc: 0.7739130434782608 , validation_acc: 0.7597402597402597 for gamma=0.005 and C=6.63265306122449 : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597 for gamma=0.005 and C=6.836734693877551 : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597 for gamma=0.005 and C=6.836734693877551 : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
```

```
for gamma=0.005 and C=7.040816326530612 : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=7.244897959183674 : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=7.448979591836735
                                         : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=7.653061224489796
                                         : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=7.857142857142858 : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=8.061224489795919 : train_acc: 0.7760869565217391, validation_acc: 0.7597402597402597
for gamma=0.005 and C=8.26530612244898
                                        : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=8.46938775510204 : train acc: 0.7760869565217391 , validation acc: 0.7597402597402597
for gamma=0.005 and C=8.673469387755102 : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=8.877551020408163
                                         : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=9.081632653061224
                                         : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=9.285714285714285
                                         : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=9.489795918367347
                                         : train_acc: 0.7760869565217391 , validation_acc: 0.7532467532467533
for gamma=0.005 and C=9.693877551020408
                                         : train_acc: 0.7760869565217391 , validation_acc: 0.7532467532467533
for gamma=0.005 and C=9.89795918367347 : train_acc: 0.7760869565217391 , validation_acc: 0.7532467532467533
for gamma=0.005 and C=10.10204081632653 : train acc: 0.7760869565217391, validation acc: 0.7532467532467533
for gamma=0.005 and C=10.306122448979592 : train_acc: 0.7760869565217391 , validation_acc: 0.7532467532467533
for gamma=0.005 and C=10.510204081632654
                                          : train_acc: 0.7760869565217391, validation_acc: 0.7532467532467533
for gamma=0.005 and C=10.714285714285715
                                          : train_acc: 0.7739130434782608 , validation_acc: 0.7532467532467533
for gamma=0.005 and C=10.918367346938776
                                          : train acc: 0.7717391304347826, validation acc: 0.7532467532467533
for gamma=0.005 and C=11.122448979591837
                                          : train_acc: 0.7717391304347826, validation_acc: 0.7597402597402597
for gamma=0.005 and C=11.326530612244898
                                           train_acc: 0.7717391304347826, validation_acc: 0.7597402597402597
for gamma=0.005 and C=11.53061224489796
                                         : train_acc: 0.7717391304347826 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=11.73469387755102 : train acc: 0.7695652173913043, validation acc: 0.7597402597402597
for gamma=0.005 and C=11.938775510204081 : train_acc: 0.7695652173913043 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=12.142857142857142
                                           train acc: 0.7717391304347826, validation acc: 0.7597402597402597
for gamma=0.005 and C=12.346938775510203
                                          : train_acc: 0.7717391304347826, validation_acc: 0.7597402597402597
for gamma=0.005 and C=12.551020408163264
                                          : train_acc: 0.7717391304347826, validation_acc: 0.7597402597402597
for gamma=0.005 and C=12.755102040816327
                                           train_acc: 0.7717391304347826, validation_acc: 0.7597402597402597
for gamma=0.005 and C=12.959183673469388
                                           train acc: 0.7717391304347826, validation acc: 0.7597402597402597
for gamma=0.005 and C=13.36734693877551 : train_acc: 0.7717391304347826, validation_acc: 0.7597402597402597
for gamma=0.005 and C=13.571428571428571
                                          : train_acc: 0.7717391304347826 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=13.775510204081632
                                           train_acc: 0.7760869565217391, validation_acc: 0.7597402597402597
for gamma=0.005 and C=13.979591836734695
                                          : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=14.183673469387756 : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=14.387755102040817 : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=14.591836734693878
                                          : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=14.795918367346939 : train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
for gamma=0.005 and C=15.0 :train_acc: 0.7760869565217391 , validation_acc: 0.7597402597402597
for gamma=0.015102040816326531 and C=5.0 : train_acc: 0.782608695652174 , validation_acc: 0.7792207792207793
for gamma=0.015102040816326531 and C=5.204081632653061 : train_acc: 0.782608695652174, validation_acc: 0.7792207792207793
for gamma=0.015102040816326531 and C=5.408163265306122 : train_acc: 0.7847826086956522 , validation_acc: 0.7792207792207793
for gamma=0.015102040816326531 and C=5.612244897959184 : train_acc: 0.7847826086956522 , validation_acc: 0.7792207792207793
for gamma=0.015102040816326531 and C=5.816326530612245
                                                         : train_acc: 0.7869565217391304, validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=6.020408163265306
                                                         : train_acc: 0.7869565217391304 , validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=6.224489795918368 : train_acc: 0.7869565217391304 , validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=6.428571428571429 : train_acc: 0.7869565217391304 , validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=6.836734693877551
                                                         : train_acc: 0.7891304347826087, validation_acc: 0.7532467532467533
for gamma=0.015102040816326531 and C=7.040816326530612 : train_acc: 0.7913043478260869 , validation_acc: 0.7532467532467532
                                                         : train_acc: 0.7891304347826087 , validation_acc: 0.7467532467532467
for gamma=0.015102040816326531 and C=7.244897959183674
for gamma=0.015102040816326531 and C=7.448979591836735
                                                         : train_acc: 0.7891304347826087, validation_acc: 0.7532467532467533
for gamma=0.015102040816326531 and C=7.653061224489796
                                                         : train_acc: 0.7891304347826087, validation_acc: 0.7597402597402597
for gamma=0.015102040816326531 and C=7.857142857142858 : train_acc: 0.7913043478260869 , validation_acc: 0.7597402597402597
                                                         : train_acc: 0.7913043478260869 , validation_acc: 0.7597402597402597
for gamma=0.015102040816326531 and C=8.061224489795919
for gamma=0.015102040816326531 and C=8.26530612244898 : train_acc: 0.7913043478260869 , validation_acc: 0.7597402597402597
for gamma=0.015102040816326531 and C=8.46938775510204 : train_acc: 0.7913043478260869 , validation_acc: 0.7597402597402597
for gamma=0.015102040816326531 and C=8.673469387755102 : train_acc: 0.7913043478260869 , validation_acc: 0.7597402597402597
                                                         : train_acc: 0.7913043478260869 , validation_acc: 0.7597402597402597
for gamma=0.015102040816326531 and C=8.877551020408163
for gamma=0.015102040816326531 and C=9.081632653061224
                                                         : train_acc: 0.7913043478260869, validation_acc: 0.7532467532467533
for gamma=0.015102040816326531 and C=9.285714285714285
                                                         : train_acc: 0.7913043478260869 , validation_acc: 0.7532467532467533
for gamma=0.015102040816326531 and C=9.489795918367347
                                                         : train_acc: 0.7913043478260869, validation_acc: 0.7597402597402597
for gamma=0.015102040816326531 and C=9.693877551020408 : train_acc: 0.7891304347826087, validation_acc: 0.7597402597402597
for gamma=0.015102040816326531 and C=9.89795918367347 : train_acc: 0.7891304347826087, validation_acc: 0.7597402597402597
for gamma=0.015102040816326531 and C=10.10204081632653 : train_acc: 0.7891304347826087 , validation_acc: 0.7597402597402597
for gamma=0.015102040816326531 and C=10.306122448979592 : train acc: 0.7891304347826087, validation acc: 0.7597402597402597
for gamma=0.015102040816326531 and C=10.510204081632654
                                                          : train_acc: 0.7869565217391304, validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=10.714285714285715
                                                          : train_acc: 0.7869565217391304, validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=10.918367346938776 : train_acc: 0.7869565217391304 , validation_acc: 0.7662337662337663
```

```
for gamma=0.015102040816326531 and C=11.122448979591837 : train_acc: 0.7869565217391304 , validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=11.326530612244898 : train_acc: 0.7891304347826087 , validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=11.53061224489796 : train_acc: 0.7891304347826087, validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=11.73469387755102 : train_acc: 0.7891304347826087 , validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=11.938775510204081 : train_acc: 0.7891304347826087, validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=12.142857142857142 : train_acc: 0.7891304347826087 , validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=12.346938775510203
                                                           : train_acc: 0.7913043478260869, validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=12.551020408163264 : train acc: 0.7913043478260869 , validation acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=12.755102040816327 : train_acc: 0.7934782608695652 , validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=12.959183673469388 : train_acc: 0.7934782608695652 , validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=13.16326530612245 : train_acc: 0.7956521739130434, validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=13.36734693877551 : train_acc: 0.7956521739130434, validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=13.571428571428571 : train_acc: 0.7934782608695652 , validation_acc: 0.7662337662337663
for gamma=0.015102040816326531 and C=13.775510204081632
                                                           : train_acc: 0.7934782608695652, validation_acc: 0.7597402597402597
for gamma=0.015102040816326531 and C=13.979591836734695
                                                           : train acc: 0.7934782608695652, validation acc: 0.7597402597402597
for gamma=0.015102040816326531 and C=14.183673469387756 : train acc: 0.7956521739130434 , validation acc: 0.7597402597402597
for gamma=0.015102040816326531 and C=14.591836734693878 : train_acc: 0.7956521739130434, validation_acc: 0.7597402597402597
for gamma=0.015102040816326531 and C=14.795918367346939 : train_acc: 0.7956521739130434 , validation_acc: 0.7532467532467533
for gamma=0.015102040816326531 and C=15.0 : train_acc: 0.7956521739130434 , validation_acc: 0.7532467532467533
for gamma=0.02520408163265306 and C=5.0 : train_acc: 0.8 , validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=5.204081632653061
                                                         : train_acc: 0.8021739130434783, validation_acc: 0.7597402597402597
for gamma=0.02520408163265306 and C=5.408163265306122
                                                         : train_acc: 0.8021739130434783, validation_acc: 0.7597402597402597
for gamma=0.02520408163265306 and C=5.612244897959184
                                                         : train acc: 0.8021739130434783, validation acc: 0.7597402597402597
for gamma=0.02520408163265306 and C=5.816326530612245
                                                         : train_acc: 0.8021739130434783 , validation_acc: 0.7597402597402597
                                                         : train_acc: 0.8 , validation_acc: 0.7532467532467533
for gamma=0.02520408163265306 and C=6.020408163265306
for gamma=0.02520408163265306 and C=6.224489795918368
                                                         : train_acc: 0.8, validation_acc: 0.7597402597402597
for gamma=0.02520408163265306 and C=6.428571428571429
                                                         : train_acc: 0.8021739130434783, validation_acc: 0.7532467532467533
for gamma=0.02520408163265306 and C=6.63265306122449 : train_acc: 0.8021739130434783 , validation_acc: 0.7532467532467533
for gamma=0.02520408163265306 and C=6.836734693877551
                                                         : train acc: 0.8065217391304348, validation acc: 0.7532467532467533
for gamma=0.02520408163265306 and C=7.040816326530612
                                                         : train_acc: 0.8065217391304348, validation_acc: 0.7597402597402597
for gamma=0.02520408163265306 and C=7.244897959183674
                                                         : train_acc: 0.8108695652173913, validation_acc: 0.7597402597402597
for gamma=0.02520408163265306 and C=7.448979591836735
                                                         : train_acc: 0.8130434782608695 , validation_acc:0.7532467532467533
for gamma=0.02520408163265306 and C=7.653061224489796
                                                         : train_acc: 0.8130434782608695, validation_acc: 0.7532467532467533
for gamma=0.02520408163265306 and C=7.857142857142858
                                                         : train_acc: 0.8130434782608695, validation_acc: 0.7532467532467533
for gamma=0.02520408163265306 and C=8.061224489795919
                                                         : train_acc: 0.8130434782608695, validation_acc: 0.7532467532467533
for gamma=0.02520408163265306 and C=8.26530612244898 : train_acc: 0.8130434782608695 , validation_acc: 0.7532467532467533
for gamma=0.02520408163265306 and C=8.46938775510204
                                                        : train_acc: 0.8130434782608695, validation_acc: 0.7532467532467533
for gamma=0.02520408163265306 and C=8.673469387755102
                                                        : train acc: 0.8130434782608695, validation acc: 0.7532467532467533
for gamma=0.02520408163265306 and C=8.877551020408163
                                                         : train_acc: 0.8130434782608695 , validation_acc: 0.7532467532467533
for gamma=0.02520408163265306 and C=9.081632653061224
                                                         : train_acc: 0.8152173913043478 , validation_acc: 0.7532467532467533
for gamma=0.02520408163265306 and C=9.285714285714285
                                                         : train_acc: 0.8152173913043478, validation_acc: 0.7532467532467533
for gamma=0.02520408163265306 and C=9.489795918367347
                                                         : train_acc: 0.8152173913043478, validation_acc: 0.7597402597402597
for gamma=0.02520408163265306 and C=9.693877551020408
                                                         : train_acc: 0.8152173913043478 , validation_acc: 0.7597402597402597
for gamma=0.02520408163265306 and C=9.89795918367347 : train_acc: 0.8152173913043478, validation_acc: 0.7597402597402597
for gamma=0.02520408163265306 and C=10.10204081632653 : train_acc: 0.8173913043478261, validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=10.306122448979592 : train_acc: 0.8173913043478261, validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=10.510204081632654 : train_acc: 0.8173913043478261, validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=10.714285714285715
                                                          : train_acc: 0.8173913043478261 , validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=10.918367346938776
                                                          : train_acc: 0.8173913043478261 , validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=11.122448979591837
                                                          : train acc: 0.8173913043478261, validation acc: 0.7662337662337663
                                                          : train_acc: 0.8173913043478261 , validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=11.326530612244898
for gamma=0.02520408163265306 and C=11.53061224489796
                                                        : train_acc: 0.8195652173913044, validation_acc: 0.7727272727272727
for gamma=0.02520408163265306 and C=11.73469387755102 : train_acc: 0.8195652173913044 , validation_acc: 0.772727272727272727
for gamma=0.02520408163265306 and C=11.938775510204081 : train_acc: 0.8173913043478261 , validation_acc: 0.772727272727272727
for gamma=0.02520408163265306 and C=12.142857142857142 : train_acc: 0.8173913043478261 , validation_acc: 0.7727272727272727
                                                          : train_acc: 0.8173913043478261 , validation_acc: 0.7727272727272727
for gamma=0.02520408163265306 and C=12.346938775510203
for gamma=0.02520408163265306 and C=12.551020408163264
                                                          : train_acc: 0.8173913043478261, validation_acc: 0.7727272727272727
for gamma=0.02520408163265306 and C=12.755102040816327
                                                          : train_acc: 0.8173913043478261, validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=12.959183673469388
                                                          : train_acc: 0.8195652173913044, validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=13.16326530612245
                                                         : train_acc: 0.8195652173913044, validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=13.36734693877551
                                                         : train_acc: 0.8195652173913044, validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=13.571428571428571 : train_acc: 0.8173913043478261, validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=13.775510204081632
                                                         : train_acc: 0.8173913043478261 , validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=13.979591836734695
                                                          : train_acc: 0.8173913043478261, validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=14.183673469387756
                                                          : train_acc: 0.8173913043478261 , validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=14.387755102040817
                                                         : train acc: 0.8195652173913044, validation acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=14.591836734693878 : train_acc: 0.8195652173913044 , validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=14.795918367346939 : train_acc: 0.8217391304347826 , validation_acc: 0.7662337662337663
for gamma=0.02520408163265306 and C=15.0 : train_acc: 0.8217391304347826 , validation_acc: 0.7662337662337663
```

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for gamma=0.03530612244897959 and C=5.0 : train_acc: 0.8108695652173913 , validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=5.204081632653061 : train_acc: 0.808695652173913 , validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=5.408163265306122
                                                         : train_acc: 0.808695652173913 , validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=5.612244897959184
                                                         : train_acc: 0.8108695652173913 , validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=5.816326530612245
                                                         : train_acc: 0.8130434782608695, validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=6.020408163265306
                                                         : train_acc: 0.8152173913043478, validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=6.224489795918368
                                                         : train_acc: 0.8130434782608695, validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=6.428571428571429
                                                         : train acc: 0.8173913043478261, validation acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=6.63265306122449 : train_acc: 0.8152173913043478 , validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=6.836734693877551
                                                         : train_acc: 0.8152173913043478, validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=7.040816326530612
                                                         : train_acc: 0.8152173913043478, validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=7.244897959183674
                                                         : train_acc: 0.8195652173913044, validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=7.448979591836735
                                                         : train_acc: 0.8195652173913044 , validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=7.653061224489796
                                                         : train_acc: 0.8195652173913044, validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=7.857142857142858
                                                         : train acc: 0.8195652173913044, validation acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=8.061224489795919
                                                         : train acc: 0.8217391304347826, validation acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=8.26530612244898 : train_acc: 0.8217391304347826, validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=8.46938775510204
                                                       : train_acc: 0.8217391304347826 , validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=8.673469387755102
                                                         : train_acc: 0.8239130434782609 , validation_acc: 0.7662337662337663
                                                         : train acc: 0.8239130434782609, validation_acc: 0.7727272727272727
for gamma=0.03530612244897959 and C=8.877551020408163
for gamma=0.03530612244897959 and C=9.081632653061224
                                                         : train_acc: 0.8282608695652174, validation_acc: 0.7727272727272727
for gamma=0.03530612244897959 and C=9.285714285714285
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for gamma=0.03530612244897959 and C=9.489795918367347
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for gamma=0.03530612244897959 and C=9.693877551020408
                                                         : train acc: 0.8304347826086956, validation acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=9.89795918367347 : train_acc: 0.8304347826086956 , validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=10.10204081632653
                                                         : train acc: 0.8304347826086956, validation acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=10.306122448979592
                                                          : train_acc: 0.8304347826086956 , validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=10.510204081632654
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for gamma=0.03530612244897959 and C=10.714285714285715
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for gamma=0.03530612244897959 and C=10.918367346938776
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for gamma=0.03530612244897959 and C=11.122448979591837
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for gamma=0.03530612244897959 and C=11.326530612244898
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for gamma=0.03530612244897959 and C=11.53061224489796 : train_acc: 0.8304347826086956 , validation_acc: 0.772727272727272727
for gamma=0.03530612244897959 and C=11.73469387755102
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for gamma=0.03530612244897959 and C=11.938775510204081
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for gamma=0.03530612244897959 and C=12.142857142857142
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for gamma=0.03530612244897959 and C=12.346938775510203
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for gamma=0.03530612244897959 and C=12.551020408163264
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for gamma=0.03530612244897959 and C=12.755102040816327
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for gamma=0.03530612244897959 and C=12.959183673469388 : train_acc: 0.8260869565217391 , validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=13.16326530612245 : train_acc: 0.8282608695652174 , validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=13.36734693877551
                                                         : train_acc: 0.8282608695652174, validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=13.571428571428571 : train_acc: 0.8282608695652174, validation_acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=13.775510204081632
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for gamma=0.03530612244897959 and C=13.979591836734695
                                                          : train acc: 0.8282608695652174, validation acc: 0.7662337662337663
for gamma=0.03530612244897959 and C=14.183673469387756
                                                          : train_acc: 0.8282608695652174 , validation_acc: 0.7727272727272727
for gamma=0.03530612244897959 and C=14.387755102040817 : train_acc: 0.8282608695652174, validation_acc: 0.7792207792207793
for gamma=0.03530612244897959 and C=14.795918367346939
                                                         : train_acc: 0.8260869565217391 , validation_acc: 0.7792207792207793
for gamma=0.03530612244897959 and C=15.0 : train_acc: 0.8260869565217391 , validation_acc: 0.7792207792207793
for gamma=0.04540816326530612 and C=5.0 : train acc: 0.8217391304347826, validation acc: 0.7662337662337663
for gamma=0.04540816326530612 and C=5.204081632653061
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for gamma=0.04540816326530612 and C=5.408163265306122
                                                         : train_acc: 0.8260869565217391, validation_acc: 0.7662337662337663
for gamma=0.04540816326530612 and C=5.612244897959184
                                                         : train_acc: 0.8260869565217391, validation_acc: 0.7662337662337663
for gamma=0.04540816326530612 and C=5.816326530612245
                                                         : train_acc: 0.8260869565217391, validation_acc: 0.7662337662337663
for gamma=0.04540816326530612 and C=6.020408163265306
                                                         : train_acc: 0.8260869565217391, validation_acc: 0.7662337662337663
                                                         : train_acc: 0.8282608695652174 , validation_acc: 0.7662337662337663
for gamma=0.04540816326530612 and C=6.224489795918368
for gamma=0.04540816326530612 and C=6.428571428571429
                                                         : train_acc: 0.8282608695652174, validation_acc: 0.7792207792207793
for gamma=0.04540816326530612 and C=6.63265306122449 : train_acc: 0.8260869565217391 , validation_acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=6.836734693877551
                                                         : train_acc: 0.8260869565217391, validation_acc: 0.7792207792207793
for gamma=0.04540816326530612 and C=7.040816326530612
                                                         : train_acc: 0.8260869565217391 , validation_acc:0.7792207792207793
for gamma=0.04540816326530612 and C=7.244897959183674
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for gamma=0.04540816326530612 and C=7.448979591836735
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for gamma=0.04540816326530612 and C=7.653061224489796
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for gamma=0.04540816326530612 and C=7.857142857142858
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for gamma=0.04540816326530612 and C=8.061224489795919
                                                         : train_acc: 0.8282608695652174, validation_acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=8.26530612244898 : train acc: 0.8304347826086956 , validation acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=8.46938775510204 : train_acc: 0.8304347826086956, validation_acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=8.673469387755102 : train_acc: 0.8326086956521739 , validation_acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=8.877551020408163 : train_acc: 0.8326086956521739, validation_acc: 0.7857142857142857
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for gamma=0.04540816326530612 and C=9.081632653061224 : train_acc: 0.8326086956521739 , validation_acc: 0.7857142857142857
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for gamma=0.04540816326530612 and C=9.489795918367347
                                                                      : train_acc: 0.8326086956521739 , validation_acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=9.693877551020408
                                                                      : train_acc: 0.8304347826086956 , validation_acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=9.89795918367347 : train_acc: 0.8304347826086956 , validation_acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=10.10204081632653 : train_acc: 0.8326086956521739 , validation_acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=10.306122448979592
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for gamma=0.04540816326530612 and C=10.510204081632654
                                                                       : train acc: 0.8347826086956521, validation acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=10.714285714285715 : train_acc: 0.8347826086956521 , validation_acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=10.918367346938776
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for gamma=0.04540816326530612 and C=11.122448979591837
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for gamma=0.04540816326530612 and C=11.326530612244898
                                                                       : train_acc: 0.8347826086956521, validation_acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=11.53061224489796 : train_acc: 0.8369565217391305 , validation_acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=11.73469387755102
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for gamma=0.04540816326530612 and C=11.938775510204081
                                                                       : train acc: 0.8347826086956521, validation acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=12.142857142857142
                                                                       : train acc: 0.8347826086956521, validation acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=12.346938775510203 : train_acc: 0.8347826086956521 , validation_acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=12.551020408163264
                                                                        : train_acc: 0.8326086956521739 , validation_acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=12.755102040816327
                                                                        : train_acc: 0.8326086956521739 , validation_acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=12.959183673469388
                                                                       : train acc: 0.8326086956521739 , validation_acc: 0.7857142857142857
for\ gamma = 0.04540816326530612\ and\ C = 13.16326530612245\ : train\_acc:\ 0.8326086956521739\ ,\ validation\_acc:\ 0.785714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714285714
for gamma=0.04540816326530612 and C=13.36734693877551
                                                                      : train_acc: 0.8326086956521739 , validation_acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=13.571428571428571
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for gamma=0.04540816326530612 and C=13.775510204081632
                                                                       : train acc: 0.8347826086956521, validation acc: 0.7922077922077922
for gamma=0.04540816326530612 and C=13.979591836734695
                                                                       : train_acc: 0.8369565217391305 , validation_acc: 0.7922077922077922
for gamma=0.04540816326530612 and C=14.183673469387756
                                                                        : train acc: 0.8369565217391305, validation acc: 0.7922077922077922
for gamma=0.04540816326530612 and C=14.387755102040817
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for gamma=0.04540816326530612 and C=14.591836734693878
                                                                       : train_acc: 0.8369565217391305, validation_acc: 0.7857142857142857
for gamma=0.04540816326530612 and C=14.795918367346939
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for gamma=0.04540816326530612 and C=15.0 : train acc: 0.8369565217391305 , validation acc: 0.7857142857142857
for gamma=0.055510204081632646 and C=5.0 : train_acc: 0.8304347826086956 , validation_acc: 0.7792207792207793
for gamma=0.055510204081632646 and C=5.204081632653061 : train_acc: 0.8304347826086956 , validation_acc: 0.7922077922
for gamma=0.055510204081632646 and C=5.408163265306122
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for gamma=0.055510204081632646 and C=5.612244897959184
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for gamma=0.055510204081632646 and C=5.816326530612245
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for gamma=0.055510204081632646 and C=6.020408163265306
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for gamma=0.055510204081632646 and C=6.224489795918368
                                                                        : train_acc: 0.8391304347826087, validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=6.428571428571429
                                                                        : train_acc: 0.8391304347826087, validation_acc: 0.7857142857142857
for gamma=0.055510204081632646 and C=6.63265306122449 : train_acc: 0.8391304347826087, validation_acc: 0.7857142857142857
for gamma=0.055510204081632646 and C=6.836734693877551 : train_acc: 0.8369565217391305, validation_acc: 0.7857142857142857
                                                                        : train_acc: 0.8369565217391305 , validation_acc: 0.7857142857142857
for gamma=0.055510204081632646 and C=7.040816326530612
for gamma=0.055510204081632646 and C=7.244897959183674
                                                                        : train_acc: 0.8369565217391305, validation_acc: 0.7857142857142857
for gamma=0.055510204081632646 and C=7.448979591836735
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for gamma=0.055510204081632646 and C=7.653061224489796
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for gamma=0.055510204081632646 and C=8.26530612244898 : train_acc: 0.8391304347826087, validation_acc: 0.7922077922
for gamma=0.055510204081632646 and C=8.46938775510204 : train_acc: 0.8391304347826087, validation_acc: 0.7857142857142857
for gamma=0.055510204081632646 and C=8.673469387755102 : train_acc: 0.8369565217391305, validation_acc: 0.7857142857142857
for gamma=0.055510204081632646 and C=8.877551020408163
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for gamma=0.055510204081632646 and C=9.081632653061224
                                                                       : train acc: 0.8369565217391305, validation acc: 0.7857142857142857
                                                                       : train_acc: 0.8369565217391305 , validation_acc: 0.7857142857142857
for gamma=0.055510204081632646 and C=9.285714285714285
for gamma=0.055510204081632646 and C=9.489795918367347
                                                                        : train_acc: 0.8369565217391305, validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=9.693877551020408
                                                                       : train_acc: 0.841304347826087, validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=9.89795918367347 : train_acc: 0.841304347826087 , validation_acc: 0.7987012987012987
for gamma=0.055510204081632646 and C=10.10204081632653 : train_acc: 0.841304347826087, validation_acc: 0.7987012987012987
                                                                         : train_acc: 0.8434782608695652 , validation_acc: 0.7987012987012987
for gamma=0.055510204081632646 and C=10.306122448979592
for gamma=0.055510204081632646 and C=10.510204081632654
                                                                         : train_acc: 0.8434782608695652, validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=10.714285714285715
                                                                         : train_acc: 0.8434782608695652 , validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=10.918367346938776
                                                                         : train_acc: 0.8478260869565217, validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=11.122448979591837
                                                                         : train_acc: 0.8478260869565217, validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=11.326530612244898
                                                                         : train\_acc: 0.8478260869565217 \ , validation\_acc: 0.7922077922077922 \\
for gamma=0.055510204081632646 and C=11.53061224489796 : train_acc: 0.8478260869565217, validation_acc: 0.7922077922
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                                                                       : train_acc: 0.8434782608695652 , validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=11.938775510204081
                                                                         : train_acc: 0.8434782608695652, validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=12.142857142857142
                                                                         : train_acc: 0.8434782608695652 , validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=12.346938775510203
                                                                         : train acc: 0.841304347826087, validation acc: 0.7922077922077922
                                                                         : train_acc: 0.8434782608695652 , validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=12.551020408163264
for gamma=0.055510204081632646 and C=12.755102040816327
                                                                         : train_acc: 0.8456521739130435, validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=12.959183673469388 : train_acc: 0.8478260869565217, validation_acc: 0.7922077922
```

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for gamma=0.055510204081632646 and C=13.16326530612245 : train_acc: 0.8478260869565217 , validation_acc:0.7922077922
for gamma=0.055510204081632646 and C=13.36734693877551 : train_acc: 0.8478260869565217 , validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=13.571428571428571 : train_acc: 0.8478260869565217 , validation_acc: 0.7857142857142857
for gamma=0.055510204081632646 and C=13.775510204081632 : train_acc: 0.8478260869565217 , validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=13.979591836734695
                                                           : train_acc: 0.8478260869565217, validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=14.183673469387756
                                                           : train_acc: 0.8456521739130435 , validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=14.387755102040817
                                                           : train_acc: 0.8456521739130435 , validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=14.591836734693878 : train acc: 0.8456521739130435 , validation acc: 0.7857142857142857
for gamma=0.055510204081632646 and C=14.795918367346939 : train_acc: 0.85 , validation_acc: 0.7922077922077922
for gamma=0.055510204081632646 and C=15.0 : train_acc: 0.8543478260869565 , validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=5.0 : train_acc: 0.8391304347826087, validation_acc: 0.7857142857142857
for gamma=0.06561224489795918 and C=5.204081632653061 : train_acc: 0.8391304347826087, validation_acc: 0.7857142857142857
for gamma=0.06561224489795918 and C=5.408163265306122
                                                         : train_acc: 0.841304347826087 , validation_acc: 0.7857142857142857
for gamma=0.06561224489795918 and C=5.612244897959184
                                                         : train_acc: 0.841304347826087, validation_acc: 0.7857142857142857
for gamma=0.06561224489795918 and C=5.816326530612245
                                                         : train_acc: 0.841304347826087, validation_acc: 0.7857142857142857
for gamma=0.06561224489795918 and C=6.020408163265306
                                                         : train acc: 0.841304347826087, validation acc: 0.7987012987012987
for gamma=0.06561224489795918 and C=6.224489795918368 : train_acc: 0.841304347826087, validation_acc: 0.7987012987012987
for gamma=0.06561224489795918 and C=6.428571428571429
                                                         : train_acc: 0.841304347826087, validation_acc: 0.7987012987012987
for gamma=0.06561224489795918 and C=6.63265306122449 : train_acc: 0.8391304347826087, validation_acc:0.7922077922
for gamma=0.06561224489795918 and C=6.836734693877551 : train acc: 0.8369565217391305, validation acc: 0.7922077922077922
                                                         : train_acc: 0.841304347826087, validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=7.040816326530612
for gamma=0.06561224489795918 and C=7.244897959183674 for gamma=0.06561224489795918 and C=7.448979591836735
                                                         : train_acc: 0.841304347826087, validation_acc: 0.7922077922077922
                                                         : train_acc: 0.8434782608695652, validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=7.653061224489796
                                                         : train acc: 0.8434782608695652, validation acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=7.857142857142858
                                                         : train_acc: 0.8434782608695652, validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=8.061224489795919
                                                         : train acc: 0.8434782608695652, validation acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=8.26530612244898 : train_acc: 0.8434782608695652 , validation_acc:0.7922077922
for gamma=0.06561224489795918 and C=8.46938775510204 : train_acc: 0.8434782608695652 , validation_acc: 0.7922077922
for gamma=0.06561224489795918 and C=8.673469387755102 : train_acc: 0.8456521739130435 , validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=8.877551020408163
                                                         : train acc: 0.8478260869565217, validation acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=9.081632653061224
                                                         : train_acc: 0.8478260869565217, validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=9.285714285714285
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                                                         : train_acc: 0.8478260869565217 , validation_acc:0.7922077922
for gamma=0.06561224489795918 and C=9.489795918367347
for gamma=0.06561224489795918 and C=9.693877551020408
                                                         : train_acc: 0.8478260869565217, validation_acc: 0.7857142857142857
for gamma=0.06561224489795918 and C=9.89795918367347 : train_acc: 0.85 , validation_acc:0.7857142857142857
for gamma=0.06561224489795918 and C=10.10204081632653 : train_acc: 0.8521739130434782, validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=10.306122448979592
                                                          : train_acc: 0.8521739130434782 , validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=10.510204081632654
                                                          : train_acc: 0.8521739130434782, validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=10.714285714285715
                                                          : train_acc: 0.8521739130434782, validation_acc: 0.7987012987012987
for gamma=0.06561224489795918 and C=10.918367346938776 : train_acc: 0.8521739130434782 , validation_acc: 0.7987012987012987
for gamma=0.06561224489795918 and C=11.122448979591837
                                                          : train_acc: 0.8521739130434782 , validation_acc: 0.7987012987012987
for gamma=0.06561224489795918 and C=11.326530612244898
                                                          : train_acc: 0.8543478260869565, validation_acc: 0.7987012987012987
for gamma=0.06561224489795918 and C=11.53061224489796 : train_acc: 0.8521739130434782 , validation_acc: 0.7987012987012987
for gamma=0.06561224489795918 and C=11.73469387755102 : train_acc: 0.8521739130434782 , validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=11.938775510204081
                                                          : train acc: 0.8521739130434782, validation acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=12.142857142857142
                                                          : train_acc: 0.85, validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=12.346938775510203 : train_acc: 0.85 , validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=12.551020408163264 : train_acc: 0.85 , validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=12.755102040816327
                                                          : train_acc: 0.85, validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=12.959183673469388
                                                          : train_acc: 0.85, validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=13.16326530612245 : train_acc: 0.85 , validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=13.36734693877551 : train_acc: 0.85 , validation_acc:0.7922077922077922
for gamma=0.06561224489795918 and C=13.571428571428571
                                                          : train_acc: 0.85, validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=13.775510204081632
                                                          : train_acc: 0.8521739130434782, validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=13.979591836734695 : train_acc: 0.8521739130434782 , validation_acc: 0.7922077922077922
for gamma=0.06561224489795918 and C=14.387755102040817
                                                          : train_acc: 0.8521739130434782, validation_acc:0.7922077922077922
for gamma=0.06561224489795918 and C=14.591836734693878
                                                          : train_acc: 0.8543478260869565, validation_acc: 0.7857142857142857
for gamma=0.06561224489795918 and C=14.795918367346939 : train_acc: 0.8543478260869565 , validation_acc: 0.7857142857142857
for gamma=0.06561224489795918 and C=15.0 : train_acc: 0.8543478260869565 , validation_acc: 0.7792207792207793
for gamma=0.07571428571428572 and C=5.0 : train_acc: 0.841304347826087 , validation_acc: 0.7987012987012987
for gamma=0.07571428571428572 and C=5.204081632653061 : train_acc: 0.841304347826087 , validation_acc:0.7922077922
for gamma=0.07571428571428572 and C=5.408163265306122
                                                         : train_acc: 0.8434782608695652, validation_acc: 0.7922077922077922
for gamma=0.07571428571428572 and C=5.612244897959184
                                                         : train_acc: 0.8456521739130435, validation_acc: 0.7922077922077922
for gamma=0.07571428571428572 and C=5.816326530612245
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for gamma=0.07571428571428572 and C=6.020408163265306
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for gamma=0.07571428571428572 and C=6.224489795918368
                                                         : train acc: 0.8456521739130435, validation acc: 0.7857142857142857
for gamma=0.07571428571428572 and C=6.428571428571429
                                                         : train_acc: 0.8521739130434782, validation_acc: 0.7922077922077922
for gamma=0.07571428571428572 and C=6.63265306122449 : train_acc: 0.8543478260869565 , validation_acc: 0.7987012987012987
for gamma=0.07571428571428572 and C=6.836734693877551 : train_acc: 0.8521739130434782, validation_acc: 0.7987012987012987
```

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for gamma=0.07571428571428572 and C=7.040816326530612 : train_acc: 0.8521739130434782 , validation_acc: 0.7987012987012987
for gamma=0.07571428571428572 and C=7.244897959183674 : train_acc: 0.8543478260869565 , validation_acc: 0.7987012987012987
for gamma=0.07571428571428572 and C=7.448979591836735
                                                                       : train_acc: 0.8521739130434782 , validation_acc: 0.7922077922077922
for gamma=0.07571428571428572 and C=7.653061224489796
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for gamma=0.07571428571428572 and C=7.857142857142858
                                                                       : train_acc: 0.8521739130434782 , validation_acc: 0.7922077922077922
for gamma=0.07571428571428572 and C=8.061224489795919
                                                                       : train_acc: 0.85, validation_acc: 0.7922077922077922
for gamma=0.07571428571428572 and C=8.26530612244898 : train_acc: 0.85 , validation_acc: 0.7987012987012987
for gamma=0.07571428571428572 and C=8.46938775510204 : train acc: 0.85, validation acc: 0.7987012987012987
for gamma=0.07571428571428572 and C=8.673469387755102 : train_acc: 0.85 , validation_acc: 0.7987012987012987
for gamma=0.07571428571428572 and C=8.877551020408163
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for gamma=0.07571428571428572 and C=9.081632653061224
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for gamma=0.07571428571428572 and C=9.285714285714285
                                                                       : train_acc: 0.85, validation_acc: 0.7922077922077922
for gamma=0.07571428571428572 and C=9.489795918367347
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for gamma=0.07571428571428572 and C=9.693877551020408
                                                                       : train_acc: 0.85, validation_acc:0.7922077922077922
for gamma=0.07571428571428572 and C=9.89795918367347 : train_acc: 0.85 , validation_acc: 0.7922077922077922
for gamma=0.07571428571428572 and C=10.10204081632653 : train acc: 0.8521739130434782 , validation acc: 0.7922077922
for gamma=0.07571428571428572 and C=10.306122448979592 : train_acc: 0.8521739130434782 , validation_acc: 0.7857142857142857
for gamma=0.07571428571428572 and C=10.510204081632654
                                                                        : train_acc: 0.8521739130434782, validation_acc: 0.7792207792207793
for gamma=0.07571428571428572 and C=10.714285714285715
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for gamma=0.07571428571428572 and C=10.918367346938776
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for gamma=0.07571428571428572 and C=11.122448979591837
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for gamma=0.07571428571428572 and C=11.326530612244898
                                                                        : train_acc: 0.8565217391304348 , validation_acc:0.7792207792207793
for gamma=0.07571428571428572 and C=11.53061224489796 : train_acc; 0.8565217391304348 , validation_acc; 0.7857142857142857
for gamma=0.07571428571428572 and C=11.73469387755102 : train acc: 0.8608695652173913 , validation acc: 0.7857142857142857
for gamma=0.07571428571428572 and C=11.938775510204081 : train_acc: 0.8608695652173913 , validation_acc: 0.7857142857142857
for gamma=0.07571428571428572 and C=12.142857142857142
                                                                        : train acc: 0.8630434782608696, validation acc: 0.7857142857142857
for gamma=0.07571428571428572 and C=12.346938775510203
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for gamma=0.07571428571428572 and C=12.551020408163264
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                                                                        : train_acc: 0.8630434782608696 , validation_acc: 0.7792207792207793
for gamma=0.07571428571428572 and C=12.755102040816327
for gamma=0.07571428571428572 and C=12.959183673469388
                                                                        : train acc: 0.8630434782608696, validation acc: 0.7857142857142857
for gamma=0.07571428571428572 and C=13.16326530612245 : train_acc: 0.8630434782608696 , validation_acc: 0.7857142857142857
for gamma=0.07571428571428572 and C=13.36734693877551
                                                                       : train_acc: 0.8630434782608696 , validation_acc: 0.7857142857142857
for gamma=0.07571428571428572 and C=13.571428571428571
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for gamma=0.07571428571428572 and C=13.979591836734695
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for gamma=0.07571428571428572 and C=14.183673469387756
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for gamma=0.07571428571428572 and C=14.387755102040817
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for gamma=0.07571428571428572 and C=14.591836734693878
                                                                        : train_acc: 0.8630434782608696 , validation_acc: 0.7857142857142857
for gamma=0.07571428571428572 and C=14.795918367346939 : train_acc: 0.8608695652173913 , validation_acc: 0.7857142857142857
for gamma=0.07571428571428572 and C=15.0 : train_acc: 0.8608695652173913 , validation_acc: 0.7857142857142857
for gamma=0.08581632653061225 and C=5.0 : train_acc: 0.8456521739130435 , validation_acc: 0.7857142857142857
for gamma=0.08581632653061225 and C=5.204081632653061
                                                                      : train_acc: 0.8521739130434782 , validation_acc: 0.7922077922077922
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                                                                      : train_acc: 0.8521739130434782, validation_acc: 0.7987012987012987
for gamma=0.08581632653061225 and C=5.612244897959184
                                                                       : train_acc: 0.8543478260869565, validation_acc: 0.7987012987012987
for gamma=0.08581632653061225 and C=5.816326530612245
                                                                       : train acc: 0.8543478260869565, validation acc: 0.7987012987012987
for gamma=0.08581632653061225 and C=6.020408163265306
                                                                       : train_acc: 0.8543478260869565, validation_acc: 0.7987012987012987
for gamma=0.08581632653061225 and C=6.224489795918368
                                                                       : train acc: 0.8521739130434782, validation acc: 0.7987012987012987
for gamma=0.08581632653061225 and C=6.428571428571429
                                                                       : train_acc: 0.8521739130434782, validation_acc: 0.7922077922077922
for\ gamma = 0.08581632653061225\ and\ C = 6.63265306122449\ : train\_acc:\ 0.8521739130434782\ ,\ validation\_acc:\ 0.7987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012987012
for gamma=0.08581632653061225 and C=6.836734693877551
                                                                       : train_acc: 0.8521739130434782, validation_acc: 0.7987012987012987
for gamma=0.08581632653061225 and C=7.040816326530612
                                                                       : train acc: 0.8521739130434782, validation acc: 0.7987012987012987
for gamma=0.08581632653061225 and C=7.244897959183674
                                                                       : train_acc: 0.8521739130434782, validation_acc: 0.7857142857142857
for gamma=0.08581632653061225 and C=7.448979591836735
                                                                       : train_acc: 0.8543478260869565, validation_acc: 0.7857142857142857
for gamma=0.08581632653061225 and C=7.653061224489796
                                                                       : train_acc: 0.8521739130434782, validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=7.857142857142858
                                                                       : train_acc: 0.8543478260869565, validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=8.061224489795919
                                                                       : train_acc: 0.8565217391304348 , validation_acc:0.7792207792207793
for gamma=0.08581632653061225 and C=8.26530612244898
                                                                     : train acc: 0.8565217391304348, validation acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=8.46938775510204 : train_acc: 0.8565217391304348 , validation_acc: 0.7857142857142857
for gamma=0.08581632653061225 and C=8.673469387755102
                                                                      : train_acc: 0.8565217391304348 , validation_acc: 0.7857142857142857
for gamma=0.08581632653061225 and C=8.877551020408163
                                                                       : train_acc: 0.8565217391304348, validation_acc: 0.7857142857142857
for gamma=0.08581632653061225 and C=9.081632653061224
                                                                       : train_acc: 0.8565217391304348, validation_acc: 0.7857142857142857
for gamma=0.08581632653061225 and C=9.285714285714285
                                                                       : train_acc: 0.8565217391304348, validation_acc:0.7727272727272727
for gamma=0.08581632653061225 and C=9.489795918367347
                                                                       : train_acc: 0.8608695652173913, validation_acc: 0.7727272727272727
for gamma=0.08581632653061225 and C=9.693877551020408
                                                                       : train_acc: 0.8608695652173913, validation_acc: 0.7727272727272727
for gamma=0.08581632653061225 and C=9.89795918367347 : train_acc: 0.8630434782608696 , validation_acc:0.772727272727272727
for gamma=0.08581632653061225 and C=10.10204081632653 : train_acc: 0.8630434782608696 , validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=10.306122448979592 : train acc: 0.8630434782608696 , validation acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=10.510204081632654
                                                                        : train_acc: 0.8608695652173913 , validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=10.714285714285715
                                                                        : train_acc: 0.8608695652173913, validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=10.918367346938776 : train_acc: 0.8608695652173913 , validation_acc: 0.7792207792207793
```

```
for gamma=0.08581632653061225 and C=11.122448979591837 : train_acc: 0.8608695652173913 , validation_acc: 0.779220779 2207793
for gamma=0.08581632653061225 and C=11.326530612244898 : train_acc: 0.8608695652173913 , validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=11.53061224489796 : train_acc: 0.8630434782608696 , validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=11.73469387755102 : train_acc: 0.8630434782608696 , validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=11.938775510204081 : train_acc: 0.8652173913043478 , validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=12.142857142857142 : train_acc: 0.8652173913043478, validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=12.346938775510203
                                                           : train_acc: 0.8652173913043478, validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=12.551020408163264
                                                          : train acc: 0.8652173913043478, validation acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=12.755102040816327
                                                          : train_acc: 0.8652173913043478 , validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=12.959183673469388 : train_acc: 0.8652173913043478 , validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=13.16326530612245
                                                         : train_acc: 0.8652173913043478 , validation_acc:0.7792207792207793
for gamma=0.08581632653061225 and C=13.36734693877551
                                                         : train_acc: 0.8673913043478261 , validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=13.571428571428571 : train_acc: 0.8673913043478261 , validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=13.775510204081632
                                                           : train_acc: 0.8673913043478261, validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=13.979591836734695
                                                           : train acc: 0.8673913043478261, validation acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=14.183673469387756 : train_acc: 0.8673913043478261 , validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=14.387755102040817 : train_acc: 0.8652173913043478 , validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=14.591836734693878 : train_acc: 0.8673913043478261 , validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=14.795918367346939
                                                          : train_acc: 0.8652173913043478 , validation_acc: 0.7792207792207793
for gamma=0.08581632653061225 and C=15.0 : train_acc: 0.8630434782608696 , validation_acc: 0.7792207792207793
for gamma=0.09591836734693877 and C=5.0 : train_acc: 0.8521739130434782, validation_acc: 0.7857142857142857
for gamma=0.09591836734693877 and C=5.204081632653061
                                                         : train_acc: 0.8521739130434782, validation_acc: 0.7857142857142857
for gamma=0.09591836734693877 and C=5.408163265306122
                                                          : train_acc: 0.8521739130434782, validation_acc:0.7922077922077922
for gamma=0.09591836734693877 and C=5.612244897959184
                                                         : train acc: 0.8521739130434782, validation acc: 0.7922077922077922
for gamma=0.09591836734693877 and C=5.816326530612245
                                                         : train_acc: 0.8521739130434782 , validation_acc:0.7792207792207793
for gamma=0.09591836734693877 and C=6.020408163265306
                                                          : train acc: 0.8565217391304348, validation acc: 0.7727272727272727
                                                         : train_acc: 0.8565217391304348 , validation_acc:0.7727272727272727
for gamma=0.09591836734693877 and C=6.224489795918368
for gamma=0.09591836734693877 and C=6.428571428571429
                                                         : train_acc: 0.8586956521739131, validation_acc: 0.7792207792207793
for gamma=0.09591836734693877 and C=6.63265306122449 : train_acc: 0.8586956521739131 , validation_acc: 0.7792207792207793
for gamma=0.09591836734693877 and C=6.836734693877551
                                                          : train acc: 0.8565217391304348, validation acc: 0.7792207792207793
for gamma=0.09591836734693877 and C=7.040816326530612
                                                          : train_acc: 0.8565217391304348 , validation_acc:0.7792207792207793
for gamma=0.09591836734693877 and C=7.244897959183674
                                                          : train_acc: 0.8565217391304348, validation_acc: 0.7727272727272727
for gamma=0.09591836734693877 and C=7.448979591836735
                                                         : train_acc: 0.8565217391304348 , validation_acc: 0.7727272727272727
for gamma=0.09591836734693877 and C=7.653061224489796
                                                          : train_acc: 0.8608695652173913, validation_acc: 0.772727272727272727
for gamma=0.09591836734693877 and C=7.857142857142858
                                                         : train_acc: 0.8630434782608696 , validation_acc: 0.7727272727272727
for gamma=0.09591836734693877 and C=8.061224489795919
                                                          : train_acc: 0.8630434782608696, validation_acc: 0.7727272727272727
for gamma=0.09591836734693877 and C=8.26530612244898 : train_acc: 0.8630434782608696 , validation_acc:0.772727272727272727
for gamma=0.09591836734693877 and C=8.46938775510204
                                                        : train_acc: 0.8630434782608696 , validation_acc: 0.7727272727272727
for gamma=0.09591836734693877 and C=8.673469387755102
                                                         : train acc: 0.8630434782608696, validation acc: 0.7727272727272727
for gamma=0.09591836734693877 and C=8.877551020408163
                                                         : train_acc: 0.8630434782608696 , validation_acc: 0.7727272727272727
for gamma=0.09591836734693877 and C=9.081632653061224
                                                          : train_acc: 0.8630434782608696 , validation_acc: 0.7727272727272727
for gamma=0.09591836734693877 and C=9.285714285714285
                                                          : train_acc: 0.8630434782608696 , validation_acc: 0.7727272727272727
for gamma=0.09591836734693877 and C=9.489795918367347
                                                         : train_acc: 0.8630434782608696 , validation_acc: 0.7727272727272727
for gamma=0.09591836734693877 and C=9.693877551020408
                                                         : train_acc: 0.8652173913043478 , validation_acc: 0.7727272727272727
for gamma=0.09591836734693877 and C=9.89795918367347 : train_acc: 0.8673913043478261, validation_acc: 0.7727272727272727
for gamma=0.09591836734693877 and C=10.10204081632653
                                                         : train_acc: 0.8673913043478261 , validation_acc: 0.7727272727272727
for gamma=0.09591836734693877 and C=10.306122448979592 : train_acc: 0.8673913043478261 , validation_acc: 0.7792207792207793
for gamma=0.09591836734693877 and C=10.510204081632654 : train_acc: 0.8652173913043478 , validation_acc: 0.7792207792207793
for gamma=0.09591836734693877 and C=10.714285714285715
                                                           : train_acc: 0.8652173913043478, validation_acc:0.7792207792207793
for gamma=0.09591836734693877 and C=10.918367346938776
                                                           : train_acc: 0.8673913043478261, validation_acc:0.7792207792207793
for gamma=0.09591836734693877 and C=11.122448979591837
                                                           : train acc: 0.8673913043478261, validation acc: 0.7792207792207793
for gamma=0.09591836734693877 and C=11.326530612244898
                                                           : train_acc: 0.8673913043478261 , validation_acc: 0.7792207792207793
for gamma=0.09591836734693877 and C=11.53061224489796
                                                         : train_acc: 0.8673913043478261, validation_acc: 0.7792207792207793
for gamma=0.09591836734693877 and C=11.73469387755102 : train_acc: 0.8630434782608696 , validation_acc: 0.7792207792207793
for gamma=0.09591836734693877 and C=11.938775510204081 : train_acc: 0.8608695652173913 , validation_acc: 0.7792207792207793
for gamma=0.09591836734693877 and C=12.142857142857142 : train_acc: 0.8608695652173913 , validation_acc: 0.7792207792207793
                                                           : train_acc: 0.8630434782608696 , validation_acc: 0.7792207792207793
for gamma=0.09591836734693877 and C=12.346938775510203
for gamma=0.09591836734693877 and C=12.551020408163264
                                                           : train_acc: 0.8630434782608696, validation_acc: 0.7792207792207793
for gamma=0.09591836734693877 and C=12.755102040816327
                                                           : train_acc: 0.8630434782608696 , validation_acc: 0.7857142857142857
                                                           : train_acc: 0.8630434782608696 , validation_acc: 0.7857142857142857
for gamma=0.09591836734693877 and C=12.959183673469388
for gamma=0.09591836734693877 and C=13.16326530612245
                                                         : train_acc: 0.8673913043478261, validation_acc: 0.7857142857142857
for gamma=0.09591836734693877 and C=13.36734693877551
                                                         : train_acc: 0.8695652173913043 , validation_acc: 0.7857142857142857
for gamma=0.09591836734693877 and C=13.571428571428571
                                                          : train_acc: 0.8717391304347826 , validation_acc: 0.7857142857142857
for gamma=0.09591836734693877 and C=13.775510204081632
                                                           : train_acc: 0.8717391304347826 , validation_acc: 0.7857142857142857
for gamma=0.09591836734693877 and C=13.979591836734695
                                                           : train_acc: 0.8739130434782608, validation_acc: 0.7857142857142857
for gamma=0.09591836734693877 and C=14.183673469387756
                                                           : train_acc: 0.8739130434782608 , validation_acc: 0.7857142857142857
for gamma=0.09591836734693877 and C=14.387755102040817
                                                           : train acc: 0.8739130434782608, validation acc: 0.7857142857142857
for gamma=0.09591836734693877 and C=14.591836734693878
                                                           : train_acc: 0.8739130434782608 , validation_acc: 0.7857142857142857
for gamma=0.09591836734693877 and C=14.795918367346939
                                                           : train_acc: 0.8739130434782608, validation_acc: 0.7857142857142857
for gamma=0.09591836734693877 and C=15.0 : train_acc: 0.8760869565217392 , validation_acc: 0.7857142857142857
```

```
for gamma=0.1060204081632653 and C=5.0 : train_acc: 0.8565217391304348 , validation_acc: 0.7857142857142857
for gamma=0.1060204081632653 and C=5.204081632653061 : train_acc: 0.8565217391304348 , validation_acc: 0.7792207792207793
for gamma=0.1060204081632653 and C=5.408163265306122
                                                       : train_acc: 0.8586956521739131, validation_acc: 0.7792207792207793
for gamma=0.1060204081632653 and C=5.612244897959184
                                                       : train_acc: 0.8586956521739131 , validation_acc: 0.7727272727272727
for gamma=0.1060204081632653 and C=5.816326530612245
                                                       : train_acc: 0.8586956521739131 , validation_acc: 0.7727272727272727
for gamma=0.1060204081632653 and C=6.020408163265306
                                                       : train_acc: 0.8586956521739131, validation_acc: 0.7727272727272727
for gamma=0.1060204081632653 and C=6.224489795918368
                                                       : train_acc: 0.8586956521739131 , validation_acc: 0.7727272727272727
for gamma=0.1060204081632653 and C=6.428571428571429
                                                       : train acc: 0.8608695652173913, validation acc: 0.7727272727272727
for gamma=0.1060204081632653 and C=6.63265306122449 : train_acc: 0.8630434782608696 , validation_acc: 0.772727272727272727
for gamma=0.1060204081632653 and C=6.836734693877551
                                                       : train_acc: 0.8630434782608696, validation_acc: 0.7727272727272727
for gamma=0.1060204081632653 and C=7.040816326530612
                                                       : train_acc: 0.8630434782608696 , validation_acc: 0.7662337662337663
for gamma=0.1060204081632653 and C=7.244897959183674
                                                       : train acc: 0.8630434782608696, validation acc: 0.7662337662337663
                                                       : train_acc: 0.8630434782608696 , validation_acc: 0.7662337662337663
for gamma=0.1060204081632653 and C=7.448979591836735
for gamma=0.1060204081632653 and C=7.653061224489796
                                                       : train_acc: 0.8630434782608696, validation_acc: 0.7662337662337663
for gamma=0.1060204081632653 and C=7.857142857142858
                                                       : train acc: 0.8608695652173913, validation acc: 0.7662337662337663
for gamma=0.1060204081632653 and C=8.061224489795919
                                                       : train acc: 0.8608695652173913, validation acc: 0.7662337662337663
: train_acc: 0.8652173913043478 , validation_acc: 0.7727272727272727
for gamma=0.1060204081632653 and C=8.46938775510204
for gamma=0.1060204081632653 and C=8.673469387755102
                                                       : train_acc: 0.8652173913043478, validation_acc: 0.7727272727272727
for gamma=0.1060204081632653 and C=8.877551020408163
                                                       : train acc: 0.8652173913043478 , validation_acc: 0.7727272727272727
                                                       : train_acc: 0.8652173913043478 , validation_acc: 0.7727272727272727
for gamma=0.1060204081632653 and C=9.081632653061224
for gamma=0.1060204081632653 and C=9.285714285714285
                                                       : train_acc: 0.8673913043478261 , validation_acc:0.7727272727272727
for gamma=0.1060204081632653 and C=9.489795918367347
                                                       : train_acc: 0.8673913043478261, validation_acc: 0.7727272727272727
for gamma=0.1060204081632653 and C=9.693877551020408
                                                       : train acc: 0.8673913043478261, validation acc: 0.7727272727272727
for gamma=0.1060204081632653 and C=10.10204081632653
                                                       : train acc: 0.8673913043478261, validation acc: 0.7857142857142857
                                                        : train_acc: 0.8673913043478261 , validation_acc: 0.7857142857142857
for gamma=0.1060204081632653 and C=10.306122448979592
for gamma=0.1060204081632653 and C=10.510204081632654
                                                        : train_acc: 0.8673913043478261, validation_acc: 0.7857142857142857
                                                        : train_acc: 0.8673913043478261 , validation_acc: 0.7857142857142857
for gamma=0.1060204081632653 and C=10.714285714285715
for gamma=0.1060204081632653 and C=10.918367346938776
                                                        : train acc: 0.8717391304347826, validation acc: 0.7857142857142857
for gamma=0.1060204081632653 and C=11.122448979591837
                                                        : train_acc: 0.8739130434782608 , validation_acc: 0.7857142857142857
for gamma=0.1060204081632653 and C=11.326530612244898
                                                        : train_acc: 0.8739130434782608, validation_acc: 0.7857142857142857
for gamma=0.1060204081632653 and C=11.53061224489796 : train_acc: 0.8739130434782608 , validation_acc: 0.7857142857142857
for gamma=0.1060204081632653 and C=11.73469387755102
                                                       : train_acc: 0.8739130434782608, validation_acc: 0.7857142857142857
for gamma=0.1060204081632653 and C=11.938775510204081
                                                        : train_acc: 0.8760869565217392, validation_acc: 0.7857142857142857
for gamma=0.1060204081632653 and C=12.142857142857142
                                                        : train_acc: 0.8782608695652174, validation_acc: 0.7857142857142857
for gamma=0.1060204081632653 and C=12.346938775510203
                                                        : train_acc: 0.8782608695652174 , validation_acc: 0.7922077922077922
for gamma=0.1060204081632653 and C=12.551020408163264
                                                        : train_acc: 0.8826086956521739, validation_acc: 0.7922077922077922
                                                        : train acc: 0.8826086956521739 , validation_acc: 0.7922077922077922
for gamma=0.1060204081632653 and C=12.755102040816327
for gamma=0.1060204081632653 and C=12.959183673469388
                                                        : train_acc: 0.8826086956521739 , validation_acc: 0.7922077922077922
for gamma=0.1060204081632653 and C=13.16326530612245 : train_acc: 0.8826086956521739 , validation_acc:0.7922077922
for gamma=0.1060204081632653 and C=13.36734693877551
                                                       : train_acc: 0.8826086956521739 , validation_acc: 0.7922077922077922
for gamma=0.1060204081632653 and C=13.571428571428571
                                                        : train_acc: 0.8826086956521739, validation_acc: 0.7922077922077922
for gamma=0.1060204081632653 and C=13.775510204081632
                                                        : train_acc: 0.8826086956521739 , validation_acc:0.7922077922077922
for gamma=0.1060204081632653 and C=13.979591836734695
                                                        : train acc: 0.8826086956521739, validation acc: 0.7922077922077922
for gamma=0.1060204081632653 and C=14.183673469387756
                                                        : train_acc: 0.8826086956521739, validation_acc: 0.7922077922077922
                                                        : train_acc: 0.8826086956521739 , validation_acc: 0.7857142857142857
for gamma=0.1060204081632653 and C=14.387755102040817
                                                        : train_acc: 0.8826086956521739 , validation_acc:0.7922077922077922
for gamma=0.1060204081632653 and C=14.591836734693878
for gamma=0.1060204081632653 and C=14.795918367346939
                                                        : train_acc: 0.8847826086956522, validation_acc: 0.7857142857142857
for gamma=0.1060204081632653 and C=15.0 : train_acc: 0.8847826086956522 , validation_acc: 0.7857142857142857
for gamma=0.11612244897959184 and C=5.0 : train acc: 0.8586956521739131, validation acc: 0.7792207792207793
for gamma=0.11612244897959184 and C=5.204081632653061
                                                        : train_acc: 0.8586956521739131, validation_acc: 0.7792207792207793
for gamma=0.11612244897959184 and C=5.408163265306122
                                                        : train_acc: 0.8586956521739131, validation_acc:0.7792207792207793
for gamma=0.11612244897959184 and C=5.612244897959184
                                                        : train_acc: 0.8586956521739131, validation_acc: 0.7792207792207793
for gamma=0.11612244897959184 and C=5.816326530612245
                                                        : train_acc: 0.8608695652173913, validation_acc: 0.7727272727272727
for gamma=0.11612244897959184 and C=6.020408163265306
                                                        : train_acc: 0.8630434782608696 , validation_acc: 0.7727272727272727
for gamma=0.11612244897959184 and C=6.224489795918368
                                                        : train acc: 0.8608695652173913, validation acc: 0.7727272727272727
for gamma=0.11612244897959184 and C=6.428571428571429
                                                        : train_acc: 0.8630434782608696 , validation_acc: 0.7727272727272727
for gamma=0.11612244897959184 and C=6.63265306122449 : train_acc: 0.8630434782608696 , validation_acc:0.772727272727272727
for gamma=0.11612244897959184 and C=6.836734693877551
                                                        : train_acc: 0.8630434782608696 , validation_acc: 0.7727272727272727
for gamma=0.11612244897959184 and C=7.040816326530612
                                                        : train_acc: 0.8673913043478261, validation_acc: 0.7727272727272727
for gamma=0.11612244897959184 and C=7.244897959183674
                                                        : train_acc: 0.8673913043478261 , validation_acc: 0.7727272727272727
for gamma=0.11612244897959184 and C=7.448979591836735
                                                        : train_acc: 0.8695652173913043, validation_acc: 0.7727272727272727
for gamma=0.11612244897959184 and C=7.653061224489796
                                                        : train_acc: 0.8717391304347826 , validation_acc: 0.7727272727272727
for gamma=0.11612244897959184 and C=7.857142857142858
                                                        : train_acc: 0.8717391304347826, validation_acc: 0.7727272727272727
for gamma=0.11612244897959184 and C=8.061224489795919
                                                        : train_acc: 0.8717391304347826, validation_acc: 0.7792207792207793
for gamma=0.11612244897959184 and C=8.26530612244898 : train acc: 0.8739130434782608 , validation acc: 0.7792207792207793
for gamma=0.11612244897959184 and C=8.46938775510204 : train_acc: 0.8717391304347826, validation_acc: 0.7727272727272727
for gamma=0.11612244897959184 and C=8.673469387755102 : train_acc: 0.8717391304347826, validation_acc: 0.772727272727272727
for gamma=0.11612244897959184 and C=8.877551020408163 : train_acc: 0.8739130434782608, validation_acc: 0.772727272727272727
```

```
for gamma=0.11612244897959184 and C=9.081632653061224 : train_acc: 0.8760869565217392 , validation_acc: 0.772727272727272727
for gamma=0.11612244897959184 and C=9.285714285714285 : train_acc: 0.8760869565217392 , validation_acc: 0.772727272727272727
for gamma=0.11612244897959184 and C=9.489795918367347
                                                          : train_acc: 0.8760869565217392, validation_acc:0.7792207792207793
for gamma=0.11612244897959184 and C=9.693877551020408
                                                          : train_acc: 0.8782608695652174, validation_acc:0.7792207792207793
for gamma=0.11612244897959184 and C=9.89795918367347 : train_acc: 0.8782608695652174, validation_acc: 0.7857142857142857
for gamma=0.11612244897959184 and C=10.10204081632653 : train_acc: 0.8804347826086957 , validation_acc: 0.7857142857142857
for gamma=0.11612244897959184 and C=10.306122448979592 : train_acc: 0.8804347826086957, validation_acc: 0.7857142857142857
for gamma=0.11612244897959184 and C=10.510204081632654
                                                          : train acc: 0.8804347826086957, validation acc: 0.7857142857142857
for gamma=0.11612244897959184 and C=10.714285714285715 : train_acc: 0.8826086956521739 , validation_acc: 0.7857142857142857
for gamma=0.11612244897959184 and C=10.918367346938776
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for gamma=0.11612244897959184 and C=11.122448979591837
                                                           : train_acc: 0.8826086956521739 , validation_acc: 0.7792207792207793
                                                           : train_acc: 0.8826086956521739 , validation_acc: 0.7792207792207793
for gamma=0.11612244897959184 and C=11.326530612244898
for gamma=0.11612244897959184 and C=11.53061224489796 : train_acc: 0.8826086956521739 , validation_acc: 0.7792207792207793
for gamma=0.11612244897959184 and C=11.73469387755102
                                                          : train_acc: 0.8826086956521739 , validation_acc: 0.7727272727272727
                                                           : train_acc: 0.8847826086956522 , validation_acc: 0.7727272727272727
for gamma=0.11612244897959184 and C=11.938775510204081
for gamma=0.11612244897959184 and C=12.142857142857142
                                                          : train acc: 0.8847826086956522, validation acc: 0.7727272727272727
for gamma=0.11612244897959184 and C=12.346938775510203 : train_acc: 0.8847826086956522 , validation_acc: 0.772727272727272727
for gamma=0.11612244897959184 and C=12.551020408163264
                                                           : train_acc: 0.8847826086956522, validation_acc: 0.7727272727272727
for gamma=0.11612244897959184 and C=12.755102040816327
                                                           : train_acc: 0.8847826086956522, validation_acc: 0.7727272727272727
for gamma=0.11612244897959184 and C=12.959183673469388
                                                           : train acc: 0.8869565217391304 , validation_acc: 0.7792207792207793
for gamma=0.11612244897959184 and C=13.16326530612245 : train_acc: 0.8891304347826087 , validation_acc: 0.7792207792207793
for gamma=0.11612244897959184 and C=13.36734693877551
                                                          : train_acc: 0.8913043478260869 , validation_acc: 0.7792207792207793
for gamma=0.11612244897959184 and C=13.571428571428571
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for gamma=0.11612244897959184 and C=13.775510204081632
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for gamma=0.11612244897959184 and C=13.979591836734695
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for gamma=0.11612244897959184 and C=14.183673469387756
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for gamma=0.11612244897959184 and C=14.387755102040817
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for gamma=0.11612244897959184 and C=14.591836734693878
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for gamma=0.11612244897959184 and C=14.795918367346939
                                                           : train_acc: 0.8913043478260869, validation_acc: 0.7857142857142857
for gamma=0.11612244897959184 and C=15.0 : train acc: 0.8913043478260869 , validation acc: 0.7857142857142857
for gamma=0.12622448979591835 and C=5.0 : train_acc: 0.8652173913043478 , validation_acc: 0.772727272727272727
for gamma=0.12622448979591835 and C=5.204081632653061
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for gamma=0.12622448979591835 and C=5.408163265306122
                                                          : train_acc: 0.8673913043478261 , validation_acc: 0.7662337662337663
for gamma=0.12622448979591835 and C=5.612244897959184
                                                          : train_acc: 0.8695652173913043, validation_acc: 0.7597402597402597
for gamma=0.12622448979591835 and C=5.816326530612245
                                                          : train acc: 0.8695652173913043, validation acc: 0.7597402597402597
for gamma=0.12622448979591835 and C=6.020408163265306
                                                          : train_acc: 0.8695652173913043, validation_acc: 0.7662337662337663
                                                          : train_acc: 0.8717391304347826 , validation_acc:0.7662337662337663
for gamma=0.12622448979591835 and C=6.224489795918368
for gamma=0.12622448979591835 and C=6.428571428571429
                                                          : train_acc: 0.8717391304347826 , validation_acc: 0.7727272727272727
for gamma=0.12622448979591835 and C=6.63265306122449 : train acc: 0.8717391304347826, validation acc: 0.7727272727272727
for gamma=0.12622448979591835 and C=6.836734693877551
                                                          : train_acc: 0.8717391304347826 , validation_acc: 0.7727272727272727
for gamma=0.12622448979591835 and C=7.040816326530612
                                                          : train_acc: 0.8739130434782608 , validation_acc: 0.7792207792207793
for gamma=0.12622448979591835 and C=7.244897959183674
                                                          : train_acc: 0.8760869565217392 , validation_acc: 0.7727272727272727
for gamma=0.12622448979591835 and C=7.448979591836735
                                                         : train_acc: 0.8760869565217392, validation_acc: 0.7727272727272727
for gamma=0.12622448979591835 and C=7.653061224489796
                                                          : train_acc: 0.8782608695652174, validation_acc: 0.7727272727272727
for gamma=0.12622448979591835 and C=7.857142857142858
                                                          : train acc: 0.8782608695652174, validation acc: 0.7662337662337663
for gamma=0.12622448979591835 and C=8.061224489795919
                                                          : train_acc: 0.8804347826086957, validation_acc: 0.7792207792207793
for gamma=0.12622448979591835 and C=8.26530612244898 : train_acc: 0.8826086956521739 , validation_acc: 0.7792207792207793
for gamma=0.12622448979591835 and C=8.46938775510204 : train_acc: 0.8804347826086957 , validation_acc:0.7792207792207793
for gamma=0.12622448979591835 and C=8.673469387755102
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for gamma=0.12622448979591835 and C=8.877551020408163
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for gamma=0.12622448979591835 and C=9.081632653061224
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for gamma=0.12622448979591835 and C=9.285714285714285
                                                          : train_acc: 0.8826086956521739 , validation_acc: 0.7857142857142857
for gamma=0.12622448979591835 and C=9.489795918367347
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for gamma=0.12622448979591835 and C=9.693877551020408
                                                          : train_acc: 0.8826086956521739, validation_acc: 0.7792207792207793
for gamma=0.12622448979591835 and C=9.89795918367347 : train_acc: 0.8847826086956522 , validation_acc: 0.7792207792207793
for gamma=0.12622448979591835 and C=10.10204081632653 : train_acc: 0.8847826086956522 , validation_acc: 0.7792207792207793
                                                           : train_acc: 0.8847826086956522 , validation_acc: 0.7792207792207793
for gamma=0.12622448979591835 and C=10.306122448979592
for gamma=0.12622448979591835 and C=10.510204081632654
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for gamma=0.12622448979591835 and C=10.714285714285715
                                                           : train_acc: 0.8891304347826087, validation_acc: 0.7727272727272727
for gamma=0.12622448979591835 and C=10.918367346938776
                                                           : train_acc: 0.8913043478260869 , validation_acc: 0.7727272727272727
for gamma=0.12622448979591835 and C=11.122448979591837
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for gamma=0.12622448979591835 and C=11.326530612244898
                                                           : train_acc: 0.8913043478260869 , validation_acc:0.7727272727272727
for gamma=0.12622448979591835 and C=11.53061224489796 : train_acc: 0.8913043478260869 , validation_acc: 0.7727272727272727
for gamma=0.12622448979591835 and C=11.73469387755102 : train_acc: 0.8913043478260869 , validation_acc: 0.772727272727272727
for gamma=0.12622448979591835 and C=11.938775510204081
                                                           : train_acc: 0.8913043478260869, validation_acc: 0.7727272727272727
for gamma=0.12622448979591835 and C=12.142857142857142
                                                           : train_acc: 0.8913043478260869 , validation_acc: 0.7792207792207793
for gamma=0.12622448979591835 and C=12.346938775510203
                                                           : train acc: 0.8913043478260869, validation acc: 0.7792207792207793
for gamma=0.12622448979591835 and C=12.551020408163264
                                                           : train_acc: 0.8913043478260869 , validation_acc: 0.7792207792207793
for gamma=0.12622448979591835 and C=12.755102040816327
                                                           : train_acc: 0.8934782608695652, validation_acc: 0.7792207792207793
for gamma=0.12622448979591835 and C=12.959183673469388 : train_acc: 0.8956521739130435 , validation_acc: 0.7792207792207793
```

```
for gamma=0.12622448979591835 and C=13.16326530612245 : train_acc: 0.8956521739130435 , validation_acc: 0.7792207792207793
for gamma=0.12622448979591835 and C=13.36734693877551 : train_acc: 0.8956521739130435 , validation_acc: 0.7857142857142857
for gamma=0.12622448979591835 and C=13.571428571428571
                                                          : train_acc: 0.8956521739130435 , validation_acc: 0.7857142857142857
for gamma=0.12622448979591835 and C=13.775510204081632
                                                          : train_acc: 0.8956521739130435 , validation_acc: 0.7857142857142857
for gamma=0.12622448979591835 and C=13.979591836734695
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for gamma=0.12622448979591835 and C=14.183673469387756
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for gamma=0.12622448979591835 and C=14.387755102040817
                                                           : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.12622448979591835 and C=14.591836734693878 : train acc: 0.8978260869565218 , validation acc: 0.7857142857142857
for gamma=0.12622448979591835 and C=14.795918367346939 : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.12622448979591835 and C=15.0 : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.1363265306122449 and C=5.0 : train_acc: 0.8695652173913043 , validation_acc: 0.7662337662337663
for gamma=0.1363265306122449 and C=5.204081632653061 : train_acc: 0.8695652173913043 , validation_acc: 0.7662337662337663
for gamma=0.1363265306122449 and C=5.408163265306122 : train_acc: 0.8695652173913043, validation_acc: 0.7662337662337663
for gamma=0.1363265306122449 and C=5.612244897959184
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for gamma=0.1363265306122449 and C=5.816326530612245
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for gamma=0.1363265306122449 and C=6.020408163265306
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for gamma=0.1363265306122449 and C=6.224489795918368
                                                        : train_acc: 0.8782608695652174 , validation_acc:0.7727272727272727
for gamma=0.1363265306122449 and C=6.428571428571429
                                                        : train_acc: 0.8782608695652174, validation_acc: 0.7727272727272727
for gamma=0.1363265306122449 and C=6.63265306122449 : train_acc: 0.8782608695652174 , validation_acc: 0.772727272727272727
for gamma=0.1363265306122449 and C=6.836734693877551
                                                        : train_acc: 0.8804347826086957, validation_acc: 0.7727272727272727
for gamma=0.1363265306122449 and C=7.040816326530612
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for gamma=0.1363265306122449 and C=7.244897959183674 for gamma=0.1363265306122449 and C=7.448979591836735
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                                                        : train_acc: 0.8826086956521739, validation_acc: 0.7792207792207793
for gamma=0.1363265306122449 and C=7.653061224489796
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for gamma=0.1363265306122449 and C=7.857142857142858
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for gamma=0.1363265306122449 and C=8.061224489795919
                                                        : train acc: 0.8826086956521739, validation acc: 0.7857142857142857
for gamma=0.1363265306122449 and C=8.26530612244898 : train_acc: 0.8826086956521739 , validation_acc: 0.7792207792207793
for gamma=0.1363265306122449 and C=8.46938775510204 : train_acc: 0.8847826086956522 , validation_acc: 0.7792207792207793
for gamma=0.1363265306122449 and C=8.673469387755102
                                                        : train_acc: 0.8847826086956522 , validation_acc: 0.7857142857142857
for gamma=0.1363265306122449 and C=8.877551020408163
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for gamma=0.1363265306122449 and C=9.081632653061224
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for gamma=0.1363265306122449 and C=9.285714285714285
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for gamma=0.1363265306122449 and C=9.489795918367347
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for gamma=0.1363265306122449 and C=9.693877551020408
                                                        : train_acc: 0.8913043478260869, validation_acc: 0.7727272727272727
for gamma=0.1363265306122449 and C=9.89795918367347 : train_acc: 0.8913043478260869 , validation_acc: 0.772727272727272727
for gamma=0.1363265306122449 and C=10.10204081632653 : train_acc: 0.8913043478260869 , validation_acc:0.772727272727272727
                                                         : train_acc: 0.8934782608695652 , validation_acc:0.7727272727272727
for gamma=0.1363265306122449 and C=10.306122448979592
for gamma=0.1363265306122449 and C=10.510204081632654
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for gamma=0.1363265306122449 and C=10.714285714285715
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for gamma=0.1363265306122449 and C=10.918367346938776
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for gamma=0.1363265306122449 and C=11.122448979591837
                                                          : train_acc: 0.8978260869565218 , validation_acc: 0.7792207792207793
for gamma=0.1363265306122449 and C=11.326530612244898
                                                         : train_acc: 0.8978260869565218 , validation_acc: 0.7792207792207793
for gamma=0.1363265306122449 and C=11.53061224489796 : train_acc: 0.8978260869565218 , validation_acc: 0.7792207792207793
for gamma=0.1363265306122449 and C=11.73469387755102 : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.1363265306122449 and C=11.938775510204081
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for gamma=0.1363265306122449 and C=12.142857142857142
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for gamma=0.1363265306122449 and C=12.346938775510203
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for gamma=0.1363265306122449 and C=12.551020408163264
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for gamma=0.1363265306122449 and C=12.755102040816327
                                                          : train_acc: 0.8978260869565218, validation_acc: 0.7857142857142857
for gamma=0.1363265306122449 and C=12.959183673469388
                                                         : train_acc: 0.8978260869565218, validation_acc: 0.7857142857142857
for gamma=0.1363265306122449 and C=13.16326530612245 : train acc: 0.8978260869565218, validation acc: 0.7857142857142857
for gamma=0.1363265306122449 and C=13.36734693877551 : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.1363265306122449 and C=13.571428571428571
                                                          : train_acc: 0.8978260869565218 , validation_acc: 0.7792207792207793
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for gamma=0.1363265306122449 and C=13.979591836734695
                                                         : train_acc: 0.8978260869565218, validation_acc: 0.7792207792207793
for gamma=0.1363265306122449 and C=14.183673469387756
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for gamma=0.1363265306122449 and C=14.387755102040817
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for gamma=0.1363265306122449 and C=14.591836734693878
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for gamma=0.1363265306122449 and C=14.795918367346939
                                                         : train_acc: 0.8978260869565218, validation_acc: 0.7792207792207793
for gamma=0.14642857142857144 and C=5.0 : train_acc: 0.8760869565217392, validation_acc:0.77272727272727272727
for gamma=0.14642857142857144 and C=5.204081632653061 : train_acc: 0.8760869565217392 , validation_acc: 0.772727272727272727
for gamma=0.14642857142857144 and C=5.408163265306122
                                                         : train_acc: 0.8782608695652174, validation_acc: 0.7792207792207793
for gamma=0.14642857142857144 and C=5.612244897959184
                                                          : train_acc: 0.8782608695652174, validation_acc:0.7792207792207793
for gamma=0.14642857142857144 and C=5.816326530612245
                                                          : train_acc: 0.8826086956521739, validation_acc: 0.7792207792207793
for gamma=0.14642857142857144 and C=6.020408163265306
                                                         : train_acc: 0.8804347826086957, validation_acc: 0.7792207792207793
for gamma=0.14642857142857144 and C=6.224489795918368
                                                         : train acc: 0.8826086956521739, validation acc: 0.7792207792207793
                                                         : train_acc: 0.8826086956521739 , validation_acc:0.7792207792207793
for gamma=0.14642857142857144 and C=6.428571428571429
for gamma=0.14642857142857144 and C=6.63265306122449 : train_acc: 0.8826086956521739 , validation_acc: 0.7792207792207793
for gamma=0.14642857142857144 and C=6.836734693877551 : train_acc: 0.8847826086956522 , validation_acc: 0.7857142857142857
```

```
for gamma=0.14642857142857144 and C=7.040816326530612 : train_acc: 0.8847826086956522 , validation_acc: 0.7792207792207793
for gamma=0.14642857142857144 and C=7.244897959183674 : train_acc: 0.8869565217391304 , validation_acc: 0.7857142857142857
for gamma=0.14642857142857144 and C=7.448979591836735
                                                          : train_acc: 0.8891304347826087, validation_acc: 0.7857142857142857
for gamma=0.14642857142857144 and C=7.653061224489796
                                                          : train_acc: 0.8891304347826087, validation_acc: 0.7857142857142857
for gamma=0.14642857142857144 and C=7.857142857142858
                                                          : train_acc: 0.8891304347826087, validation_acc: 0.7857142857142857
for gamma=0.14642857142857144 and C=8.061224489795919
                                                          : train_acc: 0.8913043478260869, validation_acc: 0.7857142857142857
for gamma=0.14642857142857144 and C=8.26530612244898 : train_acc: 0.8934782608695652 , validation_acc: 0.7857142857142857
for gamma=0.14642857142857144 and C=8.46938775510204 : train acc: 0.8934782608695652 , validation acc: 0.7792207792207793
for gamma=0.14642857142857144 and C=8.673469387755102 : train_acc: 0.8934782608695652 , validation_acc: 0.7792207792207793
for gamma=0.14642857142857144 and C=8.877551020408163
                                                          : train_acc: 0.8934782608695652, validation_acc: 0.7792207792207793
for gamma=0.14642857142857144 and C=9.081632653061224
                                                          : train_acc: 0.8956521739130435 , validation_acc: 0.7857142857142857
for gamma=0.14642857142857144 and C=9.285714285714285
                                                          : train_acc: 0.8956521739130435, validation_acc: 0.7857142857142857
for gamma=0.14642857142857144 and C=9.489795918367347
                                                          : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.14642857142857144 and C=9.693877551020408
                                                          : train_acc: 0.8978260869565218, validation_acc: 0.7857142857142857
for gamma=0.14642857142857144 and C=9.89795918367347 : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.14642857142857144 and C=10.10204081632653 : train acc; 0.8978260869565218, validation acc; 0.7857142857142857
for gamma=0.14642857142857144 and C=10.306122448979592 : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.14642857142857144 and C=10.510204081632654
                                                           : train_acc: 0.8978260869565218, validation_acc: 0.7857142857142857
for gamma=0.14642857142857144 and C=10.714285714285715
                                                           : train_acc: 0.8978260869565218, validation_acc: 0.7857142857142857
for gamma=0.14642857142857144 and C=10.918367346938776
                                                           : train_acc: 0.8978260869565218, validation_acc: 0.7857142857142857
                                                           : train_acc: 0.8978260869565218, validation_acc: 0.7792207792207793
for gamma=0.14642857142857144 and C=11.122448979591837
for gamma=0.14642857142857144 and C=11.326530612244898
                                                           : train_acc: 0.8978260869565218 , validation_acc: 0.7792207792207793
for gamma=0.14642857142857144 and C=11.53061224489796 : train_acc: 0.8978260869565218 , validation_acc: 0.7792207792207793
for gamma=0.14642857142857144 and C=11.73469387755102 : train acc: 0.8978260869565218 , validation acc: 0.7792207792207793
for gamma=0.14642857142857144 and C=11.938775510204081 : train_acc: 0.8978260869565218 , validation_acc: 0.7792207792207793
for gamma=0.14642857142857144 and C=12.142857142857142
                                                           : train acc: 0.8978260869565218, validation acc: 0.7792207792207793
                                                           : train_acc: 0.8978260869565218 , validation_acc: 0.7792207792207793
for gamma=0.14642857142857144 and C=12.346938775510203
for gamma=0.14642857142857144 and C=12.551020408163264
                                                           : train_acc: 0.8978260869565218, validation_acc: 0.7727272727272727
                                                           : train_acc: 0.8978260869565218 , validation_acc:0.7727272727272727
for gamma=0.14642857142857144 and C=12.755102040816327
for gamma=0.14642857142857144 and C=12.959183673469388
                                                           : train acc: 0.8978260869565218, validation acc: 0.7727272727272727
for gamma=0.14642857142857144 and C=13.16326530612245 : train_acc: 0.9 , validation_acc: 0.77272727272727272727
for gamma=0.14642857142857144 and C=13.36734693877551
                                                          : train_acc: 0.9 , validation_acc: 0.7727272727272727
for gamma=0.14642857142857144 and C=13.571428571428571
                                                           : train_acc: 0.9, validation_acc: 0.7727272727272727
for gamma=0.14642857142857144 and C=13.775510204081632
                                                           : train_acc: 0.9, validation_acc: 0.7662337662337663
for gamma=0.14642857142857144 and C=13.979591836734695
                                                           : train_acc: 0.9, validation_acc: 0.7662337662337663
for gamma=0.14642857142857144 and C=14.183673469387756
                                                           : train_acc: 0.9, validation_acc: 0.7662337662337663
for gamma=0.14642857142857144 and C=14.387755102040817
                                                           : train_acc: 0.9 , validation_acc: 0.7662337662337663
for gamma=0.14642857142857144 and C=14.591836734693878
                                                           : train_acc: 0.9, validation_acc: 0.7662337662337663
for gamma=0.14642857142857144 and C=14.795918367346939
                                                          : train acc: 0.9, validation acc: 0.7662337662337663
for gamma=0.14642857142857144 and C=15.0 : train_acc: 0.9 , validation_acc: 0.7597402597402597
for gamma=0.15653061224489795 and C=5.0 : train_acc: 0.8804347826086957 , validation_acc: 0.772727272727272727
for gamma=0.15653061224489795 and C=5.204081632653061
                                                         : train_acc: 0.8826086956521739 , validation_acc: 0.7792207792207793
for gamma=0.15653061224489795 and C=5.408163265306122
                                                          : train_acc: 0.8826086956521739, validation_acc: 0.7792207792207793
for gamma=0.15653061224489795 and C=5.612244897959184
                                                          : train_acc: 0.8826086956521739 , validation_acc: 0.7792207792207793
for gamma=0.15653061224489795 and C=5.816326530612245
                                                          : train acc: 0.8847826086956522, validation acc: 0.7792207792207793
for gamma=0.15653061224489795 and C=6.020408163265306
                                                          : train_acc: 0.8847826086956522 , validation_acc: 0.7792207792207793
for gamma=0.15653061224489795 and C=6.224489795918368
                                                          : train_acc: 0.8869565217391304, validation_acc: 0.7792207792207793
for gamma=0.15653061224489795 and C=6.428571428571429
                                                          : train_acc: 0.8891304347826087, validation_acc: 0.7857142857142857
for gamma=0.15653061224489795 and C=6.63265306122449 : train_acc: 0.8934782608695652 , validation_acc:0.7857142857142857
for gamma=0.15653061224489795 and C=6.836734693877551
                                                          : train_acc: 0.8934782608695652, validation_acc: 0.7857142857142857
for gamma=0.15653061224489795 and C=7.040816326530612
                                                          : train acc: 0.8956521739130435, validation acc: 0.7857142857142857
                                                          : train_acc: 0.8956521739130435 , validation_acc: 0.7857142857142857
for gamma=0.15653061224489795 and C=7.244897959183674
for gamma=0.15653061224489795 and C=7.448979591836735
                                                          : train_acc: 0.8934782608695652, validation_acc: 0.7857142857142857
for gamma=0.15653061224489795 and C=7.653061224489796
                                                          : train_acc: 0.8956521739130435, validation_acc: 0.7922077922077922
for gamma=0.15653061224489795 and C=7.857142857142858
                                                         : train_acc: 0.8956521739130435 , validation_acc: 0.7857142857142857
for gamma=0.15653061224489795 and C=8.061224489795919
                                                          : train_acc: 0.8956521739130435 , validation_acc: 0.7857142857142857
for gamma=0.15653061224489795 and C=8.26530612244898
                                                        : train acc: 0.8978260869565218, validation acc: 0.7857142857142857
for gamma=0.15653061224489795 and C=8.46938775510204 : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.15653061224489795 and C=8.673469387755102
                                                         : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
                                                          : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.15653061224489795 and C=8.877551020408163
for gamma=0.15653061224489795 and C=9.081632653061224
                                                          : train_acc: 0.8978260869565218, validation_acc: 0.7857142857142857
for gamma=0.15653061224489795 and C=9.285714285714285
                                                          : train\_acc: 0.8978260869565218, validation\_acc:0.7857142857142857
for gamma=0.15653061224489795 and C=9.489795918367347
                                                          : train_acc: 0.8978260869565218, validation_acc: 0.7857142857142857
for gamma=0.15653061224489795 and C=9.693877551020408
                                                          : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.15653061224489795 and C=9.89795918367347 : train_acc: 0.8978260869565218, validation_acc: 0.7857142857142857
for gamma=0.15653061224489795 and C=10.10204081632653 : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.15653061224489795 and C=10.306122448979592 : train acc: 0.8978260869565218 , validation acc: 0.7857142857142857
for gamma=0.15653061224489795 and C=10.510204081632654
                                                           : train_acc: 0.8978260869565218 , validation_acc: 0.7792207792207793
for gamma=0.15653061224489795 and C=10.714285714285715
                                                           : train_acc: 0.8978260869565218, validation_acc: 0.7792207792207793
for gamma=0.15653061224489795 and C=10.918367346938776 : train_acc: 0.8978260869565218, validation_acc: 0.7792207792207793
```

```
for gamma=0.15653061224489795 and C=11.122448979591837 : train_acc: 0.8978260869565218 , validation_acc: 0.7792207792207793
for gamma=0.15653061224489795 and C=11.326530612244898 : train_acc: 0.9 , validation_acc: 0.772727272727272727
for gamma=0.15653061224489795 and C=11.53061224489796 : train_acc: 0.9 , validation_acc:0.77272727272727272727
for gamma=0.15653061224489795 and C=11.73469387755102 : train_acc: 0.9 , validation_acc:0.772727272727272727
for gamma=0.15653061224489795 and C=11.938775510204081 : train_acc: 0.9 , validation_acc: 0.772727272727272727
for gamma=0.15653061224489795 and C=12.142857142857142 : train_acc: 0.9 , validation_acc: 0.772727272727272727
for gamma=0.15653061224489795 and C=12.346938775510203
                                                          : train_acc: 0.9 , validation_acc: 0.7662337662337663
for gamma=0.15653061224489795 and C=12.551020408163264 : train acc: 0.9, validation acc: 0.7662337662337663
for gamma=0.15653061224489795 and C=12.755102040816327 : train_acc: 0.9 , validation_acc: 0.7597402597402597
for gamma=0.15653061224489795 and C=12.959183673469388 : train_acc: 0.9 , validation_acc: 0.7597402597402597
for gamma=0.15653061224489795 and C=13.16326530612245 : train_acc: 0.9 , validation_acc: 0.7597402597402597
for gamma=0.15653061224489795 and C=13.36734693877551 : train_acc: 0.9 , validation_acc: 0.7597402597402597
for gamma=0.15653061224489795 and C=13.571428571428571 : train_acc: 0.9021739130434783 , validation_acc: 0.7597402597402597
for gamma=0.15653061224489795 and C=13.775510204081632
                                                          : train_acc: 0.9021739130434783, validation_acc: 0.7597402597402597
for gamma=0.15653061224489795 and C=13.979591836734695
                                                          : train acc: 0.9021739130434783, validation acc: 0.7597402597402597
for gamma=0.15653061224489795 and C=14.183673469387756 : train acc: 0.9021739130434783, validation acc: 0.7467532467532467
for gamma=0.15653061224489795 and C=14.387755102040817 : train_acc: 0.9021739130434783 , validation_acc: 0.7467532467532467
for gamma=0.15653061224489795 and C=14.591836734693878 : train_acc: 0.9021739130434783 , validation_acc: 0.7467532467532467
for gamma=0.15653061224489795 and C=14.795918367346939
                                                          : train_acc: 0.9021739130434783 , validation_acc: 0.7467532467532467
for gamma=0.15653061224489795 and C=15.0 : train_acc: 0.9 , validation_acc: 0.7467532467532467
for gamma=0.1666326530612245 and C=5.0 : train_acc: 0.8826086956521739 , validation_acc: 0.7792207792207793
for gamma=0.1666326530612245 and C=5.204081632653061
                                                        : train_acc: 0.8847826086956522, validation_acc: 0.7792207792207793
for gamma=0.1666326530612245 and C=5.408163265306122
                                                        : train_acc: 0.8869565217391304, validation_acc: 0.7792207792207793
for gamma=0.1666326530612245 and C=5.612244897959184
                                                        : train acc: 0.8913043478260869, validation acc: 0.7792207792207793
for gamma=0.1666326530612245 and C=5.816326530612245
                                                       : train_acc: 0.8934782608695652 , validation_acc: 0.7857142857142857
for gamma=0.1666326530612245 and C=6.020408163265306
                                                        : train acc: 0.8934782608695652, validation acc: 0.7857142857142857
for gamma=0.1666326530612245 and C=6.224489795918368
                                                        : train_acc: 0.8956521739130435, validation_acc: 0.7857142857142857
for gamma=0.1666326530612245 and C=6.428571428571429
                                                        : train_acc: 0.8978260869565218, validation_acc: 0.7922077922077922
for gamma=0.1666326530612245 and C=6.836734693877551
                                                        : train acc: 0.8978260869565218, validation acc: 0.7922077922077922
for gamma=0.1666326530612245 and C=7.040816326530612
                                                        : train_acc: 0.8978260869565218 , validation_acc: 0.7922077922077922
for gamma=0.1666326530612245 and C=7.244897959183674
                                                        : train_acc: 0.9, validation_acc: 0.7857142857142857
for gamma=0.1666326530612245 and C=7.448979591836735
                                                        : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.1666326530612245 and C=7.653061224489796
                                                        : train_acc: 0.8978260869565218, validation_acc: 0.7857142857142857
for gamma=0.1666326530612245 and C=7.857142857142858
                                                        : train_acc: 0.8978260869565218, validation_acc: 0.7857142857142857
for gamma=0.1666326530612245 and C=8.061224489795919
                                                        : train_acc: 0.8978260869565218, validation_acc: 0.7857142857142857
for gamma=0.1666326530612245 and C=8.26530612244898 : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.1666326530612245 and C=8.46938775510204
                                                       : train_acc: 0.8978260869565218, validation_acc: 0.7857142857142857
for gamma=0.1666326530612245 and C=8.673469387755102
                                                       : train acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.1666326530612245 and C=8.877551020408163
                                                       : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.1666326530612245 and C=9.081632653061224
                                                        : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.1666326530612245 and C=9.285714285714285
                                                        : train_acc: 0.8978260869565218, validation_acc: 0.7857142857142857
for gamma=0.1666326530612245 and C=9.489795918367347
                                                        : train_acc: 0.8978260869565218 , validation_acc: 0.7792207792207793
for gamma=0.1666326530612245 and C=9.693877551020408
                                                       : train_acc: 0.9 , validation_acc:0.7792207792207793
for gamma=0.1666326530612245 and C=9.89795918367347 : train_acc: 0.9 , validation_acc: 0.7792207792207793
for gamma=0.1666326530612245 and C=10.10204081632653 : train_acc: 0.9 , validation_acc:0.7792207792207793
for gamma=0.1666326530612245 and C=10.306122448979592 : train_acc: 0.9 , validation_acc: 0.7792207792207793
                                                         : train_acc: 0.9 , validation_acc: 0.7792207792207793
for gamma=0.1666326530612245 and C=10.510204081632654
for gamma=0.1666326530612245 and C=10.714285714285715
                                                         : train_acc: 0.9 , validation_acc:0.7727272727272727
for gamma=0.1666326530612245 and C=10.918367346938776
                                                         : train_acc: 0.9 , validation_acc: 0.7727272727272727
for gamma=0.1666326530612245 and C=11.122448979591837
                                                         : train acc: 0.9, validation acc: 0.7727272727272727
for gamma=0.1666326530612245 and C=11.326530612244898
                                                         : train_acc: 0.9, validation_acc: 0.7597402597402597
for gamma=0.1666326530612245 and C=11.53061224489796
                                                        : train_acc: 0.9021739130434783, validation_acc: 0.7597402597402597
for gamma=0.1666326530612245 and C=11.73469387755102 : train_acc: 0.9021739130434783, validation_acc: 0.7597402597402597
for gamma=0.1666326530612245 and C=11.938775510204081 : train_acc: 0.9021739130434783 , validation_acc: 0.7597402597402597
                                                         : train_acc: 0.9021739130434783, validation_acc: 0.7597402597402597
for gamma=0.1666326530612245 and C=12.142857142857142
for gamma=0.1666326530612245 and C=12.346938775510203
                                                         : train_acc: 0.9021739130434783, validation_acc: 0.7467532467532467
for gamma=0.1666326530612245 and C=12.551020408163264
                                                         : train_acc: 0.9021739130434783, validation_acc: 0.7467532467532467
for gamma=0.1666326530612245 and C=12.755102040816327
                                                         : train_acc: 0.9021739130434783, validation_acc: 0.7467532467532467
                                                         : train_acc: 0.9021739130434783, validation_acc: 0.7467532467532467
for gamma=0.1666326530612245 and C=12.959183673469388
for gamma=0.1666326530612245 and C=13.16326530612245
                                                        : train_acc: 0.9021739130434783, validation_acc: 0.7467532467532467
for gamma=0.1666326530612245 and C=13.36734693877551
                                                        : train_acc: 0.9043478260869565 , validation_acc: 0.7467532467532467
for gamma=0.1666326530612245 and C=13.571428571428571
                                                         : train_acc: 0.9065217391304348, validation_acc: 0.7467532467532467
for gamma=0.1666326530612245 and C=13.775510204081632
                                                         : train_acc: 0.9065217391304348, validation_acc: 0.7467532467532467
for gamma=0.1666326530612245 and C=13.979591836734695
                                                         : train_acc: 0.9065217391304348, validation_acc: 0.7467532467532467
for gamma=0.1666326530612245 and C=14.183673469387756
                                                         : train_acc: 0.9065217391304348, validation_acc: 0.7467532467532467
for gamma=0.1666326530612245 and C=14.387755102040817
                                                         : train acc: 0.9065217391304348, validation acc: 0.7467532467532467
for gamma=0.1666326530612245 and C=14.591836734693878
                                                         : train_acc: 0.908695652173913 , validation_acc: 0.7467532467532467
for gamma=0.1666326530612245 and C=14.795918367346939 : train_acc: 0.908695652173913 , validation_acc: 0.7467532467532467
for gamma=0.1666326530612245 and C=15.0 : train_acc: 0.908695652173913 , validation_acc: 0.7467532467532467
```

```
for gamma=0.17673469387755103 and C=5.0 : train_acc: 0.8934782608695652 , validation_acc: 0.7792207792207793
for gamma=0.17673469387755103 and C=5.204081632653061 : train_acc: 0.8934782608695652 , validation_acc: 0.7792207792207793
for gamma=0.17673469387755103 and C=5.408163265306122
                                                         : train_acc: 0.8956521739130435, validation_acc: 0.7857142857142857
for gamma=0.17673469387755103 and C=5.612244897959184
                                                         : train_acc: 0.8978260869565218, validation_acc: 0.7922077922077922
for gamma=0.17673469387755103 and C=5.816326530612245
                                                         : train_acc: 0.8978260869565218, validation_acc: 0.7922077922077922
for gamma=0.17673469387755103 and C=6.020408163265306
                                                         : train_acc: 0.8978260869565218, validation_acc: 0.7922077922077922
for gamma=0.17673469387755103 and C=6.224489795918368
                                                         : train_acc: 0.8978260869565218 , validation_acc: 0.7922077922077922
for gamma=0.17673469387755103 and C=6.428571428571429
                                                         : train acc: 0.9, validation acc: 0.7922077922077922
for gamma=0.17673469387755103 and C=6.63265306122449 : train_acc: 0.9 , validation_acc: 0.7922077922077922
for gamma=0.17673469387755103 and C=6.836734693877551
                                                         : train_acc: 0.9, validation_acc: 0.7857142857142857
for gamma=0.17673469387755103 and C=7.040816326530612
                                                         : train_acc: 0.9, validation_acc: 0.7857142857142857
for gamma=0.17673469387755103 and C=7.244897959183674
                                                         : train_acc: 0.9, validation_acc: 0.7857142857142857
for gamma=0.17673469387755103 and C=7.448979591836735
                                                         : train_acc: 0.9, validation_acc: 0.7857142857142857
for gamma=0.17673469387755103 and C=7.653061224489796
                                                         : train_acc: 0.9, validation_acc: 0.7857142857142857
for gamma=0.17673469387755103 and C=7.857142857142858
                                                         : train_acc: 0.9, validation_acc: 0.7857142857142857
for gamma=0.17673469387755103 and C=8.061224489795919
                                                         : train acc: 0.9, validation acc: 0.7857142857142857
for gamma=0.17673469387755103 and C=8.26530612244898 : train_acc: 0.8978260869565218 , validation_acc: 0.7857142857142857
for gamma=0.17673469387755103 and C=8.46938775510204
                                                        : train_acc: 0.9, validation_acc: 0.7792207792207793
for gamma=0.17673469387755103 and C=8.673469387755102
                                                         : train_acc: 0.9 , validation_acc: 0.7792207792207793
for gamma=0.17673469387755103 and C=8.877551020408163
                                                         : train_acc: 0.9, validation_acc: 0.7792207792207793
for gamma=0.17673469387755103 and C=9.081632653061224
                                                         : train_acc: 0.9, validation_acc: 0.7792207792207793
for gamma=0.17673469387755103 and C=9.285714285714285
                                                         : train_acc: 0.9, validation_acc: 0.7792207792207793
for gamma=0.17673469387755103 and C=9.489795918367347
                                                         : train_acc: 0.9, validation_acc: 0.7792207792207793
for gamma=0.17673469387755103 and C=9.693877551020408
                                                         : train acc: 0.9, validation acc: 0.7792207792207793
for gamma=0.17673469387755103 and C=9.89795918367347 : train_acc: 0.9 , validation_acc:0.7792207792207793
for gamma=0.17673469387755103 and C=10.10204081632653
                                                         : train acc: 0.9043478260869565, validation acc: 0.7662337662337663
for gamma=0.17673469387755103 and C=10.306122448979592
                                                          : train_acc: 0.9043478260869565, validation_acc: 0.7597402597402597
for gamma=0.17673469387755103 and C=10.510204081632654
                                                          : train_acc: 0.9043478260869565, validation_acc: 0.7597402597402597
                                                          : train_acc: 0.9043478260869565 , validation_acc: 0.7597402597402597
for gamma=0.17673469387755103 and C=10.714285714285715
for gamma=0.17673469387755103 and C=10.918367346938776
                                                          : train acc: 0.9043478260869565, validation acc: 0.7532467532467533
for gamma=0.17673469387755103 and C=11.122448979591837
                                                          : train_acc: 0.9043478260869565, validation_acc: 0.7467532467532467
for gamma=0.17673469387755103 and C=11.326530612244898
                                                          : train_acc: 0.9043478260869565, validation_acc: 0.7467532467532467
for gamma=0.17673469387755103 and C=11.53061224489796 : train_acc: 0.9043478260869565 , validation_acc: 0.7467532467532467
for gamma=0.17673469387755103 and C=11.73469387755102
                                                         : train_acc: 0.9043478260869565, validation_acc: 0.7467532467532467
for gamma=0.17673469387755103 and C=11.938775510204081
                                                          : train_acc: 0.908695652173913, validation_acc: 0.7467532467532467
for gamma=0.17673469387755103 and C=12.142857142857142
                                                          : train_acc: 0.9108695652173913, validation_acc: 0.7467532467532467
for gamma=0.17673469387755103 and C=12.346938775510203
                                                          : train_acc: 0.9108695652173913 , validation_acc: 0.7467532467532467
for gamma=0.17673469387755103 and C=12.551020408163264
                                                          : train_acc: 0.9108695652173913, validation_acc: 0.7467532467532467
                                                          : train acc: 0.908695652173913 , validation_acc: 0.7467532467532467
for gamma=0.17673469387755103 and C=12.755102040816327
for gamma=0.17673469387755103 and C=12.959183673469388 : train_acc: 0.9108695652173913 , validation_acc: 0.7467532467532467
for gamma=0.17673469387755103 and C=13.36734693877551
                                                         : train_acc: 0.9108695652173913, validation_acc: 0.7467532467532467
for gamma=0.17673469387755103 and C=13.571428571428571 : train_acc: 0.9108695652173913 , validation_acc: 0.7467532467532467
for gamma=0.17673469387755103 and C=13.775510204081632
                                                          : train_acc: 0.9152173913043479, validation_acc: 0.7467532467532467
for gamma=0.17673469387755103 and C=13.979591836734695
                                                          : train acc: 0.9152173913043479, validation acc: 0.7467532467532467
for gamma=0.17673469387755103 and C=14.183673469387756
                                                          : train_acc: 0.9152173913043479, validation_acc: 0.7402597402597403
for gamma=0.17673469387755103 and C=14.387755102040817 : train_acc: 0.9173913043478261 , validation_acc: 0.7402597402597403
for gamma=0.17673469387755103 and C=14.591836734693878 : train_acc: 0.9173913043478261 , validation_acc: 0.7467532467532467
for gamma=0.17673469387755103 and C=14.795918367346939
                                                          : train_acc: 0.9173913043478261 , validation_acc: 0.7402597402597403
for gamma=0.17673469387755103 and C=15.0 : train_acc: 0.9217391304347826 , validation_acc:0.7402597402597403
for gamma=0.18683673469387754 and C=5.0 : train acc: 0.8978260869565218, validation acc: 0.7922077922077922
                                                         : train_acc: 0.8978260869565218 , validation_acc: 0.7922077922077922
for gamma=0.18683673469387754 and C=5.204081632653061
for gamma=0.18683673469387754 and C=5.408163265306122
                                                         : train_acc: 0.8978260869565218, validation_acc: 0.7922077922077922
for gamma=0.18683673469387754 and C=5.612244897959184
                                                         : train_acc: 0.8978260869565218, validation_acc: 0.7922077922077922
for gamma=0.18683673469387754 and C=5.816326530612245
                                                         : train_acc: 0.9 , validation_acc: 0.7922077922077922
for gamma=0.18683673469387754 and C=6.020408163265306
                                                         : train_acc: 0.9 , validation_acc: 0.7922077922077922
for gamma=0.18683673469387754 and C=6.224489795918368
                                                         : train_acc: 0.9 , validation_acc: 0.7922077922077922
for gamma=0.18683673469387754 and C=6.428571428571429
                                                         : train_acc: 0.9, validation_acc: 0.7857142857142857
for gamma=0.18683673469387754 and C=6.63265306122449 : train_acc: 0.9, validation_acc: 0.7857142857142857
for gamma=0.18683673469387754 and C=6.836734693877551
                                                         : train_acc: 0.9, validation_acc: 0.7857142857142857
for gamma=0.18683673469387754 and C=7.040816326530612
                                                         : train_acc: 0.9, validation_acc: 0.7857142857142857
for gamma=0.18683673469387754 and C=7.244897959183674
                                                         : train_acc: 0.9, validation_acc: 0.7857142857142857
for gamma=0.18683673469387754 and C=7.448979591836735
                                                         : train_acc: 0.9021739130434783, validation_acc: 0.7857142857142857
for gamma=0.18683673469387754 and C=7.653061224489796
                                                         : train_acc: 0.9021739130434783, validation_acc: 0.7792207792207793
for gamma=0.18683673469387754 and C=7.857142857142858
                                                         : train_acc: 0.9021739130434783, validation_acc: 0.7792207792207793
for gamma=0.18683673469387754 and C=8.061224489795919
                                                         : train_acc: 0.9043478260869565, validation_acc: 0.7792207792207793
for gamma=0.18683673469387754 and C=8.26530612244898 : train acc: 0.9043478260869565 , validation acc: 0.7792207792207793
for gamma=0.18683673469387754 and C=8.46938775510204 : train_acc: 0.9043478260869565 , validation_acc:0.7792207792207793
for gamma=0.18683673469387754 and C=8.673469387755102
                                                         : train_acc: 0.9065217391304348, validation_acc: 0.7792207792207793
for gamma=0.18683673469387754 and C=8.877551020408163 : train_acc: 0.9043478260869565, validation_acc: 0.7792207792207793
```

```
for gamma=0.18683673469387754 and C=9.081632653061224 : train_acc: 0.9043478260869565 , validation_acc: 0.772727272727272727
for gamma=0.18683673469387754 and C=9.285714285714285 : train_acc: 0.9043478260869565 , validation_acc: 0.772727272727272727
for gamma=0.18683673469387754 and C=9.489795918367347
                                                          : train_acc: 0.9043478260869565, validation_acc: 0.7597402597402597
for gamma=0.18683673469387754 and C=9.693877551020408
                                                          : train_acc: 0.9043478260869565 , validation_acc: 0.7597402597402597
for gamma=0.18683673469387754 and C=9.89795918367347 : train_acc: 0.9043478260869565 , validation_acc: 0.7467532467532467
for gamma=0.18683673469387754 and C=10.10204081632653 : train_acc: 0.9043478260869565 , validation_acc: 0.7467532467532467
for gamma=0.18683673469387754 and C=10.306122448979592
                                                          : train_acc: 0.9043478260869565 , validation_acc: 0.7467532467532467
for gamma=0.18683673469387754 and C=10.510204081632654
                                                           : train acc: 0.9043478260869565, validation acc: 0.7467532467532467
for gamma=0.18683673469387754 and C=10.714285714285715
                                                          : train_acc: 0.9130434782608695 , validation_acc: 0.7467532467532467
for gamma=0.18683673469387754 and C=10.918367346938776
                                                           : train_acc: 0.9130434782608695 , validation_acc: 0.7467532467532467
for gamma=0.18683673469387754 and C=11.122448979591837
                                                           : train_acc: 0.9130434782608695, validation_acc: 0.7467532467532467
for gamma=0.18683673469387754 and C=11.326530612244898
                                                           : train_acc: 0.9130434782608695 , validation_acc: 0.7467532467532467
for gamma=0.18683673469387754 and C=11.53061224489796 : train_acc: 0.9130434782608695 , validation_acc: 0.7467532467532467
for gamma=0.18683673469387754 and C=11.73469387755102
                                                          : train_acc: 0.9130434782608695, validation_acc: 0.7467532467532467
for gamma=0.18683673469387754 and C=11.938775510204081
                                                           : train_acc: 0.9130434782608695, validation_acc: 0.7467532467532467
for gamma=0.18683673469387754 and C=12.142857142857142
                                                           : train acc: 0.9152173913043479, validation acc: 0.7402597402597403
for gamma=0.18683673469387754 and C=12.346938775510203 : train_acc: 0.9173913043478261 , validation_acc: 0.7402597402597403
for gamma=0.18683673469387754 and C=12.551020408163264
                                                           : train_acc: 0.9195652173913044, validation_acc: 0.7402597402597403
for gamma=0.18683673469387754 and C=12.755102040816327
                                                           : train_acc: 0.9217391304347826 , validation_acc: 0.7402597402597403
for gamma=0.18683673469387754 and C=12.959183673469388
                                                           : train_acc: 0.9217391304347826, validation_acc: 0.7402597402597403
for gamma=0.18683673469387754 and C=13.16326530612245 : train_acc: 0.9239130434782609, validation_acc: 0.7467532467532467
for gamma=0.18683673469387754 and C=13.36734693877551
                                                          : train_acc: 0.9239130434782609, validation_acc: 0.7467532467532467
for gamma=0.18683673469387754 and C=13.571428571428571
                                                           : train_acc: 0.9260869565217391, validation_acc: 0.7467532467532467
for gamma=0.18683673469387754 and C=13.775510204081632
                                                           : train acc: 0.9282608695652174, validation acc: 0.7467532467532467
for gamma=0.18683673469387754 and C=13.979591836734695
                                                           : train_acc: 0.9282608695652174, validation_acc: 0.7467532467532467
for gamma=0.18683673469387754 and C=14.183673469387756
                                                           : train acc: 0.9282608695652174, validation acc: 0.7402597402597403
for gamma=0.18683673469387754 and C=14.387755102040817
                                                           : train_acc: 0.9304347826086956 , validation_acc: 0.7402597402597403
for gamma=0.18683673469387754 and C=14.591836734693878
                                                           : train_acc: 0.9304347826086956, validation_acc: 0.7402597402597403
for gamma=0.18683673469387754 and C=14.795918367346939
                                                           : train_acc: 0.9304347826086956, validation_acc: 0.7402597402597403
for gamma=0.18683673469387754 and C=15.0 : train acc: 0.9304347826086956 , validation acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=5.0 : train_acc: 0.8978260869565218 , validation_acc:0.7922077922077922
for gamma=0.19693877551020408 and C=5.204081632653061
                                                          : train_acc: 0.9 , validation_acc: 0.7922077922077922
for gamma=0.19693877551020408 and C=5.408163265306122
                                                          : train_acc: 0.9 , validation_acc: 0.7922077922077922
for gamma=0.19693877551020408 and C=5.612244897959184
                                                          : train_acc: 0.9, validation_acc: 0.7922077922077922
for gamma=0.19693877551020408 and C=5.816326530612245
                                                          : train_acc: 0.9 , validation_acc: 0.7922077922077922
for gamma=0.19693877551020408 and C=6.020408163265306
                                                          : train_acc: 0.9, validation_acc: 0.7857142857142857
                                                          : train_acc: 0.9021739130434783 , validation_acc:0.7857142857142857
for gamma=0.19693877551020408 and C=6.224489795918368
for gamma=0.19693877551020408 and C=6.428571428571429
                                                          : train_acc: 0.9021739130434783, validation_acc: 0.7857142857142857
for gamma=0.19693877551020408 and C=6.63265306122449 : train_acc: 0.9021739130434783 , validation_acc: 0.7857142857142857
for gamma=0.19693877551020408 and C=6.836734693877551
                                                          : train_acc: 0.9043478260869565, validation_acc: 0.7792207792207793
for gamma=0.19693877551020408 and C=7.040816326530612
                                                          : train_acc: 0.9043478260869565 , validation_acc: 0.7792207792207793
for gamma=0.19693877551020408 and C=7.244897959183674
                                                          : train_acc: 0.9043478260869565, validation_acc: 0.7792207792207793
for gamma=0.19693877551020408 and C=7.448979591836735
                                                          : train_acc: 0.9043478260869565, validation_acc: 0.7792207792207793
for gamma=0.19693877551020408 and C=7.653061224489796
                                                          : train_acc: 0.9065217391304348, validation_acc: 0.7792207792207793
for gamma=0.19693877551020408 and C=7.857142857142858
                                                          : train acc: 0.9065217391304348, validation acc: 0.7792207792207793
for gamma=0.19693877551020408 and C=8.061224489795919
                                                          : train_acc: 0.9065217391304348 , validation_acc: 0.7792207792207793
for gamma=0.19693877551020408 and C=8.26530612244898 : train_acc: 0.9065217391304348 , validation_acc: 0.772727272727272727
for gamma=0.19693877551020408 and C=8.46938775510204 : train_acc: 0.9065217391304348 , validation_acc: 0.772727272727272727
for gamma=0.19693877551020408 and C=8.673469387755102
                                                          : train_acc: 0.9065217391304348, validation_acc: 0.7727272727272727
for gamma=0.19693877551020408 and C=8.877551020408163
                                                          : train_acc: 0.9065217391304348, validation_acc: 0.7532467532467533
for gamma=0.19693877551020408 and C=9.081632653061224
                                                          : train acc: 0.908695652173913, validation acc: 0.7467532467532467
                                                          : train_acc: 0.908695652173913 , validation_acc: 0.7467532467532467
for gamma=0.19693877551020408 and C=9.285714285714285
for gamma=0.19693877551020408 and C=9.489795918367347
                                                          : train_acc: 0.9065217391304348, validation_acc: 0.7467532467532467
for gamma=0.19693877551020408 and C=9.693877551020408
                                                          : train_acc: 0.9130434782608695, validation_acc: 0.7467532467532467
for gamma=0.19693877551020408 and C=9.89795918367347 : train_acc: 0.9130434782608695 , validation_acc: 0.7467532467532467
for gamma=0.19693877551020408 and C=10.10204081632653 : train_acc: 0.9130434782608695 , validation_acc: 0.7467532467532467
                                                           : train_acc: 0.9130434782608695 , validation_acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=10.306122448979592
for gamma=0.19693877551020408 and C=10.510204081632654
                                                           : train_acc: 0.9130434782608695, validation_acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=10.714285714285715
                                                           : train_acc: 0.9130434782608695, validation_acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=10.918367346938776
                                                           : train_acc: 0.9173913043478261 , validation_acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=11.122448979591837
                                                           : train_acc: 0.9217391304347826, validation_acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=11.326530612244898
                                                           : train_acc: 0.9217391304347826 , validation_acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=11.53061224489796 : train_acc: 0.9239130434782609 , validation_acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=11.73469387755102 : train_acc: 0.9239130434782609 , validation_acc: 0.7467532467532467
for gamma=0.19693877551020408 and C=11.938775510204081
                                                           : train_acc: 0.9260869565217391, validation_acc: 0.7467532467532467
for gamma=0.19693877551020408 and C=12.142857142857142
                                                           : train_acc: 0.9282608695652174 , validation_acc: 0.7467532467532467
for gamma=0.19693877551020408 and C=12.346938775510203
                                                           : train acc: 0.9282608695652174, validation acc: 0.7467532467532467
for gamma=0.19693877551020408 and C=12.551020408163264
                                                           : train_acc: 0.9282608695652174, validation_acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=12.755102040816327
                                                           : train_acc: 0.9282608695652174, validation_acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=12.959183673469388 : train_acc: 0.9304347826086956 , validation_acc: 0.7402597402597403
```

```
for gamma=0.19693877551020408 and C=13.16326530612245 : train_acc: 0.9304347826086956 , validation_acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=13.36734693877551 : train_acc: 0.9304347826086956 , validation_acc: 0.7337662337662337
for gamma=0.19693877551020408 and C=13.571428571428571
                                                           : train_acc: 0.9304347826086956 , validation_acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=13.775510204081632
                                                           : train_acc: 0.9326086956521739 , validation_acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=13.979591836734695
                                                           : train_acc: 0.9326086956521739 , validation_acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=14.183673469387756
                                                           : train_acc: 0.9326086956521739 , validation_acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=14.387755102040817
                                                           : train_acc: 0.9326086956521739 , validation_acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=14.591836734693878 : train acc: 0.9326086956521739 , validation acc: 0.7402597402597403
for gamma=0.19693877551020408 and C=14.795918367346939 : train_acc: 0.9347826086956522 , validation_acc: 0.7337662337662337
for gamma=0.19693877551020408 and C=15.0 : train_acc: 0.9347826086956522 , validation_acc: 0.7337662337662337
for gamma=0.2070408163265306 and C=5.0 : train_acc: 0.9021739130434783 , validation_acc: 0.7922077922077922
for gamma=0.2070408163265306 and C=5.204081632653061 : train_acc: 0.9021739130434783 , validation_acc: 0.7922077922077922
for gamma=0.2070408163265306 and C=5.408163265306122
                                                         : train_acc: 0.9021739130434783 , validation_acc: 0.7922077922077922
for gamma=0.2070408163265306 and C=5.612244897959184
                                                         : train_acc: 0.9021739130434783, validation_acc: 0.7857142857142857
for gamma=0.2070408163265306 and C=5.816326530612245
                                                         : train acc: 0.9021739130434783, validation acc: 0.7857142857142857
                                                         : train acc: 0.9043478260869565, validation acc: 0.7792207792207793
for gamma=0.2070408163265306 and C=6.020408163265306
for gamma=0.2070408163265306 and C=6.224489795918368
                                                         : train_acc: 0.9043478260869565 , validation_acc: 0.7792207792207793
for gamma=0.2070408163265306 and C=6.428571428571429
                                                         : train_acc: 0.9043478260869565, validation_acc: 0.7792207792207793
for gamma=0.2070408163265306 and C=6.63265306122449 : train_acc: 0.9043478260869565 , validation_acc: 0.7792207792207793
for gamma=0.2070408163265306 and C=6.836734693877551
                                                         : train_acc: 0.9065217391304348, validation_acc: 0.7727272727272727
for gamma=0.2070408163265306 and C=7.040816326530612
                                                         : train_acc: 0.9065217391304348, validation_acc: 0.7727272727272727
for gamma=0.2070408163265306 and C=7.244897959183674 for gamma=0.2070408163265306 and C=7.448979591836735
                                                         : train_acc: 0.9065217391304348, validation_acc: 0.7727272727272727
                                                         : train_acc: 0.9065217391304348, validation_acc: 0.7662337662337663
for gamma=0.2070408163265306 and C=7.653061224489796
                                                         : train acc: 0.9065217391304348, validation acc: 0.7662337662337663
for gamma=0.2070408163265306 and C=7.857142857142858
                                                         : train_acc: 0.908695652173913 , validation_acc: 0.7662337662337663
for gamma=0.2070408163265306 and C=8.061224489795919
                                                         : train acc: 0.908695652173913, validation acc: 0.7597402597402597
for gamma=0.2070408163265306 and C=8.26530612244898 : train_acc: 0.908695652173913 , validation_acc: 0.7532467532467533
for gamma=0.2070408163265306 and C=8.46938775510204
                                                        : train_acc: 0.908695652173913, validation_acc: 0.7467532467532467
for gamma=0.2070408163265306 and C=8.673469387755102
                                                         : train_acc: 0.9108695652173913 , validation_acc: 0.7467532467532467
for gamma=0.2070408163265306 and C=8.877551020408163
                                                         : train acc: 0.9152173913043479, validation acc: 0.7467532467532467
for gamma=0.2070408163265306 and C=9.081632653061224
                                                         : train_acc: 0.9152173913043479 , validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=9.285714285714285
                                                         : train_acc: 0.9152173913043479, validation_acc: 0.7402597402597403
                                                         : train_acc: 0.9152173913043479 , validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=9.489795918367347
for gamma=0.2070408163265306 and C=9.693877551020408
                                                         : train_acc: 0.9152173913043479, validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=9.89795918367347 : train_acc: 0.9195652173913044 , validation_acc:0.7402597402597403
for gamma=0.2070408163265306 and C=10.10204081632653 : train_acc: 0.9239130434782609 , validation_acc:0.7337662337662337
for gamma=0.2070408163265306 and C=10.306122448979592
                                                          : train_acc: 0.9260869565217391 , validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=10.510204081632654
                                                           : train_acc: 0.9282608695652174, validation_acc: 0.7402597402597403
                                                          : train acc: 0.9282608695652174, validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=10.714285714285715
for gamma=0.2070408163265306 and C=10.918367346938776
                                                          : train_acc: 0.9282608695652174, validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=11.122448979591837
                                                          : train_acc: 0.9282608695652174, validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=11.326530612244898
                                                          : train_acc: 0.9282608695652174, validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=11.53061224489796 : train_acc: 0.9304347826086956 , validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=11.73469387755102 : train_acc: 0.9304347826086956 , validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=11.938775510204081
                                                          : train acc: 0.9304347826086956, validation acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=12.142857142857142
                                                          : train_acc: 0.9326086956521739, validation_acc: 0.7467532467532467
for gamma=0.2070408163265306 and C=12.346938775510203
                                                          : train acc: 0.9326086956521739 , validation_acc: 0.7467532467532467
                                                          : train_acc: 0.9326086956521739 , validation_acc: 0.7467532467532467
for gamma=0.2070408163265306 and C=12.551020408163264
for gamma=0.2070408163265306 and C=12.755102040816327
                                                          : train_acc: 0.9326086956521739 , validation_acc: 0.7467532467532467
for gamma=0.2070408163265306 and C=12.959183673469388
                                                          : train_acc: 0.9326086956521739, validation_acc: 0.7467532467532467
for gamma=0.2070408163265306 and C=13.16326530612245 : train acc: 0.9347826086956522, validation acc: 0.7467532467532467
for gamma=0.2070408163265306 and C=13.36734693877551 : train_acc: 0.9347826086956522 , validation_acc: 0.7467532467532467
for gamma=0.2070408163265306 and C=13.571428571428571
                                                          : train_acc: 0.9347826086956522, validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=13.775510204081632
                                                          : train_acc: 0.9369565217391305, validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=13.979591836734695
                                                          : train_acc: 0.9369565217391305, validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=14.183673469387756
                                                          : train_acc: 0.9391304347826087, validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=14.387755102040817
                                                          : train_acc: 0.9434782608695652, validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=14.591836734693878
                                                          : train_acc: 0.9434782608695652, validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=14.795918367346939 : train_acc: 0.9434782608695652 , validation_acc: 0.7402597402597403
for gamma=0.2070408163265306 and C=15.0 : train_acc: 0.9434782608695652 , validation_acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=5.0 : train_acc: 0.9021739130434783, validation_acc: 0.7857142857142857
for gamma=0.21714285714285714 and C=5.204081632653061 : train_acc: 0.9021739130434783 , validation_acc: 0.7792207792207793
for gamma=0.21714285714285714 and C=5.408163265306122
                                                          : train_acc: 0.9021739130434783, validation_acc: 0.7727272727272727
for gamma=0.21714285714285714 and C=5.612244897959184
                                                          : train_acc: 0.9043478260869565, validation_acc: 0.7727272727272727
for gamma=0.21714285714285714 and C=5.816326530612245
                                                           : train_acc: 0.9043478260869565, validation_acc: 0.7727272727272727
for gamma=0.21714285714285714 and C=6.020408163265306
                                                          : train_acc: 0.9065217391304348, validation_acc: 0.7727272727272727
for gamma=0.21714285714285714 and C=6.224489795918368
                                                          : train acc: 0.9065217391304348, validation acc: 0.7727272727272727
                                                          : train_acc: 0.9065217391304348 , validation_acc: 0.7727272727272727
for gamma=0.21714285714285714 and C=6.428571428571429
for gamma=0.21714285714285714 and C=6.63265306122449 : train_acc: 0.9065217391304348 , validation_acc: 0.772727272727272727
for gamma=0.21714285714285714 and C=6.836734693877551 : train_acc: 0.9065217391304348, validation_acc: 0.7662337662337663
```

```
for gamma=0.21714285714285714 and C=7.040816326530612 : train_acc: 0.908695652173913 , validation_acc: 0.7662337662337663
for gamma=0.21714285714285714 and C=7.244897959183674 : train_acc: 0.908695652173913 , validation_acc: 0.7662337662337663
for gamma=0.21714285714285714 and C=7.448979591836735
                                                         : train_acc: 0.908695652173913 , validation_acc: 0.7532467532467533
for gamma=0.21714285714285714 and C=7.653061224489796
                                                         : train_acc: 0.908695652173913 , validation_acc: 0.7532467532467533
for gamma=0.21714285714285714 and C=7.857142857142858
                                                         : train_acc: 0.9108695652173913, validation_acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=8.061224489795919
                                                         : train_acc: 0.9152173913043479, validation_acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=8.26530612244898 : train_acc: 0.9173913043478261 , validation_acc:0.7402597402597403
for gamma=0.21714285714285714 and C=8.46938775510204 : train acc: 0.9173913043478261, validation acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=8.673469387755102 :train_acc: 0.9173913043478261, validation_acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=8.877551020408163
                                                         : train_acc: 0.9217391304347826, validation_acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=9.081632653061224
                                                         : train_acc: 0.9260869565217391 , validation_acc: 0.7467532467532467
for gamma=0.21714285714285714 and C=9.285714285714285
                                                         : train_acc: 0.9304347826086956 , validation_acc: 0.7467532467532467
                                                         : train_acc: 0.9304347826086956 , validation_acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=9.489795918367347
for gamma=0.21714285714285714 and C=9.693877551020408
                                                         : train_acc: 0.9282608695652174, validation_acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=9.89795918367347 : train_acc: 0.9282608695652174 , validation_acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=10.10204081632653 : train acc: 0.9282608695652174, validation acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=10.306122448979592 : train_acc: 0.9304347826086956 , validation_acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=10.510204081632654
                                                          : train_acc: 0.9304347826086956, validation_acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=10.714285714285715
                                                          : train_acc: 0.9326086956521739, validation_acc: 0.7402597402597403
                                                          : train acc: 0.9326086956521739 , validation_acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=10.918367346938776
                                                          : train_acc: 0.9326086956521739, validation_acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=11.122448979591837
for gamma=0.21714285714285714 and C=11.326530612244898
                                                          : train_acc: 0.9326086956521739, validation_acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=11.53061224489796 : train_acc: 0.9347826086956522 , validation_acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=11.73469387755102 : train acc: 0.9347826086956522 , validation acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=11.938775510204081 : train_acc: 0.9369565217391305 , validation_acc: 0.7402597402597403
for gamma=0.21714285714285714 and C=12.142857142857142
                                                          : train acc: 0.9391304347826087, validation acc: 0.7467532467532467
                                                          : train_acc: 0.941304347826087, validation_acc: 0.7532467532467533
for gamma=0.21714285714285714 and C=12.346938775510203
for gamma=0.21714285714285714 and C=12.551020408163264
                                                          : train_acc: 0.9434782608695652, validation_acc: 0.7467532467532467
for gamma=0.21714285714285714 and C=12.755102040816327
                                                          : train_acc: 0.9434782608695652 , validation_acc: 0.7467532467532467
for gamma=0.21714285714285714 and C=12.959183673469388
                                                          : train acc: 0.9434782608695652, validation acc: 0.7467532467532467
for gamma=0.21714285714285714 and C=13.16326530612245 : train_acc: 0.9434782608695652 , validation_acc: 0.7467532467532467
for gamma=0.21714285714285714 and C=13.36734693877551
                                                         : train_acc: 0.9434782608695652, validation_acc: 0.7467532467532467
for gamma=0.21714285714285714 and C=13.571428571428571
                                                          : train_acc: 0.9434782608695652 , validation_acc: 0.7467532467532467
for gamma=0.21714285714285714 and C=13.775510204081632
                                                          : train_acc: 0.9434782608695652, validation_acc: 0.7467532467532467
for gamma=0.21714285714285714 and C=13.979591836734695
                                                          : train_acc: 0.9434782608695652, validation_acc: 0.7467532467532467
for gamma=0.21714285714285714 and C=14.183673469387756
                                                          : train_acc: 0.9434782608695652, validation_acc: 0.7532467532467533
                                                          : train_acc: 0.9434782608695652 , validation_acc: 0.7532467532467533
for gamma=0.21714285714285714 and C=14.387755102040817
for gamma=0.21714285714285714 and C=14.591836734693878
                                                          : train_acc: 0.9478260869565217, validation_acc: 0.7532467532467533
for gamma=0.21714285714285714 and C=14.795918367346939
                                                         : train_acc: 0.95 , validation_acc: 0.7467532467532467
for gamma=0.21714285714285714 and C=15.0 : train_acc: 0.9521739130434783 , validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=5.0 : train_acc: 0.9043478260869565 , validation_acc: 0.772727272727272727
for gamma=0.22724489795918368 and C=5.204081632653061
                                                         : train_acc: 0.9043478260869565, validation_acc: 0.7727272727272727
for gamma=0.22724489795918368 and C=5.408163265306122
                                                        : train_acc: 0.9065217391304348, validation_acc: 0.7727272727272727
for gamma=0.22724489795918368 and C=5.612244897959184
                                                         : train_acc: 0.9065217391304348, validation_acc: 0.7662337662337663
for gamma=0.22724489795918368 and C=5.816326530612245
                                                         : train acc: 0.9065217391304348, validation acc: 0.7662337662337663
for gamma=0.22724489795918368 and C=6.020408163265306
                                                         : train_acc: 0.9065217391304348, validation_acc: 0.7662337662337663
for gamma=0.22724489795918368 and C=6.224489795918368
                                                         : train_acc: 0.908695652173913, validation_acc: 0.7597402597402597
for gamma=0.22724489795918368 and C=6.428571428571429
                                                         : train_acc: 0.908695652173913 , validation_acc: 0.7597402597402597
for gamma=0.22724489795918368 and C=6.63265306122449 : train_acc: 0.908695652173913 , validation_acc: 0.7597402597402597
for gamma=0.22724489795918368 and C=6.836734693877551
                                                         : train_acc: 0.908695652173913, validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=7.040816326530612
                                                         : train acc: 0.9108695652173913, validation acc: 0.7402597402597403
for gamma=0.22724489795918368 and C=7.244897959183674
                                                         : train_acc: 0.9130434782608695, validation_acc: 0.7402597402597403
for gamma=0.22724489795918368 and C=7.448979591836735
                                                         : train_acc: 0.9173913043478261, validation_acc: 0.7402597402597403
for gamma=0.22724489795918368 and C=7.653061224489796
                                                         : train_acc: 0.9173913043478261, validation_acc: 0.7402597402597403
for gamma=0.22724489795918368 and C=7.857142857142858
                                                         : train_acc: 0.9173913043478261, validation_acc: 0.7402597402597403
for gamma=0.22724489795918368 and C=8.061224489795919
                                                         : train_acc: 0.9239130434782609, validation_acc: 0.7467532467532467
                                                       : train_acc: 0.9260869565217391 , validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=8.26530612244898
for gamma=0.22724489795918368 and C=8.46938775510204
                                                       : train_acc: 0.9282608695652174, validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=8.673469387755102
                                                         : train_acc: 0.9304347826086956 , validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=8.877551020408163
                                                         : train_acc: 0.9304347826086956, validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=9.081632653061224
                                                         : train_acc: 0.9304347826086956, validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=9.285714285714285
                                                         : train\_acc: 0.9326086956521739, validation\_acc:0.7467532467532467
for gamma=0.22724489795918368 and C=9.489795918367347
                                                         : train_acc: 0.9347826086956522, validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=9.693877551020408
                                                         : train_acc: 0.9347826086956522, validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=9.89795918367347 : train_acc: 0.9347826086956522 , validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=10.306122448979592 : train acc: 0.9347826086956522 , validation acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=10.510204081632654
                                                          : train_acc: 0.9369565217391305 , validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=10.714285714285715
                                                          : train_acc: 0.9391304347826087, validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=10.918367346938776 : train_acc: 0.941304347826087, validation_acc: 0.7467532467532467
```

```
for gamma=0.22724489795918368 and C=11.122448979591837 : train_acc: 0.9434782608695652 , validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=11.326530612244898 : train_acc: 0.9434782608695652 , validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=11.53061224489796 : train_acc: 0.9434782608695652 , validation_acc: 0.7402597402597403
for gamma=0.22724489795918368 and C=11.73469387755102 : train_acc: 0.9434782608695652 , validation_acc: 0.7402597402597403
for gamma=0.22724489795918368 and C=11.938775510204081 : train_acc: 0.9434782608695652 , validation_acc: 0.7402597402597403
for gamma=0.22724489795918368 and C=12.142857142857142 : train_acc: 0.9434782608695652, validation_acc: 0.7402597402597403
for gamma=0.22724489795918368 and C=12.346938775510203
                                                                        : train_acc: 0.9434782608695652, validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=12.551020408163264
                                                                        : train acc: 0.9434782608695652, validation acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=12.755102040816327
                                                                        : train_acc: 0.9434782608695652 , validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=12.959183673469388 : train_acc: 0.9456521739130435 , validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=13.16326530612245
                                                                      : train_acc: 0.9478260869565217, validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=13.36734693877551 : train_acc: 0.95 , validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=13.571428571428571 : train_acc: 0.9521739130434783 , validation_acc: 0.7532467532467533
for gamma=0.22724489795918368 and C=13.775510204081632
                                                                        : train_acc: 0.9521739130434783, validation_acc: 0.7467532467532467
for gamma=0.22724489795918368 and C=13.979591836734695
                                                                        : train acc: 0.9521739130434783, validation acc: 0.7402597402597403
for gamma=0.22724489795918368 and C=14.183673469387756 : train acc: 0.9521739130434783 , validation acc: 0.7402597402597403
for gamma=0.22724489795918368 and C=14.387755102040817 : train_acc: 0.9521739130434783 , validation_acc: 0.7402597402597403
for gamma=0.22724489795918368 and C=14.591836734693878 : train_acc: 0.9521739130434783 , validation_acc: 0.7402597402597403
for \ gamma = 0.22724489795918368 \ and \ C = 14.795918367346939 \ : train\_acc: 0.9521739130434783 \ , validation\_acc: 0.74025974025974031241 \ , validation\_acc: 0.74025974031241 \ , validation\_acc: 0.7402597403124 \ , validation\_acc: 0.7402597403124 \ , validation\_acc: 0.7402597403124 \ , validation\_acc: 0.74025974031 \ , validation\_acc: 0.74025974031
for gamma=0.22724489795918368 and C=15.0 : train_acc: 0.9521739130434783 , validation_acc: 0.7402597402597403
for gamma=0.2373469387755102 and C=5.0 : train_acc: 0.908695652173913 , validation_acc: 0.7662337662337663
for gamma=0.2373469387755102 and C=5.204081632653061
                                                                     : train_acc: 0.908695652173913, validation_acc: 0.7662337662337663
for gamma=0.2373469387755102 and C=5.408163265306122
                                                                     : train_acc: 0.908695652173913, validation_acc: 0.7662337662337663
for gamma=0.2373469387755102 and C=5.612244897959184
                                                                     : train acc: 0.9108695652173913, validation acc: 0.7662337662337663
for gamma=0.2373469387755102 and C=5.816326530612245
                                                                     : train_acc: 0.908695652173913 , validation_acc: 0.7597402597402597
                                                                     : train_acc: 0.908695652173913 , validation_acc: 0.7597402597402597
for gamma=0.2373469387755102 and C=6.020408163265306
for gamma=0.2373469387755102 and C=6.224489795918368
                                                                     : train_acc: 0.908695652173913 , validation_acc: 0.7597402597402597
for gamma=0.2373469387755102 and C=6.428571428571429
                                                                     : train_acc: 0.9130434782608695, validation_acc: 0.7402597402597403
for\ gamma = 0.2373469387755102\ and\ C = 6.63265306122449\ : train\_acc:\ 0.9130434782608695\ ,\ validation\_acc:\ 0.740259740259740312449\ .
for gamma=0.2373469387755102 and C=6.836734693877551
                                                                     : train acc: 0.9152173913043479, validation acc: 0.7402597402597403
for gamma=0.2373469387755102 and C=7.040816326530612
                                                                     : train_acc: 0.9173913043478261, validation_acc: 0.7402597402597403
for gamma=0.2373469387755102 and C=7.244897959183674
                                                                     : train_acc: 0.9239130434782609, validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=7.448979591836735
                                                                     : train_acc: 0.9260869565217391, validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=7.653061224489796
                                                                     : train_acc: 0.9304347826086956, validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=7.857142857142858
                                                                     : train_acc: 0.9304347826086956 , validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=8.061224489795919
                                                                     : train_acc: 0.9326086956521739, validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=8.46938775510204
                                                                    : train_acc: 0.9326086956521739 , validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=8.673469387755102
                                                                     : train acc: 0.9347826086956522 , validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=8.877551020408163
                                                                     : train_acc: 0.9369565217391305 , validation_acc: 0.7467532467532467
                                                                     : train_acc: 0.9369565217391305 , validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=9.081632653061224
for gamma=0.2373469387755102 and C=9.285714285714285
                                                                     : train_acc: 0.9369565217391305, validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=9.489795918367347
                                                                     : train_acc: 0.9391304347826087, validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=9.693877551020408
                                                                     : train_acc: 0.941304347826087, validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=9.89795918367347 : train_acc: 0.941304347826087, validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=10.10204081632653
                                                                     : train_acc: 0.9434782608695652 , validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=10.306122448979592
                                                                      : train_acc: 0.9434782608695652, validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=10.510204081632654
                                                                      : train_acc: 0.9434782608695652, validation_acc: 0.7532467532467533
for gamma=0.2373469387755102 and C=10.714285714285715
                                                                      : train_acc: 0.9434782608695652, validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=10.918367346938776
                                                                       : train_acc: 0.9434782608695652, validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=11.122448979591837
                                                                      : train acc: 0.9434782608695652, validation acc: 0.7467532467532467
                                                                      : train_acc: 0.9434782608695652 , validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=11.326530612244898
for gamma=0.2373469387755102 and C=11.53061224489796
                                                                     : train_acc: 0.9456521739130435 , validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=11.73469387755102
                                                                     : train_acc: 0.9456521739130435 , validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=11.938775510204081
                                                                      : train_acc: 0.9478260869565217, validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=12.142857142857142
                                                                      : train_acc: 0.95, validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=12.346938775510203
                                                                       : train acc: 0.9521739130434783, validation acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=12.551020408163264
                                                                       : train_acc: 0.9521739130434783, validation_acc: 0.7467532467532467
for gamma=0.2373469387755102 and C=12.755102040816327
                                                                       : train_acc: 0.9521739130434783, validation_acc: 0.7402597402597403
for gamma=0.2373469387755102 and C=12.959183673469388
                                                                      : train_acc: 0.9521739130434783, validation_acc: 0.7337662337662337
for gamma=0.2373469387755102 and C=13.16326530612245
                                                                     : train_acc: 0.9521739130434783, validation_acc: 0.7337662337662337
for gamma=0.2373469387755102 and C=13.36734693877551
                                                                     : train_acc: 0.9521739130434783 , validation_acc: 0.7337662337662337
for gamma=0.2373469387755102 and C=13.571428571428571
                                                                      : train_acc: 0.9521739130434783, validation_acc: 0.7337662337662337
for gamma=0.2373469387755102 and C=13.775510204081632
                                                                      : train_acc: 0.9521739130434783, validation_acc: 0.7337662337662337
for gamma=0.2373469387755102 and C=13.979591836734695
                                                                       : train_acc: 0.9521739130434783, validation_acc: 0.7337662337662337
for gamma=0.2373469387755102 and C=14.183673469387756
                                                                      : train_acc: 0.9521739130434783, validation_acc: 0.7337662337662337
for gamma=0.2373469387755102 and C=14.387755102040817
                                                                      : train acc: 0.9521739130434783, validation acc: 0.7337662337662337
                                                                      : train_acc: 0.9521739130434783 , validation_acc: 0.7337662337662337
for gamma=0.2373469387755102 and C=14.591836734693878
for gamma=0.2373469387755102 and C=14.795918367346939
                                                                      : train_acc: 0.9521739130434783, validation_acc: 0.7402597402597403
for gamma=0.2373469387755102 and C=15.0 : train_acc: 0.9521739130434783, validation_acc: 0.7402597402597403
```

```
for gamma=0.24744897959183673 and C=5.0 : train_acc: 0.9108695652173913 , validation_acc: 0.7662337662337663
for gamma=0.24744897959183673 and C=5.204081632653061 : train_acc: 0.9108695652173913 , validation_acc: 0.7662337662337663
for gamma=0.24744897959183673 and C=5.408163265306122
                                                          : train_acc: 0.9108695652173913, validation_acc: 0.7597402597402597
for gamma=0.24744897959183673 and C=5.612244897959184
                                                          : train_acc: 0.9130434782608695 , validation_acc: 0.7597402597402597
for gamma=0.24744897959183673 and C=5.816326530612245
                                                          : train_acc: 0.9152173913043479 , validation_acc: 0.7597402597402597
for gamma=0.24744897959183673 and C=6.020408163265306
                                                          : train_acc: 0.9152173913043479, validation_acc: 0.7402597402597403
for gamma=0.24744897959183673 and C=6.224489795918368
                                                          : train_acc: 0.9152173913043479, validation_acc: 0.7402597402597403
for gamma=0.24744897959183673 and C=6.428571428571429
                                                          : train acc: 0.9195652173913044, validation acc: 0.7402597402597403
for gamma=0.24744897959183673 and C=6.63265306122449 : train_acc: 0.9260869565217391 , validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=6.836734693877551
                                                          : train_acc: 0.9282608695652174, validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=7.040816326530612
                                                          : train_acc: 0.9304347826086956 , validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=7.244897959183674
                                                          : train_acc: 0.9304347826086956, validation_acc: 0.7467532467532467
                                                          : train_acc: 0.9304347826086956 , validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=7.448979591836735
for gamma=0.24744897959183673 and C=7.653061224489796
                                                          : train_acc: 0.9326086956521739, validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=7.857142857142858
                                                          : train_acc: 0.9347826086956522, validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=8.061224489795919
                                                          : train acc: 0.9369565217391305, validation acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=8.26530612244898 : train_acc: 0.9369565217391305 , validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=8.46938775510204
                                                        : train_acc: 0.9391304347826087, validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=8.673469387755102
                                                          : train_acc: 0.9434782608695652 , validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=8.877551020408163
                                                          : train_acc: 0.9434782608695652, validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=9.081632653061224
                                                          : train_acc: 0.9434782608695652, validation_acc: 0.7532467532467533
for gamma=0.24744897959183673 and C=9.285714285714285
                                                          : train_acc: 0.9456521739130435, validation_acc: 0.7532467532467533
for gamma=0.24744897959183673 and C=9.489795918367347
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for gamma=0.24744897959183673 and C=9.693877551020408
                                                          : train acc: 0.9434782608695652, validation acc: 0.7532467532467533
for gamma=0.24744897959183673 and C=9.89795918367347 : train_acc: 0.9434782608695652 , validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=10.10204081632653
                                                          : train acc: 0.9434782608695652, validation acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=10.306122448979592
                                                           : train_acc: 0.9456521739130435 , validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=10.510204081632654
                                                           : train_acc: 0.9456521739130435, validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=10.714285714285715
                                                           : train_acc: 0.9478260869565217 , validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=10.918367346938776
                                                           : train acc: 0.9478260869565217, validation acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=11.122448979591837
                                                           : train_acc: 0.95, validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=11.326530612244898
                                                           : train_acc: 0.9521739130434783, validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=11.53061224489796 : train_acc: 0.9521739130434783 , validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=11.73469387755102
                                                          : train_acc: 0.9521739130434783, validation_acc: 0.7467532467532467
for gamma=0.24744897959183673 and C=11.938775510204081
                                                           : train_acc: 0.9521739130434783, validation_acc: 0.7337662337662337
for gamma=0.24744897959183673 and C=12.142857142857142
                                                           : train_acc: 0.9521739130434783, validation_acc: 0.7337662337662337
                                                           : train_acc: 0.9521739130434783 , validation_acc:0.7337662337662337
for gamma=0.24744897959183673 and C=12.346938775510203
for gamma=0.24744897959183673 and C=12.551020408163264
                                                           : train_acc: 0.9521739130434783, validation_acc: 0.7337662337662337
                                                           : train acc: 0.9521739130434783 , validation_acc: 0.7337662337662337
for gamma=0.24744897959183673 and C=12.755102040816327
for gamma=0.24744897959183673 and C=12.959183673469388 : train_acc: 0.9521739130434783 , validation_acc: 0.7337662337662337
for gamma=0.24744897959183673 and C=13.16326530612245 : train_acc: 0.9521739130434783 , validation_acc: 0.7337662337662337
for gamma=0.24744897959183673 and C=13.36734693877551
                                                          : train_acc: 0.9521739130434783, validation_acc: 0.7337662337662337
for gamma=0.24744897959183673 and C=13.571428571428571 : train_acc: 0.9521739130434783 , validation_acc: 0.7337662337662337
for gamma=0.24744897959183673 and C=13.775510204081632
                                                           : train_acc: 0.9521739130434783 , validation_acc: 0.7337662337662337
for gamma=0.24744897959183673 and C=13.979591836734695
                                                           : train acc: 0.9521739130434783, validation acc: 0.7337662337662337
for gamma=0.24744897959183673 and C=14.183673469387756
                                                           : train_acc: 0.9521739130434783, validation_acc: 0.7337662337662337
for gamma=0.24744897959183673 and C=14.387755102040817
                                                          : train_acc: 0.9521739130434783, validation_acc: 0.7337662337662337
for gamma=0.24744897959183673 and C=14.591836734693878 : train_acc: 0.9521739130434783 , validation_acc: 0.7337662337662337
for gamma=0.24744897959183673 and C=14.795918367346939
                                                          : train_acc: 0.9521739130434783, validation_acc: 0.7402597402597403
for gamma=0.24744897959183673 and C=15.0 : train_acc: 0.9521739130434783 , validation_acc: 0.7402597402597403
for gamma=0.25755102040816324 and C=5.0 : train acc: 0.9130434782608695, validation acc: 0.7597402597402597
for gamma=0.25755102040816324 and C=5.204081632653061
                                                          : train_acc: 0.9130434782608695, validation_acc: 0.7597402597402597
for gamma=0.25755102040816324 and C=5.408163265306122
                                                          : train_acc: 0.9152173913043479, validation_acc: 0.7597402597402597
for gamma=0.25755102040816324 and C=5.612244897959184
                                                          : train_acc: 0.9152173913043479, validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=5.816326530612245
                                                          : train_acc: 0.9173913043478261 , validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=6.020408163265306
                                                          : train_acc: 0.9217391304347826, validation_acc: 0.7467532467532467
                                                          : train_acc: 0.9282608695652174, validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=6.224489795918368
for gamma=0.25755102040816324 and C=6.428571428571429
                                                          : train_acc: 0.9282608695652174, validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=6.63265306122449 : train_acc: 0.9304347826086956 , validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=6.836734693877551
                                                          : train_acc: 0.9304347826086956, validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=7.040816326530612
                                                          : train_acc: 0.9326086956521739 , validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=7.244897959183674
                                                          : train_acc: 0.9347826086956522 , validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=7.448979591836735
                                                          : train_acc: 0.9369565217391305, validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=7.653061224489796
                                                          : train_acc: 0.941304347826087, validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=7.857142857142858
                                                          : train_acc: 0.9434782608695652, validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=8.061224489795919
                                                          : train_acc: 0.9434782608695652, validation_acc: 0.7532467532467533
for gamma=0.25755102040816324 and C=8.26530612244898 : train acc: 0.9434782608695652 , validation acc: 0.7532467532467533
for gamma=0.25755102040816324 and C=8.46938775510204 : train_acc: 0.9434782608695652 , validation_acc: 0.7532467532467533
for gamma=0.25755102040816324 and C=8.673469387755102
                                                         : train_acc: 0.9456521739130435 , validation_acc: 0.7532467532467533
for gamma=0.25755102040816324 and C=8.877551020408163 : train_acc: 0.9456521739130435, validation_acc: 0.7532467532467533
```

```
for gamma=0.25755102040816324 and C=9.081632653061224 : train_acc: 0.9456521739130435, validation_acc:0.7532467532467533
for gamma=0.25755102040816324 and C=9.285714285714285 : train_acc: 0.9478260869565217, validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=9.489795918367347
                                                        : train_acc: 0.9456521739130435 , validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=9.693877551020408
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for gamma=0.25755102040816324 and C=9.89795918367347 : train_acc: 0.9478260869565217, validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=10.10204081632653 : train_acc: 0.95 , validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=10.306122448979592 : train_acc: 0.95 , validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=10.510204081632654 : train acc: 0.9521739130434783 , validation acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=10.714285714285715 : train_acc: 0.9521739130434783 , validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=10.918367346938776 : train_acc: 0.9521739130434783 , validation_acc: 0.7467532467532467
for gamma=0.25755102040816324 and C=11.122448979591837
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for gamma=0.25755102040816324 and C=11.326530612244898
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for gamma=0.25755102040816324 and C=11.53061224489796 : train_acc: 0.9521739130434783 , validation_acc: 0.7337662337662337
for gamma=0.25755102040816324 and C=11.73469387755102
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for gamma=0.25755102040816324 and C=11.938775510204081
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for gamma=0.25755102040816324 and C=12.142857142857142
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for gamma=0.25755102040816324 and C=12.346938775510203 : train_acc: 0.9521739130434783 , validation_acc: 0.7337662337662337
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for gamma=0.25755102040816324 and C=12.959183673469388
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for gamma=0.25755102040816324 and C=13.16326530612245 : train_acc: 0.95, validation_acc: 0.7337662337662337
for gamma=0.25755102040816324 and C=13.36734693877551
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for gamma=0.25755102040816324 and C=13.571428571428571
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for gamma=0.25755102040816324 and C=13.775510204081632
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for gamma=0.25755102040816324 and C=13.979591836734695 : train_acc: 0.9521739130434783 , validation_acc: 0.72727272727272727
for gamma=0.25755102040816324 and C=14.183673469387756
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for gamma=0.25755102040816324 and C=14.387755102040817
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for gamma=0.25755102040816324 and C=14.591836734693878 : train_acc: 0.9543478260869566 , validation_acc: 0.7337662337662337
for gamma=0.25755102040816324 and C=14.795918367346939 : train_acc: 0.9565217391304348 , validation_acc: 0.7402597402597403
for gamma=0.25755102040816324 and C=15.0 : train acc: 0.9565217391304348 , validation acc: 0.7402597402597403
for gamma=0.2676530612244898 and C=5.204081632653061 : train_acc: 0.9152173913043479 , validation_acc: 0.7532467532467533
for gamma=0.2676530612244898 and C=5.408163265306122
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for gamma=0.2676530612244898 and C=5.612244897959184
                                                       : train_acc: 0.9239130434782609, validation_acc: 0.7532467532467533
for gamma=0.2676530612244898 and C=5.816326530612245
                                                       : train_acc: 0.9260869565217391, validation_acc: 0.7402597402597403
for gamma=0.2676530612244898 and C=6.020408163265306
                                                       : train_acc: 0.9282608695652174, validation_acc: 0.7402597402597403
for gamma=0.2676530612244898 and C=6.224489795918368
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for gamma=0.2676530612244898 and C=6.428571428571429
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for gamma=0.2676530612244898 and C=6.63265306122449 : train_acc: 0.9326086956521739 , validation_acc: 0.7467532467532467
for gamma=0.2676530612244898 and C=6.836734693877551
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for gamma=0.2676530612244898 and C=7.040816326530612
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for gamma=0.2676530612244898 and C=7.244897959183674
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for gamma=0.2676530612244898 and C=7.448979591836735
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for gamma=0.2676530612244898 and C=7.857142857142858
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for gamma=0.2676530612244898 and C=8.061224489795919
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for gamma=0.2676530612244898 and C=8.26530612244898 : train_acc: 0.9456521739130435 , validation_acc: 0.7532467532467533
for gamma=0.2676530612244898 and C=8.673469387755102
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for gamma=0.2676530612244898 and C=8.877551020408163
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for gamma=0.2676530612244898 and C=9.081632653061224
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for gamma=0.2676530612244898 and C=9.285714285714285
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for gamma=0.2676530612244898 and C=9.489795918367347
                                                       : train_acc: 0.95, validation_acc: 0.7467532467532467
for gamma=0.2676530612244898 and C=9.693877551020408
                                                       : train_acc: 0.9521739130434783, validation_acc: 0.7467532467532467
for gamma=0.2676530612244898 and C=9.89795918367347 : train_acc: 0.9521739130434783 , validation_acc: 0.7467532467532467
for gamma=0.2676530612244898 and C=10.10204081632653 : train_acc: 0.9521739130434783, validation_acc: 0.7467532467532467
                                                        : train_acc: 0.9521739130434783 , validation_acc: 0.7467532467532467
for gamma=0.2676530612244898 and C=10.306122448979592
for gamma=0.2676530612244898 and C=10.510204081632654
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for gamma=0.2676530612244898 and C=10.714285714285715
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for gamma=0.2676530612244898 and C=10.918367346938776
                                                        : train_acc: 0.9521739130434783, validation_acc: 0.7337662337662337
for gamma=0.2676530612244898 and C=11.122448979591837
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for gamma=0.2676530612244898 and C=11.326530612244898
                                                        : train_acc: 0.9521739130434783, validation_acc: 0.7337662337662337
for gamma=0.2676530612244898 and C=11.53061224489796 : train_acc: 0.9521739130434783, validation_acc: 0.7337662337662337
for gamma=0.2676530612244898 and C=11.73469387755102 : train_acc: 0.9521739130434783 , validation_acc: 0.7337662337662337
for gamma=0.2676530612244898 and C=11.938775510204081
                                                        : train_acc: 0.9521739130434783, validation_acc: 0.7337662337662337
for gamma=0.2676530612244898 and C=12.142857142857142
                                                        : train_acc: 0.95, validation_acc: 0.7337662337662337
for gamma=0.2676530612244898 and C=12.346938775510203
                                                        : train acc: 0.95, validation acc: 0.7337662337662337
for gamma=0.2676530612244898 and C=12.551020408163264
                                                        : train_acc: 0.95 , validation_acc: 0.7272727272727273
for gamma=0.2676530612244898 and C=12.755102040816327
                                                        : train_acc: 0.9521739130434783, validation_acc: 0.72727272727273
for gamma=0.2676530612244898 and C=12.959183673469388 : train_acc: 0.9521739130434783 , validation_acc: 0.72727272727272727
```

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for gamma=0.2676530612244898 and C=13.16326530612245 : train_acc: 0.9521739130434783 , validation_acc: 0.72727272727272727
for gamma=0.2676530612244898 and C=13.36734693877551 : train_acc: 0.9543478260869566 , validation_acc: 0.7337662337662337
for gamma=0.2676530612244898 and C=13.571428571428571
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for gamma=0.2676530612244898 and C=13.775510204081632
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for gamma=0.2676530612244898 and C=13.979591836734695
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for gamma=0.2676530612244898 and C=14.183673469387756
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for gamma=0.2676530612244898 and C=14.387755102040817
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for gamma=0.2676530612244898 and C=14.591836734693878
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for gamma=0.2676530612244898 and C=14.795918367346939 : train_acc: 0.9608695652173913 , validation_acc: 0.7467532467532467
for gamma=0.2676530612244898 and C=15.0 : train_acc: 0.9608695652173913 , validation_acc: 0.7467532467532467
for gamma=0.2777551020408163 and C=5.0 : train_acc: 0.9195652173913044 , validation_acc: 0.7467532467532467
for gamma=0.2777551020408163 and C=5.204081632653061 : train_acc: 0.9239130434782609 , validation_acc: 0.7532467532467533
for gamma=0.2777551020408163 and C=5.408163265306122
                                                        : train_acc: 0.9260869565217391 , validation_acc: 0.7532467532467533
for gamma=0.2777551020408163 and C=5.612244897959184
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for gamma=0.2777551020408163 and C=5.816326530612245
                                                        : train_acc: 0.9304347826086956 , validation_acc: 0.7532467532467533
for gamma=0.2777551020408163 and C=6.020408163265306
                                                        : train acc: 0.9304347826086956, validation acc: 0.7467532467532467
for gamma=0.2777551020408163 and C=6.224489795918368
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for gamma=0.2777551020408163 and C=6.428571428571429
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for gamma=0.2777551020408163 and C=6.836734693877551
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for gamma=0.2777551020408163 and C=7.040816326530612
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for gamma=0.2777551020408163 and C=7.244897959183674 for gamma=0.2777551020408163 and C=7.448979591836735
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                                                        : train_acc: 0.9456521739130435 , validation_acc: 0.7532467532467533
for gamma=0.2777551020408163 and C=7.653061224489796
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for gamma=0.2777551020408163 and C=7.857142857142858
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for gamma=0.2777551020408163 and C=8.061224489795919
                                                        : train_acc: 0.9478260869565217, validation_acc: 0.7532467532467533
for gamma=0.2777551020408163 and C=8.26530612244898 : train_acc: 0.95 , validation_acc: 0.7467532467532467
for gamma=0.2777551020408163 and C=8.46938775510204
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                                                        : train_acc: 0.9521739130434783 , validation_acc: 0.7467532467532467
for gamma=0.2777551020408163 and C=8.673469387755102
for gamma=0.2777551020408163 and C=8.877551020408163
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for gamma=0.2777551020408163 and C=9.081632653061224
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for gamma=0.2777551020408163 and C=9.489795918367347
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for gamma=0.2777551020408163 and C=9.693877551020408
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for gamma=0.2777551020408163 and C=9.89795918367347 : train_acc: 0.9521739130434783 , validation_acc: 0.7402597402597403
for gamma=0.2777551020408163 and C=10.10204081632653 : train_acc: 0.9521739130434783, validation_acc: 0.7402597402597403
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for gamma=0.2777551020408163 and C=10.918367346938776
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for gamma=0.2777551020408163 and C=11.122448979591837
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for gamma=0.2777551020408163 and C=11.326530612244898
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for gamma=0.2777551020408163 and C=11.53061224489796 : train_acc: 0.95 , validation_acc: 0.7272727272727273
for gamma=0.2777551020408163 and C=11.73469387755102 : train_acc: 0.95 , validation_acc: 0.7272727272727273
for gamma=0.2777551020408163 and C=11.938775510204081
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for gamma=0.2777551020408163 and C=12.142857142857142
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for gamma=0.2777551020408163 and C=12.346938775510203
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for gamma=0.2777551020408163 and C=12.551020408163264
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for gamma=0.2777551020408163 and C=12.755102040816327
                                                          : train_acc: 0.9586956521739131, validation_acc: 0.7337662337662337
for gamma=0.2777551020408163 and C=12.959183673469388
                                                         : train_acc: 0.9586956521739131, validation_acc: 0.7337662337662337
for gamma=0.2777551020408163 and C=13.16326530612245 : train acc: 0.9586956521739131, validation acc: 0.7337662337662337
for gamma=0.2777551020408163 and C=13.36734693877551 : train_acc: 0.9586956521739131, validation_acc: 0.7337662337662337
for gamma=0.2777551020408163 and C=13.571428571428571
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for gamma=0.2777551020408163 and C=13.979591836734695
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for gamma=0.2777551020408163 and C=14.183673469387756
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for gamma=0.2777551020408163 and C=14.387755102040817
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for gamma=0.2777551020408163 and C=14.591836734693878
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for gamma=0.2777551020408163 and C=14.795918367346939
                                                         : train_acc: 0.9630434782608696 , validation_acc: 0.7467532467532467
for gamma=0.2777551020408163 and C=15.0 : train_acc: 0.9630434782608696 , validation_acc: 0.7467532467532467
for gamma=0.28785714285714287 and C=5.0 : train_acc: 0.9260869565217391, validation_acc: 0.7532467532467533
for gamma=0.28785714285714287 and C=5.204081632653061 : train_acc: 0.9282608695652174 , validation_acc: 0.7532467532467532
for gamma=0.28785714285714287 and C=5.408163265306122
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for gamma=0.28785714285714287 and C=5.612244897959184
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for gamma=0.28785714285714287 and C=6.020408163265306
                                                         : train_acc: 0.941304347826087, validation_acc: 0.7467532467532467
for gamma=0.28785714285714287 and C=6.224489795918368
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for gamma=0.28785714285714287 and C=6.428571428571429
                                                         : train_acc: 0.9434782608695652 , validation_acc: 0.7532467532467533
for gamma=0.28785714285714287 and C=6.63265306122449 : train_acc: 0.9434782608695652 , validation_acc: 0.7532467532467533
for gamma=0.28785714285714287 and C=6.836734693877551 : train_acc: 0.9456521739130435, validation_acc: 0.7532467532467532
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for gamma=0.28785714287 14287 and C=7.040816326530612 : train_acc: 0.9478260869565217, validation_acc: 0.7532467532467533
for gamma=0.2878571428714287 and C=7.244897959183674 : train_acc: 0.9478260869565217, validation_acc: 0.7532467532467533
for gamma=0.28785714285714287 and C=7.448979591836735
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for gamma=0.28785714285714287 and C=7.653061224489796
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for gamma=0.28785714285714287 and C=7.857142857142858
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for gamma=0.28785714285714287 and C=8.061224489795919 : train_acc: 0.95, validation_acc: 0.7467532467532467
for gamma=0.28785714285714287 and C=8.26530612244898 : train_acc: 0.9543478260869566 , validation_acc: 0.7467532467532467
for gamma=0.28785714285714287 and C=8.46938775510204 : train acc: 0.9543478260869566 , validation acc: 0.7467532467532467
for gamma=0.28785714285714287 and C=8.673469387755102 : train_acc: 0.9543478260869566 , validation_acc: 0.7467532467532467
for gamma=0.28785714285714287 and C=8.877551020408163
                                                        : train_acc: 0.9543478260869566, validation_acc: 0.7467532467532467
for gamma=0.28785714285714287 and C=9.081632653061224
                                                        : train_acc: 0.9543478260869566 , validation_acc: 0.7467532467532467
for gamma=0.28785714285714287 and C=9.285714285714285
                                                        : train_acc: 0.9543478260869566 , validation_acc: 0.7402597402597403
for gamma=0.28785714285714287 and C=9.489795918367347
                                                        : train_acc: 0.9543478260869566, validation_acc: 0.7402597402597403
for gamma=0.28785714285714287 and C=9.693877551020408
                                                        : train_acc: 0.9521739130434783, validation_acc: 0.7402597402597403
for gamma=0.2878571428714287 and C=9.89795918367347 : train_acc: 0.9521739130434783 , validation_acc: 0.7337662337662337
for gamma=0.28785714285714287 and C=10.10204081632653 : train acc: 0.9521739130434783 , validation acc: 0.7337662337662337
for gamma=0.28785714285714287 and C=10.306122448979592 : train_acc: 0.95 , validation_acc:0.7337662337662337
for gamma=0.28785714285714287 and C=10.510204081632654
                                                         : train_acc: 0.95, validation_acc: 0.7337662337662337
for gamma=0.28785714285714287 and C=10.714285714285715
                                                         : train_acc: 0.9521739130434783, validation_acc: 0.72727272727273
for gamma=0.28785714285714287 and C=10.918367346938776
                                                         : train acc: 0.9521739130434783 , validation_acc: 0.7272727272727273
for gamma=0.28785714285714287 and C=11.122448979591837
                                                         : train_acc: 0.9521739130434783, validation_acc: 0.72727272727273
for gamma=0.28785714285714287 and C=11.326530612244898
                                                         : train_acc: 0.9521739130434783, validation_acc: 0.72727272727273
for gamma=0.28785714285714287 and C=11.53061224489796 : train_acc: 0.9565217391304348 , validation_acc: 0.72727272727272727
for gamma=0.2878571428714287 and C=11.73469387755102 : train acc: 0.9586956521739131, validation acc: 0.7337662337662337
for gamma=0.28785714285714287 and C=11.938775510204081 : train_acc: 0.9586956521739131 , validation_acc: 0.7337662337662337
for gamma=0.28785714285714287 and C=12.142857142857142
                                                         : train acc: 0.9586956521739131, validation acc: 0.7337662337662337
for gamma=0.28785714285714287 and C=12.346938775510203
                                                         : train_acc: 0.9586956521739131, validation_acc: 0.7337662337662337
for gamma=0.28785714285714287 and C=12.551020408163264
                                                         : train_acc: 0.9608695652173913, validation_acc: 0.7337662337662337
for gamma=0.28785714285714287 and C=12.755102040816327
                                                         : train_acc: 0.9630434782608696 , validation_acc: 0.7337662337662337
for gamma=0.28785714285714287 and C=12.959183673469388
                                                         : train acc: 0.9630434782608696, validation acc: 0.7402597402597403
for gamma=0.2878571428714287 and C=13.16326530612245 : train_acc: 0.9630434782608696 , validation_acc: 0.7402597402597403
for gamma=0.28785714285714287 and C=13.36734693877551
                                                        : train_acc: 0.9630434782608696, validation_acc: 0.7402597402597403
for gamma=0.28785714285714287 and C=13.571428571428571
                                                         : train_acc: 0.9630434782608696 , validation_acc: 0.7402597402597403
for gamma=0.28785714285714287 and C=13.775510204081632
                                                         : train_acc: 0.9630434782608696, validation_acc: 0.7402597402597403
for gamma=0.28785714285714287 and C=13.979591836734695
                                                         : train_acc: 0.9630434782608696, validation_acc: 0.7402597402597403
for gamma=0.28785714285714287 and C=14.183673469387756
                                                         : train_acc: 0.9630434782608696, validation_acc: 0.7402597402597403
for gamma=0.28785714285714287 and C=14.387755102040817
                                                         : train_acc: 0.9652173913043478 , validation_acc: 0.7402597402597403
for gamma=0.28785714285714287 and C=14.591836734693878
                                                         : train_acc: 0.9652173913043478, validation_acc: 0.7402597402597403
for gamma=0.2878571428714287 and C=14.795918367346939 : train_acc: 0.967391304347826 , validation_acc: 0.7402597402597403
for gamma=0.28785714285714287 and C=15.0 : train_acc: 0.967391304347826 , validation_acc: 0.7402597402597403
for gamma=0.2979591836734694 and C=5.204081632653061 : train_acc: 0.9326086956521739 , validation_acc: 0.7532467532467533
for gamma=0.2979591836734694 and C=5.408163265306122
                                                       : train_acc: 0.9369565217391305, validation_acc: 0.7532467532467533
for gamma=0.2979591836734694 and C=5.612244897959184
                                                       : train_acc: 0.9391304347826087, validation_acc: 0.7532467532467533
for gamma=0.2979591836734694 and C=5.816326530612245
                                                       : train_acc: 0.9434782608695652, validation_acc: 0.7532467532467533
for gamma=0.2979591836734694 and C=6.020408163265306
                                                       : train_acc: 0.9434782608695652 , validation_acc: 0.7597402597402597
for gamma=0.2979591836734694 and C=6.224489795918368
                                                       : train_acc: 0.9434782608695652, validation_acc: 0.7532467532467533
for gamma=0.2979591836734694 and C=6.428571428571429
                                                       : train_acc: 0.9456521739130435 , validation_acc: 0.7532467532467533
: train_acc: 0.9478260869565217 , validation_acc: 0.7532467532467533
for gamma=0.2979591836734694 and C=6.836734693877551
for gamma=0.2979591836734694 and C=7.040816326530612 : train_acc: 0.95 , validation_acc: 0.7532467532467533
for gamma=0.2979591836734694 and C=7.244897959183674
                                                       : train_acc: 0.95 , validation_acc: 0.7532467532467533
for gamma=0.2979591836734694 and C=7.448979591836735
                                                       : train_acc: 0.95, validation_acc: 0.7467532467532467
for gamma=0.2979591836734694 and C=7.653061224489796
                                                       : train_acc: 0.9521739130434783, validation_acc: 0.7467532467532467
for gamma=0.2979591836734694 and C=7.857142857142858
                                                       : train_acc: 0.9543478260869566 , validation_acc: 0.7467532467532467
                                                       : train_acc: 0.9543478260869566 , validation_acc: 0.7467532467532467
for gamma=0.2979591836734694 and C=8.061224489795919
for gamma=0.2979591836734694 and C=8.26530612244898 : train acc: 0.9543478260869566 , validation acc: 0.7467532467532467
for gamma=0.2979591836734694 and C=8.46938775510204 : train_acc: 0.9543478260869566 , validation_acc: 0.7467532467532467
for gamma=0.2979591836734694 and C=8.673469387755102
                                                       : train_acc: 0.9543478260869566 , validation_acc: 0.7402597402597403
for gamma=0.2979591836734694 and C=8.877551020408163
                                                       : train_acc: 0.9543478260869566 , validation_acc: 0.7402597402597403
for gamma=0.2979591836734694 and C=9.081632653061224
                                                       : train_acc: 0.9543478260869566, validation_acc: 0.7402597402597403
for gamma=0.2979591836734694 and C=9.285714285714285
                                                       : train_acc: 0.9543478260869566, validation_acc: 0.7402597402597403
for gamma=0.2979591836734694 and C=9.489795918367347
                                                       : train_acc: 0.9543478260869566, validation_acc: 0.7402597402597403
for gamma=0.2979591836734694 and C=9.693877551020408 : train_acc: 0.9543478260869566 , validation_acc: 0.7337662337662337
for gamma=0.2979591836734694 and C=9.89795918367347 : train_acc: 0.9543478260869566 , validation_acc: 0.72727272727272727
for gamma=0.2979591836734694 and C=10.10204081632653 : train_acc: 0.9521739130434783 , validation_acc: 0.7272727272727272727
for gamma=0.2979591836734694 and C=10.306122448979592 : train acc: 0.9521739130434783, validation acc: 0.72727272727272727
for gamma=0.2979591836734694 and C=10.510204081632654
                                                        : train_acc: 0.9543478260869566 , validation_acc: 0.7272727272727273
for gamma=0.2979591836734694 and C=10.714285714285715
                                                        : train_acc: 0.9543478260869566 , validation_acc: 0.72727272727273
for gamma=0.2979591836734694 and C=10.918367346938776 : train_acc: 0.9586956521739131, validation_acc: 0.72727272727272727
```

```
for gamma=0.2979591836734694 and C=11.122448979591837 : train_acc: 0.9586956521739131 , validation_acc: 0.72727272727272727
for gamma=0.2979591836734694 and C=11.326530612244898 : train_acc: 0.9586956521739131 , validation_acc: 0.7337662337662337
for gamma=0.2979591836734694 and C=11.53061224489796 : train_acc: 0.9586956521739131 , validation_acc: 0.7337662337662337
for gamma=0.2979591836734694 and C=11.73469387755102 : train_acc: 0.9630434782608696 , validation_acc: 0.7337662337662337
for gamma=0.2979591836734694 and C=11.938775510204081 : train_acc: 0.9630434782608696 , validation_acc: 0.7337662337662337
for gamma=0.2979591836734694 and C=12.142857142857142
                                                          : train_acc: 0.9630434782608696, validation_acc: 0.7402597402597403
for gamma=0.2979591836734694 and C=12.346938775510203
                                                          : train_acc: 0.9630434782608696, validation_acc: 0.7402597402597403
for gamma=0.2979591836734694 and C=12.551020408163264
                                                          : train acc: 0.9630434782608696, validation acc: 0.7402597402597403
                                                          : train_acc: 0.9630434782608696 , validation_acc: 0.7402597402597403
for gamma=0.2979591836734694 and C=12.755102040816327
for gamma=0.2979591836734694 and C=12.959183673469388
                                                          : train_acc: 0.9652173913043478, validation_acc: 0.7402597402597403
for gamma=0.2979591836734694 and C=13.16326530612245 : train_acc: 0.9652173913043478 , validation_acc: 0.7402597402597403
for gamma=0.2979591836734694 and C=13.36734693877551 : train_acc: 0.9652173913043478 , validation_acc: 0.7402597402597403
for gamma=0.2979591836734694 and C=13.571428571428571
                                                          : train_acc: 0.967391304347826 , validation_acc: 0.7402597402597403
for gamma=0.2979591836734694 and C=13.775510204081632
                                                          : train_acc: 0.967391304347826, validation_acc: 0.7402597402597403
for gamma=0.2979591836734694 and C=13.979591836734695
                                                          : train_acc: 0.967391304347826 , validation_acc: 0.7337662337662337
for gamma=0.2979591836734694 and C=14.183673469387756
                                                          : train acc: 0.967391304347826, validation acc: 0.7337662337662337
for gamma=0.2979591836734694 and C=14.387755102040817
                                                          : train_acc: 0.967391304347826, validation_acc: 0.7337662337662337
for gamma=0.2979591836734694 and C=14.591836734693878
                                                          : train_acc: 0.9695652173913043, validation_acc: 0.7337662337662337
                                                         : train_acc: 0.9717391304347827 , validation_acc: 0.7337662337662337
for gamma=0.2979591836734694 and C=14.795918367346939
for gamma=0.2979591836734694 and C=15.0 : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=5.0 : train_acc: 0.9347826086956522 , validation_acc: 0.7532467532467533
for gamma=0.3080612244897959 and C=5.204081632653061
                                                        : train_acc: 0.9391304347826087, validation_acc: 0.7532467532467533
for gamma=0.3080612244897959 and C=5.408163265306122
                                                         : train_acc: 0.9434782608695652, validation_acc: 0.7532467532467533
for gamma=0.3080612244897959 and C=5.612244897959184
                                                        : train acc: 0.9434782608695652, validation acc: 0.7532467532467533
for gamma=0.3080612244897959 and C=5.816326530612245
                                                        : train_acc: 0.9434782608695652, validation_acc: 0.7597402597402597
for gamma=0.3080612244897959 and C=6.020408163265306
                                                        : train acc: 0.9478260869565217, validation acc: 0.7597402597402597
for gamma=0.3080612244897959 and C=6.224489795918368
                                                        : train_acc: 0.9478260869565217, validation_acc: 0.7532467532467533
for gamma=0.3080612244897959 and C=6.428571428571429
                                                        : train_acc: 0.95, validation_acc: 0.7532467532467533
for gamma=0.3080612244897959 and C=6.63265306122449 : train_acc: 0.95 , validation_acc: 0.7532467532467533
for gamma=0.3080612244897959 and C=6.836734693877551
                                                        : train acc: 0.95, validation acc: 0.7532467532467533
for gamma=0.3080612244897959 and C=7.040816326530612
                                                        : train_acc: 0.95, validation_acc: 0.7532467532467533
for gamma=0.3080612244897959 and C=7.244897959183674
                                                        : train_acc: 0.9543478260869566, validation_acc: 0.7467532467532467
for gamma=0.3080612244897959 and C=7.448979591836735
                                                        : train_acc: 0.9543478260869566 , validation_acc: 0.7467532467532467
for gamma=0.3080612244897959 and C=7.653061224489796
                                                        : train_acc: 0.9543478260869566 , validation_acc: 0.7467532467532467
for gamma=0.3080612244897959 and C=7.857142857142858
                                                        : train_acc: 0.9543478260869566, validation_acc: 0.7402597402597403
for gamma=0.3080612244897959 and C=8.061224489795919
                                                        : train_acc: 0.9543478260869566, validation_acc: 0.7402597402597403
for gamma=0.3080612244897959 and C=8.26530612244898 : train_acc: 0.9543478260869566 , validation_acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=8.46938775510204
                                                        : train_acc: 0.9543478260869566 , validation_acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=8.673469387755102
                                                        : train acc: 0.9543478260869566, validation acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=8.877551020408163
                                                        : train_acc: 0.9565217391304348 , validation_acc: 0.7402597402597403
for gamma=0.3080612244897959 and C=9.081632653061224
                                                        : train_acc: 0.9543478260869566 , validation_acc: 0.7402597402597403
for gamma=0.3080612244897959 and C=9.285714285714285
                                                         : train_acc: 0.9543478260869566 , validation_acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=9.489795918367347
                                                        : train_acc: 0.9543478260869566 , validation_acc: 0.7272727272727273
for gamma=0.3080612244897959 and C=9.693877551020408
                                                        : train_acc: 0.9565217391304348 , validation_acc: 0.72727272727273
for gamma=0.3080612244897959 and C=9.89795918367347 : train_acc: 0.9565217391304348 , validation_acc: 0.72727272727272727
for gamma=0.3080612244897959 and C=10.10204081632653
                                                        : train_acc: 0.9565217391304348 , validation_acc: 0.72727272727273
for gamma=0.3080612244897959 and C=10.306122448979592
                                                          : train_acc: 0.9586956521739131, validation_acc: 0.72727272727273
for gamma=0.3080612244897959 and C=10.510204081632654
                                                          : train_acc: 0.9586956521739131 , validation_acc: 0.72727272727273
for gamma=0.3080612244897959 and C=10.714285714285715
                                                          : train_acc: 0.9586956521739131, validation_acc: 0.72727272727273
for gamma=0.3080612244897959 and C=10.918367346938776
                                                          : train_acc: 0.9630434782608696, validation_acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=11.122448979591837
                                                          : train acc: 0.9630434782608696, validation acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=11.326530612244898
                                                          : train_acc: 0.9630434782608696, validation_acc: 0.7402597402597403
for gamma=0.3080612244897959 and C=11.53061224489796
                                                        : train_acc: 0.9630434782608696 , validation_acc: 0.7402597402597403
for gamma=0.3080612244897959 and C=11.73469387755102
                                                        : train_acc: 0.9630434782608696 , validation_acc: 0.7402597402597403
for gamma=0.3080612244897959 and C=11.938775510204081
                                                         : train_acc: 0.9652173913043478, validation_acc: 0.7402597402597403
for gamma=0.3080612244897959 and C=12.142857142857142
                                                          : train_acc: 0.9652173913043478, validation_acc: 0.7402597402597403
                                                          : train_acc: 0.9652173913043478 , validation_acc: 0.7402597402597403
for gamma=0.3080612244897959 and C=12.346938775510203
for gamma=0.3080612244897959 and C=12.551020408163264
                                                          : train_acc: 0.967391304347826, validation_acc: 0.7402597402597403
for gamma=0.3080612244897959 and C=12.755102040816327
                                                          : train_acc: 0.967391304347826, validation_acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=12.959183673469388
                                                          : train_acc: 0.967391304347826 , validation_acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=13.16326530612245
                                                        : train_acc: 0.967391304347826, validation_acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=13.36734693877551
                                                        : train_acc: 0.9695652173913043 , validation_acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=13.571428571428571
                                                          : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=13.775510204081632
                                                          : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=13.979591836734695
                                                          : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=14.183673469387756
                                                          : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=14.387755102040817
                                                          : train acc: 0.9739130434782609, validation acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=14.591836734693878
                                                          : train_acc: 0.9739130434782609 , validation_acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=14.795918367346939
                                                          : train_acc: 0.9739130434782609, validation_acc: 0.7337662337662337
for gamma=0.3080612244897959 and C=15.0 : train_acc: 0.9739130434782609 , validation_acc: 0.7337662337662337
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for gamma=0.31816326530612243 and C=5.0 : train_acc: 0.941304347826087 , validation_acc: 0.7532467532467533
for gamma=0.31816326530612243 and C=5.204081632653061 : train_acc: 0.9434782608695652 , validation_acc: 0.7532467532467532
for gamma=0.31816326530612243 and C=5.408163265306122
                                                          : train_acc: 0.9434782608695652, validation_acc: 0.7532467532467533
for gamma=0.31816326530612243 and C=5.612244897959184
                                                          : train_acc: 0.9478260869565217, validation_acc: 0.7597402597402597
for gamma=0.31816326530612243 and C=5.816326530612245
                                                          : train_acc: 0.9478260869565217, validation_acc: 0.7597402597402597
for gamma=0.31816326530612243 and C=6.020408163265306
                                                          : train_acc: 0.95, validation_acc: 0.7532467532467533
for gamma=0.31816326530612243 and C=6.224489795918368
                                                          : train_acc: 0.95 , validation_acc: 0.7532467532467533
for gamma=0.31816326530612243 and C=6.428571428571429
                                                          : train acc: 0.95, validation acc: 0.7532467532467533
for gamma=0.31816326530612243 and C=6.63265306122449 : train_acc: 0.95 , validation_acc:0.7532467532467533
for gamma=0.31816326530612243 and C=6.836734693877551
                                                          : train_acc: 0.9543478260869566, validation_acc: 0.7467532467532467
for gamma=0.31816326530612243 and C=7.040816326530612
                                                          : train_acc: 0.9543478260869566 , validation_acc: 0.7467532467532467
for gamma=0.31816326530612243 and C=7.244897959183674
                                                          : train_acc: 0.9543478260869566, validation_acc: 0.7402597402597403
for gamma=0.31816326530612243 and C=7.448979591836735
                                                          : train_acc: 0.9543478260869566, validation_acc: 0.7402597402597403
for gamma=0.31816326530612243 and C=7.653061224489796
                                                          : train_acc: 0.9543478260869566, validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=7.857142857142858
                                                          : train acc: 0.9543478260869566, validation acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=8.061224489795919
                                                          : train acc: 0.9565217391304348, validation acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=8.26530612244898 : train_acc: 0.9565217391304348 , validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=8.46938775510204
                                                        : train_acc: 0.9543478260869566 , validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=8.673469387755102
                                                          : train_acc: 0.9543478260869566 , validation_acc: 0.72727272727273
for gamma=0.31816326530612243 and C=8.877551020408163
                                                          : train acc: 0.9565217391304348, validation acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=9.081632653061224
                                                          : train_acc: 0.9565217391304348, validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=9.285714285714285
                                                          : train_acc: 0.9565217391304348 , validation_acc: 0.72727272727272727
for gamma=0.31816326530612243 and C=9.489795918367347
                                                          : train_acc: 0.9565217391304348, validation_acc: 0.72727272727273
for gamma=0.31816326530612243 and C=9.693877551020408
                                                          : train acc: 0.9586956521739131, validation acc: 0.72727272727273
for gamma=0.31816326530612243 and C=9.89795918367347 : train_acc: 0.9586956521739131 , validation_acc: 0.7272727272727273
for gamma=0.31816326530612243 and C=10.10204081632653
                                                         : train acc: 0.9608695652173913, validation acc: 0.7272727272727273
for gamma=0.31816326530612243 and C=10.306122448979592
                                                           : train_acc: 0.9630434782608696 , validation_acc: 0.72727272727273
for gamma=0.31816326530612243 and C=10.510204081632654
                                                           : train_acc: 0.9630434782608696 , validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=10.714285714285715
                                                           : train_acc: 0.9630434782608696 , validation_acc: 0.7402597402597403
for gamma=0.31816326530612243 and C=10.918367346938776
                                                           : train acc: 0.9652173913043478, validation acc: 0.7402597402597403
for gamma=0.31816326530612243 and C=11.122448979591837
                                                           : train_acc: 0.9652173913043478, validation_acc: 0.7402597402597403
for gamma=0.31816326530612243 and C=11.326530612244898
                                                           : train_acc: 0.9652173913043478, validation_acc: 0.7402597402597403
for gamma=0.31816326530612243 and C=11.53061224489796 : train_acc: 0.967391304347826, validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=11.73469387755102
                                                          : train_acc: 0.967391304347826 , validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=11.938775510204081
                                                           : train_acc: 0.967391304347826 , validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=12.142857142857142
                                                           : train_acc: 0.967391304347826, validation_acc: 0.7337662337662337
                                                           : train_acc: 0.9695652173913043 , validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=12.346938775510203
for gamma=0.31816326530612243 and C=12.551020408163264
                                                           : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=12.755102040816327
                                                           : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=12.959183673469388 : train_acc: 0.9717391304347827 , validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=13.16326530612245 : train_acc: 0.9717391304347827 , validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=13.36734693877551
                                                          : train_acc: 0.9739130434782609, validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=13.571428571428571 : train_acc: 0.9739130434782609 , validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=13.775510204081632 : train_acc: 0.9739130434782609 , validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=13.979591836734695
                                                           : train_acc: 0.9760869565217392, validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=14.183673469387756
                                                           : train_acc: 0.9760869565217392 , validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=14.387755102040817 : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=14.591836734693878 : train_acc: 0.9782608695652174 , validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=14.795918367346939
                                                          : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.31816326530612243 and C=15.0 : train_acc: 0.9782608695652174 , validation_acc:0.72727272727272727
for gamma=0.328265306122449 and C=5.0 : train acc: 0.9434782608695652, validation acc: 0.7532467532467533
for gamma=0.328265306122449 and C=5.204081632653061 : train_acc: 0.9478260869565217 , validation_acc: 0.7532467532467533
for gamma=0.328265306122449 and C=5.408163265306122
                                                        : train_acc: 0.95, validation_acc: 0.7597402597402597
                                                        : train_acc: 0.95, validation_acc: 0.7597402597402597
for gamma=0.328265306122449 and C=5.612244897959184
for gamma=0.328265306122449 and C=5.816326530612245
                                                       : train_acc: 0.95, validation_acc: 0.7597402597402597
for gamma=0.328265306122449 and C=6.020408163265306
                                                       : train_acc: 0.95 , validation_acc: 0.7532467532467533
for gamma=0.328265306122449 and C=6.224489795918368
                                                        : train acc: 0.95, validation acc: 0.7532467532467533
for gamma=0.328265306122449 and C=6.428571428571429
                                                        : train_acc: 0.9543478260869566, validation_acc: 0.7532467532467533
for gamma=0.328265306122449 and C=6.63265306122449 : train_acc: 0.9543478260869566 , validation_acc: 0.7467532467532467
                                                       : train_acc: 0.9543478260869566 , validation_acc: 0.7402597402597403
for gamma=0.328265306122449 and C=6.836734693877551
for gamma=0.328265306122449 and C=7.040816326530612
                                                        : train_acc: 0.9543478260869566 , validation_acc: 0.7402597402597403
for gamma=0.328265306122449 and C=7.244897959183674
                                                        : train_acc: 0.9543478260869566 , validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=7.448979591836735
                                                       : train_acc: 0.9565217391304348, validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=7.653061224489796
                                                       : train_acc: 0.9565217391304348 , validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=7.857142857142858
                                                        : train_acc: 0.9565217391304348, validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=8.061224489795919
                                                       : train_acc: 0.9543478260869566 , validation_acc: 0.72727272727273
for gamma=0.328265306122449 and C=8.26530612244898 : train acc: 0.9565217391304348 , validation acc: 0.72727272727272727
for gamma=0.328265306122449 and C=8.46938775510204 : train_acc: 0.9565217391304348 , validation_acc: 0.72727272727272727
for gamma=0.328265306122449 and C=8.673469387755102 : train_acc: 0.9565217391304348 , validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=8.877551020408163 : train_acc: 0.9565217391304348, validation_acc: 0.7337662337662337
```

```
for gamma=0.328265306122449 and C=9.081632653061224 : train_acc: 0.9586956521739131, validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=9.285714285714285 : train_acc: 0.9608695652173913 , validation_acc: 0.72727272727272727
for gamma=0.328265306122449 and C=9.489795918367347
                                                      : train_acc: 0.9608695652173913, validation_acc: 0.7272727272727273
for gamma=0.328265306122449 and C=9.693877551020408 : train_acc: 0.9630434782608696 , validation_acc: 0.72727272727272727
for gamma=0.328265306122449 and C=9.89795918367347 : train_acc: 0.9630434782608696 , validation_acc: 0.72727272727272727
for gamma=0.328265306122449 and C=10.10204081632653 : train_acc: 0.9652173913043478, validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=10.306122448979592
                                                       : train_acc: 0.9652173913043478, validation_acc: 0.7402597402597403
for gamma=0.328265306122449 and C=10.510204081632654
                                                       : train acc: 0.9652173913043478, validation acc: 0.7337662337662337
for gamma=0.328265306122449 and C=10.714285714285715 : train_acc: 0.967391304347826, validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=10.918367346938776
                                                       : train_acc: 0.967391304347826, validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=11.122448979591837
                                                       : train_acc: 0.967391304347826 , validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=11.326530612244898
                                                       : train_acc: 0.9695652173913043, validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=11.53061224489796 : train_acc: 0.9717391304347827 , validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=11.73469387755102
                                                      : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
                                                       : train_acc: 0.9717391304347827 , validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=11.938775510204081
for gamma=0.328265306122449 and C=12.142857142857142
                                                       : train acc: 0.9717391304347827, validation acc: 0.7337662337662337
for gamma=0.328265306122449 and C=12.346938775510203 : train_acc: 0.9739130434782609 , validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=12.551020408163264
                                                       : train_acc: 0.9739130434782609 , validation_acc: 0.7337662337662337
                                                       : train_acc: 0.9739130434782609, validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=12.755102040816327
for gamma=0.328265306122449 and C=12.959183673469388
                                                       : train acc: 0.9760869565217392, validation acc: 0.7337662337662337
for gamma=0.328265306122449 and C=13.16326530612245 : train_acc: 0.9760869565217392 , validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=13.36734693877551
                                                      : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
                                                       : train_acc: 0.9782608695652174 , validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=13.571428571428571
for gamma=0.328265306122449 and C=13.775510204081632
                                                       : train acc: 0.9782608695652174, validation acc: 0.7337662337662337
for gamma=0.328265306122449 and C=13.979591836734695
                                                       : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.328265306122449 and C=14.183673469387756
                                                       : train acc: 0.9782608695652174, validation acc: 0.7272727272727273
                                                       : train_acc: 0.9782608695652174 , validation_acc: 0.7272727272727273
for gamma=0.328265306122449 and C=14.387755102040817
for gamma=0.328265306122449 and C=14.591836734693878
                                                       : train_acc: 0.9782608695652174, validation_acc: 0.7272727272727273
                                                       : train_acc: 0.9782608695652174 , validation_acc:0.7272727272727273
for gamma=0.328265306122449 and C=14.795918367346939
for gamma=0.328265306122449 and C=15.0 : train acc: 0.9782608695652174, validation acc: 0.7207792207792207
for gamma=0.3383673469387755 and C=5.0 : train_acc: 0.9478260869565217 , validation_acc: 0.7532467532467533
for gamma=0.3383673469387755 and C=5.204081632653061
                                                      : train_acc: 0.95, validation_acc:0.7532467532467533
for gamma=0.3383673469387755 and C=5.408163265306122
                                                       : train_acc: 0.95, validation_acc: 0.7597402597402597
for gamma=0.3383673469387755 and C=5.612244897959184
                                                       : train_acc: 0.95, validation_acc: 0.7597402597402597
for gamma=0.3383673469387755 and C=5.816326530612245
                                                       : train acc: 0.95, validation acc: 0.7532467532467533
for gamma=0.3383673469387755 and C=6.020408163265306
                                                       : train_acc: 0.9543478260869566, validation_acc: 0.7532467532467533
                                                       : train_acc: 0.9543478260869566 , validation_acc:0.7402597402597403
for gamma=0.3383673469387755 and C=6.224489795918368
for gamma=0.3383673469387755 and C=6.428571428571429
                                                        train_acc: 0.9543478260869566, validation_acc:0.7402597402597403
for gamma=0.3383673469387755 and C=6.63265306122449 : train acc: 0.9543478260869566 , validation acc: 0.7402597402597403
for gamma=0.3383673469387755 and C=6.836734693877551
                                                       : train_acc: 0.9565217391304348 , validation_acc: 0.7402597402597403
for gamma=0.3383673469387755 and C=7.040816326530612
                                                       : train_acc: 0.9565217391304348 , validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=7.244897959183674
                                                       : train_acc: 0.9565217391304348, validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=7.448979591836735
                                                       : train_acc: 0.9565217391304348, validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=7.653061224489796
                                                       : train_acc: 0.9565217391304348 , validation_acc: 0.72727272727273
for gamma=0.3383673469387755 and C=7.857142857142858
                                                       : train acc: 0.9565217391304348, validation acc: 0.72727272727273
for gamma=0.3383673469387755 and C=8.061224489795919
                                                       : train_acc: 0.9565217391304348 , validation_acc: 0.72727272727273
for gamma=0.3383673469387755 and C=8.26530612244898 : train_acc: 0.9565217391304348 , validation_acc: 0.72727272727272727
for gamma=0.3383673469387755 and C=8.673469387755102
                                                       : train_acc: 0.9608695652173913, validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=8.877551020408163
                                                       : train_acc: 0.9608695652173913, validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=9.081632653061224
                                                       : train acc: 0.9630434782608696, validation acc: 0.7337662337662337
                                                       : train_acc: 0.9652173913043478 , validation_acc: 0.7272727272727273
for gamma=0.3383673469387755 and C=9.285714285714285
for gamma=0.3383673469387755 and C=9.489795918367347
                                                       : train_acc: 0.9652173913043478 , validation_acc: 0.7272727272727273
for gamma=0.3383673469387755 and C=9.693877551020408
                                                       : train_acc: 0.9652173913043478, validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=9.89795918367347 : train_acc: 0.9652173913043478 , validation_acc: 0.7337662337662337
: train_acc: 0.967391304347826 , validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=10.306122448979592
for gamma=0.3383673469387755 and C=10.510204081632654
                                                        : train_acc: 0.9695652173913043, validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=10.714285714285715
                                                        : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=10.918367346938776
                                                        : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=11.122448979591837
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for gamma=0.3383673469387755 and C=11.326530612244898
                                                        : train_acc: 0.9739130434782609 , validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=11.53061224489796 : train_acc: 0.9739130434782609 , validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=11.73469387755102 : train_acc: 0.9760869565217392 , validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=11.938775510204081
                                                        : train_acc: 0.9760869565217392, validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=12.142857142857142
                                                        : train_acc: 0.9760869565217392, validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=12.346938775510203
                                                        : train acc: 0.9760869565217392, validation acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=12.551020408163264
                                                        : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=12.755102040816327
                                                        : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=12.959183673469388 : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
```

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for gamma=0.3383673469387755 and C=13.16326530612245 : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=13.36734693877551 : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.3383673469387755 and C=13.571428571428571
                                                          : train_acc: 0.9782608695652174, validation_acc: 0.7272727272727273
for gamma=0.3383673469387755 and C=13.775510204081632
                                                          : train_acc: 0.9782608695652174, validation_acc: 0.7272727272727273
for gamma=0.3383673469387755 and C=13.979591836734695
                                                          : train_acc: 0.9782608695652174, validation_acc: 0.7272727272727273
for gamma=0.3383673469387755 and C=14.183673469387756
                                                          : train_acc: 0.9782608695652174, validation_acc: 0.7207792207792207
for gamma=0.3383673469387755 and C=14.387755102040817
                                                           : train_acc: 0.9782608695652174, validation_acc: 0.7207792207792207
for gamma=0.3383673469387755 and C=14.591836734693878
                                                          : train acc: 0.9782608695652174, validation acc: 0.7207792207792207
for gamma=0.3383673469387755 and C=14.795918367346939 : train_acc: 0.9782608695652174, validation_acc: 0.7207792207792207
for gamma=0.3383673469387755 and C=15.0 : train_acc: 0.9782608695652174 , validation_acc: 0.72727272727272727
for gamma=0.34846938775510206 and C=5.0 : train_acc: 0.95 , validation_acc: 0.7532467532467533
for gamma=0.34846938775510206 and C=5.204081632653061 : train_acc: 0.95 , validation_acc: 0.7597402597402597
for gamma=0.34846938775510206 and C=5.408163265306122
                                                          : train_acc: 0.95 , validation_acc: 0.7597402597402597
for gamma=0.34846938775510206 and C=5.612244897959184
                                                          : train_acc: 0.95, validation_acc: 0.7597402597402597
for gamma=0.34846938775510206 and C=5.816326530612245
                                                          : train acc: 0.9543478260869566, validation acc: 0.7532467532467533
for gamma=0.34846938775510206 and C=6.020408163265306
                                                          : train acc: 0.9543478260869566, validation acc: 0.7402597402597403
                                                          : train_acc: 0.9543478260869566 , validation_acc: 0.7402597402597403
for gamma=0.34846938775510206 and C=6.224489795918368
for gamma=0.34846938775510206 and C=6.428571428571429
                                                          : train_acc: 0.9565217391304348, validation_acc: 0.7402597402597403
for gamma=0.34846938775510206 and C=6.63265306122449 : train_acc: 0.9565217391304348 , validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=6.836734693877551
                                                          : train acc: 0.9565217391304348, validation acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=7.040816326530612
                                                          : train_acc: 0.9586956521739131, validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=7.244897959183674 for gamma=0.34846938775510206 and C=7.448979591836735
                                                          : train_acc: 0.9565217391304348, validation_acc: 0.72727272727273
                                                          : train_acc: 0.9565217391304348, validation_acc:0.72727272727273
for gamma=0.34846938775510206 and C=7.653061224489796
                                                          : train acc: 0.9565217391304348, validation acc: 0.72727272727273
for gamma=0.34846938775510206 and C=7.857142857142858
                                                          : train_acc: 0.9565217391304348 , validation_acc: 0.7272727272727273
for gamma=0.34846938775510206 and C=8.061224489795919
                                                          : train acc: 0.9608695652173913, validation acc: 0.7272727272727273
for gamma=0.34846938775510206 and C=8.26530612244898 : train_acc: 0.9608695652173913 , validation_acc: 0.72727272727272727
for gamma=0.34846938775510206 and C=8.46938775510204 : train_acc: 0.9630434782608696 , validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=8.673469387755102 : train_acc: 0.9652173913043478 , validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=8.877551020408163
                                                          : train acc: 0.9652173913043478, validation acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=9.081632653061224
                                                          : train_acc: 0.9652173913043478, validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=9.285714285714285
                                                           : train_acc: 0.9652173913043478, validation_acc: 0.7337662337662337
                                                          : train_acc: 0.967391304347826 , validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=9.489795918367347
for gamma=0.34846938775510206 and C=9.693877551020408
                                                          : train_acc: 0.9695652173913043, validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=9.89795918367347 : train_acc: 0.9717391304347827 , validation_acc:0.7337662337662337
for gamma=0.34846938775510206 and C=10.10204081632653 : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=10.306122448979592
                                                           : train_acc: 0.9717391304347827 , validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=10.510204081632654
                                                           : train_acc: 0.9739130434782609, validation_acc: 0.7337662337662337
                                                           : train acc: 0.9739130434782609 , validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=10.714285714285715
for gamma=0.34846938775510206 and C=10.918367346938776
                                                           : train_acc: 0.9760869565217392 , validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=11.122448979591837
                                                           : train\_acc: 0.9760869565217392 \ , \ validation\_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=11.326530612244898
                                                           : train_acc: 0.9760869565217392, validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=11.53061224489796 : train_acc: 0.9760869565217392 , validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=11.73469387755102 : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=11.938775510204081
                                                           : train acc: 0.9782608695652174, validation acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=12.142857142857142
                                                           : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=12.346938775510203 : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=12.551020408163264 : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=12.755102040816327
                                                           : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=12.959183673469388
                                                           : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=13.16326530612245 : train acc: 0.9782608695652174, validation acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=13.36734693877551
                                                          : train_acc: 0.9782608695652174, validation_acc: 0.72727272727273
for gamma=0.34846938775510206 and C=13.571428571428571
                                                           : train_acc: 0.9782608695652174, validation_acc: 0.7272727272727273
for gamma=0.34846938775510206 and C=13.775510204081632
                                                           : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=13.979591836734695 : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=14.183673469387756 : train_acc: 0.9782608695652174 , validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=14.387755102040817
                                                           : train_acc: 0.9804347826086957, validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=14.591836734693878
                                                           : train_acc: 0.9804347826086957, validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=14.795918367346939
                                                           : train_acc: 0.9804347826086957, validation_acc: 0.7337662337662337
for gamma=0.34846938775510206 and C=15.0 : train_acc: 0.9826086956521739 , validation_acc: 0.7402597402597403
for gamma=0.35857142857142854 and C=5.0 : train_acc: 0.95 , validation_acc: 0.7597402597402597
for gamma=0.35857142857142854 and C=5.204081632653061 : train_acc: 0.95 , validation_acc: 0.7597402597402597
for gamma=0.35857142857142854 and C=5.408163265306122
                                                          : train_acc: 0.9543478260869566, validation_acc: 0.7597402597402597
for gamma=0.35857142857142854 and C=5.612244897959184
                                                          : train_acc: 0.9543478260869566, validation_acc: 0.7532467532467533
for gamma=0.35857142857142854 and C=5.816326530612245
                                                           : train_acc: 0.9565217391304348 , validation_acc: 0.7467532467532467
for gamma=0.35857142857142854 and C=6.020408163265306
                                                          : train_acc: 0.9565217391304348, validation_acc: 0.7402597402597403
for gamma=0.35857142857142854 and C=6.224489795918368
                                                          : train acc: 0.9565217391304348, validation acc: 0.7337662337662337
                                                          : train_acc: 0.9565217391304348 , validation_acc: 0.7337662337662337
for gamma=0.35857142857142854 and C=6.428571428571429
for gamma=0.35857142857142854 and C=6.63265306122449 : train_acc: 0.9586956521739131 , validation_acc: 0.7337662337662337
for gamma=0.35857142857142854 and C=6.836734693877551 : train_acc: 0.9586956521739131, validation_acc: 0.72727272727272727
```

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for gamma=0.35857142857142854 and C=7.040816326530612 : train_acc: 0.9565217391304348 , validation_acc: 0.72727272727272727
for gamma=0.35857142857142854 and C=7.244897959183674 : train_acc: 0.9565217391304348 , validation_acc: 0.7272727272727272727
for gamma=0.35857142857142854 and C=7.448979591836735
                                                          : train_acc: 0.9565217391304348 , validation_acc: 0.72727272727273
for gamma=0.35857142857142854 and C=7.653061224489796
                                                         : train_acc: 0.9608695652173913 , validation_acc: 0.7272727272727273
for gamma=0.35857142857142854 and C=7.857142857142858
                                                          : train_acc: 0.9630434782608696 , validation_acc: 0.72727272727273
for gamma=0.35857142857142854 and C=8.061224489795919
                                                          : train_acc: 0.9652173913043478, validation_acc: 0.72727272727273
for gamma=0.35857142857142854 and C=8.26530612244898 : train_acc: 0.9652173913043478 , validation_acc: 0.7337662337662337
for gamma=0.35857142857142854 and C=8.46938775510204 : train acc: 0.9652173913043478, validation acc: 0.7337662337662337
for gamma=0.35857142857142854 and C=8.673469387755102 :train_acc: 0.9652173913043478, validation_acc: 0.7402597402597403
for gamma=0.35857142857142854 and C=8.877551020408163
                                                          : train_acc: 0.967391304347826 , validation_acc: 0.7402597402597403
for gamma=0.35857142857142854 and C=9.081632653061224
                                                          : train_acc: 0.9695652173913043, validation_acc: 0.7337662337662337
for gamma=0.35857142857142854 and C=9.285714285714285
                                                          : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
                                                          : train_acc: 0.9717391304347827 , validation_acc: 0.7337662337662337
for gamma=0.35857142857142854 and C=9.489795918367347
for gamma=0.35857142857142854 and C=9.693877551020408
                                                          : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
for gamma=0.35857142857142854 and C=9.89795918367347 : train_acc: 0.9739130434782609 , validation_acc: 0.7337662337662337
for gamma=0.35857142857142854 and C=10.10204081632653 : train acc: 0.9760869565217392 , validation acc: 0.7337662337662337
for gamma=0.35857142857142854 and C=10.306122448979592 : train_acc: 0.9760869565217392 , validation_acc: 0.7337662337662337
                                                           : train_acc: 0.9760869565217392, validation_acc: 0.7402597402597403
for gamma=0.35857142857142854 and C=10.510204081632654
for gamma=0.35857142857142854 and C=10.714285714285715
                                                           : train_acc: 0.9760869565217392, validation_acc: 0.7402597402597403
for gamma=0.35857142857142854 and C=10.918367346938776
                                                           : train acc: 0.9782608695652174 , validation_acc: 0.7402597402597403
for gamma=0.35857142857142854 and C=11.122448979591837
                                                           : train_acc: 0.9782608695652174, validation_acc: 0.7402597402597403
for gamma=0.35857142857142854 and C=11.326530612244898
                                                           : train_acc: 0.9782608695652174 , validation_acc: 0.7402597402597403
for gamma=0.35857142857142854 and C=11.53061224489796 : train_acc: 0.9782608695652174 , validation_acc: 0.7402597402597403
for gamma=0.35857142857142854 and C=11.73469387755102 : train acc: 0.9782608695652174, validation acc: 0.7402597402597403
for gamma=0.35857142857142854 and C=11.938775510204081 : train_acc: 0.9782608695652174, validation_acc: 0.7402597402597403
for gamma=0.35857142857142854 and C=12.142857142857142
                                                           : train acc: 0.9782608695652174, validation acc: 0.7402597402597403
for gamma=0.35857142857142854 and C=12.346938775510203
                                                           : train_acc: 0.9782608695652174 , validation_acc: 0.7337662337662337
for gamma=0.35857142857142854 and C=12.551020408163264
                                                           : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
                                                           : train_acc: 0.9782608695652174 , validation_acc: 0.7337662337662337
for gamma=0.35857142857142854 and C=12.755102040816327
for gamma=0.35857142857142854 and C=12.959183673469388
                                                           : train acc: 0.9804347826086957, validation acc: 0.7337662337662337
for gamma=0.35857142857142854 and C=13.16326530612245 : train_acc: 0.9804347826086957 , validation_acc: 0.7337662337662337
for gamma=0.35857142857142854 and C=13.36734693877551
                                                          : train_acc: 0.9804347826086957, validation_acc: 0.7337662337662337
                                                           : train_acc: 0.9804347826086957, validation_acc: 0.7337662337662337
for gamma=0.35857142857142854 and C=13.571428571428571
for gamma=0.35857142857142854 and C=13.775510204081632
                                                           : train_acc: 0.9804347826086957, validation_acc: 0.72727272727273
                                                           : train_acc: 0.9826086956521739 , validation_acc: 0.7272727272727273
for gamma=0.35857142857142854 and C=13.979591836734695
for gamma=0.35857142857142854 and C=14.183673469387756
                                                           : train_acc: 0.9826086956521739, validation_acc: 0.72727272727273
for gamma=0.35857142857142854 and C=14.387755102040817
                                                           : train_acc: 0.9847826086956522 , validation_acc: 0.7272727272727273
for gamma=0.35857142857142854 and C=14.591836734693878
                                                           : train_acc: 0.9847826086956522, validation_acc: 0.72727272727273
for gamma=0.35857142857142854 and C=14.795918367346939 : train_acc: 0.9847826086956522 , validation_acc: 0.72727272727272727
for \ gamma = 0.35857142857142854 \ and \ C = 15.0 \\ \ : train\_acc: 0.9847826086956522 \ , validation\_acc: 0.7272727272727272733 \ . \\
for gamma=0.3686734693877551 and C=5.0 : train_acc: 0.95 , validation_acc: 0.7532467532467533
for gamma=0.3686734693877551 and C=5.204081632653061
                                                        : train_acc: 0.9543478260869566 , validation_acc: 0.7467532467532467
for gamma=0.3686734693877551 and C=5.408163265306122
                                                        : train_acc: 0.9565217391304348, validation_acc: 0.7467532467532467
for gamma=0.3686734693877551 and C=5.612244897959184
                                                        : train_acc: 0.9565217391304348 , validation_acc: 0.7402597402597403
for gamma=0.3686734693877551 and C=5.816326530612245
                                                         : train_acc: 0.9565217391304348, validation_acc: 0.7337662337662337
for gamma=0.3686734693877551 and C=6.020408163265306
                                                         : train_acc: 0.9586956521739131 , validation_acc: 0.72727272727273
                                                        : train acc: 0.9586956521739131 , validation_acc:0.7272727272727273
for gamma=0.3686734693877551 and C=6.224489795918368
for gamma=0.3686734693877551 and C=6.428571428571429
                                                        : train_acc: 0.9586956521739131 , validation_acc: 0.72727272727273
for gamma=0.3686734693877551 and C=6.63265306122449 : train_acc: 0.9565217391304348 , validation_acc: 0.7207792207792207
for gamma=0.3686734693877551 and C=6.836734693877551
                                                         : train_acc: 0.9565217391304348, validation_acc: 0.7207792207792207
for gamma=0.3686734693877551 and C=7.040816326530612
                                                        : train acc: 0.9586956521739131, validation acc: 0.7207792207792207
                                                        : train_acc: 0.9630434782608696 , validation_acc: 0.7207792207792207
for gamma=0.3686734693877551 and C=7.244897959183674
for gamma=0.3686734693877551 and C=7.448979591836735
                                                         : train_acc: 0.9630434782608696 , validation_acc: 0.7207792207792207
for gamma=0.3686734693877551 and C=7.653061224489796
                                                         : train_acc: 0.9652173913043478, validation_acc: 0.7207792207792207
for gamma=0.3686734693877551 and C=7.857142857142858
                                                        : train_acc: 0.9652173913043478 , validation_acc: 0.727272727272727
for gamma=0.3686734693877551 and C=8.061224489795919
                                                        : train_acc: 0.9652173913043478, validation_acc: 0.72727272727273
for gamma=0.3686734693877551 and C=8.26530612244898 : train acc: 0.967391304347826, validation acc: 0.7272727272727273
for gamma=0.3686734693877551 and C=8.46938775510204 : train_acc: 0.9695652173913043 , validation_acc: 0.7337662337662337
for gamma=0.3686734693877551 and C=8.673469387755102
                                                        : train_acc: 0.9717391304347827 , validation_acc: 0.7337662337662337
for gamma=0.3686734693877551 and C=8.877551020408163
                                                         : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
for gamma=0.3686734693877551 and C=9.081632653061224
                                                         : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
for gamma=0.3686734693877551 and C=9.285714285714285
                                                         : train_acc: 0.9739130434782609 , validation_acc: 0.7337662337662337
for gamma=0.3686734693877551 and C=9.489795918367347
                                                         : train_acc: 0.9760869565217392, validation_acc: 0.7337662337662337
for gamma=0.3686734693877551 and C=9.693877551020408 : train_acc: 0.9760869565217392, validation_acc: 0.7337662337662337
for gamma=0.3686734693877551 and C=9.89795918367347 : train_acc: 0.9760869565217392 , validation_acc: 0.7337662337662337
for gamma=0.3686734693877551 and C=10.10204081632653 : train_acc: 0.9760869565217392, validation_acc: 0.7337662337662337
for gamma=0.3686734693877551 and C=10.306122448979592 : train acc: 0.9782608695652174, validation acc: 0.7337662337662337
for gamma=0.3686734693877551 and C=10.510204081632654
                                                          : train_acc: 0.9782608695652174 , validation_acc: 0.7337662337662337
for gamma=0.3686734693877551 and C=10.714285714285715
                                                          : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.3686734693877551 and C=10.918367346938776 : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
```

```
for gamma=0.3686734693877551 and C=11.122448979591837 : train_acc: 0.9782608695652174 , validation_acc: 0.7337662337662337
for gamma=0.3686734693877551 and C=11.326530612244898 : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.3686734693877551 and C=11.53061224489796 : train_acc: 0.9782608695652174, validation_acc: 0.727272727272727
for gamma=0.3686734693877551 and C=11.73469387755102 : train_acc: 0.9782608695652174 , validation_acc: 0.7337662337662337
for gamma=0.3686734693877551 and C=11.938775510204081 :train_acc: 0.9804347826086957 , validation_acc: 0.727272727272727
for gamma=0.3686734693877551 and C=12.142857142857142
                                                        : train_acc: 0.9804347826086957, validation_acc: 0.7207792207792207
for gamma=0.3686734693877551 and C=12.346938775510203
                                                         : train_acc: 0.9804347826086957, validation_acc: 0.7207792207792207
                                                         : train acc: 0.9804347826086957, validation acc: 0.7207792207792207
for gamma=0.3686734693877551 and C=12.551020408163264
for gamma=0.3686734693877551 and C=12.755102040816327
                                                         : train_acc: 0.9804347826086957, validation_acc: 0.7207792207792207
for gamma=0.3686734693877551 and C=12.959183673469388
                                                         : train_acc: 0.9826086956521739, validation_acc: 0.7207792207792207
for gamma=0.3686734693877551 and C=13.16326530612245 : train_acc: 0.9826086956521739 , validation_acc: 0.7207792207792207
for gamma=0.3686734693877551 and C=13.36734693877551 : train_acc: 0.9826086956521739 , validation_acc: 0.7207792207792207
                                                         : train_acc: 0.9847826086956522 , validation_acc:0.7207792207792207
for gamma=0.3686734693877551 and C=13.571428571428571
for gamma=0.3686734693877551 and C=13.775510204081632
                                                         : train_acc: 0.9847826086956522, validation_acc: 0.7272727272727273
for gamma=0.3686734693877551 and C=13.979591836734695
                                                         : train acc: 0.9847826086956522, validation acc: 0.72727272727273
for gamma=0.3686734693877551 and C=14.183673469387756
                                                        : train acc: 0.9847826086956522, validation acc: 0.7272727272727273
                                                        : train_acc: 0.9847826086956522 , validation_acc: 0.7272727272727273
for gamma=0.3686734693877551 and C=14.387755102040817
for gamma=0.3686734693877551 and C=14.591836734693878
                                                        : train_acc: 0.9869565217391304 , validation_acc: 0.7272727272727273
for gamma=0.3686734693877551 and C=14.795918367346939 : train_acc: 0.9869565217391304, validation_acc: 0.72727272727272727
for gamma=0.3686734693877551 and C=15.0 : train_acc: 0.9869565217391304 , validation_acc: 0.72727272727272727
for gamma=0.3787755102040816 and C=5.0 : train_acc: 0.9565217391304348 , validation_acc: 0.7467532467532467
for gamma=0.3787755102040816 and C=5.204081632653061
                                                       : train_acc: 0.9565217391304348, validation_acc: 0.7467532467532467
for gamma=0.3787755102040816 and C=5.408163265306122
                                                        : train_acc: 0.9586956521739131, validation_acc: 0.7402597402597403
for gamma=0.3787755102040816 and C=5.612244897959184
                                                       : train acc: 0.9586956521739131, validation acc: 0.7337662337662337
for gamma=0.3787755102040816 and C=5.816326530612245
                                                       : train_acc: 0.9586956521739131 , validation_acc:0.7272727272727273
for gamma=0.3787755102040816 and C=6.020408163265306
                                                        : train acc: 0.9586956521739131, validation acc: 0.72727272727273
                                                        : train_acc: 0.9586956521739131 , validation_acc: 0.7207792207792207
for gamma=0.3787755102040816 and C=6.224489795918368
for gamma=0.3787755102040816 and C=6.428571428571429
                                                        : train_acc: 0.9565217391304348, validation_acc: 0.7207792207792207
for gamma=0.3787755102040816 and C=6.63265306122449 : train_acc: 0.9586956521739131 , validation_acc: 0.7207792207792207
for gamma=0.3787755102040816 and C=6.836734693877551
                                                        : train acc: 0.9630434782608696, validation acc: 0.7207792207792207
for gamma=0.3787755102040816 and C=7.040816326530612
                                                        : train_acc: 0.9630434782608696 , validation_acc: 0.7207792207792207
for gamma=0.3787755102040816 and C=7.244897959183674
                                                        : train_acc: 0.9652173913043478, validation_acc: 0.7207792207792207
for gamma=0.3787755102040816 and C=7.448979591836735
                                                        : train_acc: 0.9652173913043478 , validation_acc: 0.7272727272727273
for gamma=0.3787755102040816 and C=7.653061224489796
                                                        : train_acc: 0.9652173913043478, validation_acc: 0.7272727272727273
for gamma=0.3787755102040816 and C=7.857142857142858
                                                        : train_acc: 0.9695652173913043 , validation_acc: 0.7272727272727273
for gamma=0.3787755102040816 and C=8.061224489795919
                                                        : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
for gamma=0.3787755102040816 and C=8.46938775510204
                                                       : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
for gamma=0.3787755102040816 and C=8.673469387755102
                                                       : train acc: 0.9760869565217392, validation acc: 0.7337662337662337
for gamma=0.3787755102040816 and C=8.877551020408163
                                                       : train_acc: 0.9760869565217392 , validation_acc: 0.7337662337662337
for gamma=0.3787755102040816 and C=9.081632653061224
                                                        : train_acc: 0.9760869565217392 , validation_acc: 0.7337662337662337
for gamma=0.3787755102040816 and C=9.285714285714285
                                                        : train_acc: 0.9760869565217392, validation_acc: 0.7337662337662337
for gamma=0.3787755102040816 and C=9.489795918367347
                                                        : train_acc: 0.9760869565217392, validation_acc: 0.7337662337662337
for gamma=0.3787755102040816 and C=9.693877551020408
                                                       : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.3787755102040816 and C=9.89795918367347 : train_acc: 0.9782608695652174, validation_acc: 0.7337662337662337
for gamma=0.3787755102040816 and C=10.10204081632653
                                                       : train_acc: 0.9782608695652174, validation_acc: 0.7272727272727273
for gamma=0.3787755102040816 and C=10.306122448979592
                                                        : train acc: 0.9782608695652174, validation acc: 0.7272727272727273
for gamma=0.3787755102040816 and C=10.510204081632654
                                                         : train_acc: 0.9782608695652174, validation_acc: 0.72727272727273
for gamma=0.3787755102040816 and C=10.714285714285715
                                                         : train_acc: 0.9782608695652174, validation_acc: 0.72727272727273
for gamma=0.3787755102040816 and C=10.918367346938776
                                                         : train_acc: 0.9804347826086957, validation_acc: 0.7337662337662337
for gamma=0.3787755102040816 and C=11.122448979591837
                                                         : train acc: 0.9804347826086957, validation acc: 0.7337662337662337
                                                         : train_acc: 0.9804347826086957, validation_acc: 0.7272727272727273
for gamma=0.3787755102040816 and C=11.326530612244898
for gamma=0.3787755102040816 and C=11.53061224489796
                                                       : train_acc: 0.9804347826086957, validation_acc: 0.7207792207792207
for gamma=0.3787755102040816 and C=11.73469387755102
                                                       : train_acc: 0.9804347826086957, validation_acc: 0.7207792207792207
for gamma=0.3787755102040816 and C=11.938775510204081
                                                        : train_acc: 0.9826086956521739 , validation_acc: 0.7207792207792207
for gamma=0.3787755102040816 and C=12.142857142857142
                                                         : train_acc: 0.9826086956521739 , validation_acc: 0.7207792207792207
                                                         : train_acc: 0.9826086956521739 , validation_acc: 0.7207792207792207
for gamma=0.3787755102040816 and C=12.346938775510203
for gamma=0.3787755102040816 and C=12.551020408163264
                                                         : train_acc: 0.9826086956521739, validation_acc: 0.7207792207792207
for gamma=0.3787755102040816 and C=12.755102040816327
                                                         : train_acc: 0.9826086956521739, validation_acc: 0.7207792207792207
for gamma=0.3787755102040816 and C=12.959183673469388
                                                         : train_acc: 0.9847826086956522 , validation_acc:0.7207792207792207
for gamma=0.3787755102040816 and C=13.16326530612245
                                                        : train_acc: 0.9847826086956522, validation_acc: 0.72727272727273
                                                       : train_acc: 0.9847826086956522 , validation_acc: 0.7272727272727273
for gamma=0.3787755102040816 and C=13.36734693877551
for gamma=0.3787755102040816 and C=13.571428571428571
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.72727272727273
for gamma=0.3787755102040816 and C=13.775510204081632
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.72727272727273
for gamma=0.3787755102040816 and C=13.979591836734695
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.72727272727273
for gamma=0.3787755102040816 and C=14.183673469387756
                                                        : train_acc: 0.9869565217391304, validation_acc: 0.7272727272727273
for gamma=0.3787755102040816 and C=14.387755102040817
                                                         : train acc: 0.9869565217391304, validation acc: 0.7207792207792207
for gamma=0.3787755102040816 and C=14.591836734693878
                                                         : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.3787755102040816 and C=14.795918367346939
                                                        : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.3787755102040816 and C=15.0 : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
```

```
for gamma=0.38887755102040816 and C=5.0 : train_acc: 0.9586956521739131, validation_acc: 0.7467532467532467
for gamma=0.38887755102040816 and C=5.204081632653061 : train_acc: 0.9586956521739131 , validation_acc: 0.7402597402597403
for gamma=0.38887755102040816 and C=5.408163265306122
                                                        : train_acc: 0.9586956521739131, validation_acc: 0.7337662337662337
for gamma=0.38887755102040816 and C=5.612244897959184
                                                        : train_acc: 0.9586956521739131, validation_acc: 0.7272727272727273
for gamma=0.38887755102040816 and C=5.816326530612245
                                                        : train_acc: 0.9586956521739131, validation_acc: 0.72727272727273
for gamma=0.38887755102040816 and C=6.020408163265306
                                                        : train_acc: 0.9586956521739131, validation_acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=6.224489795918368
                                                        : train_acc: 0.9608695652173913 , validation_acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=6.428571428571429
                                                        : train acc: 0.9608695652173913, validation acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=6.63265306122449 : train_acc: 0.9630434782608696 , validation_acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=6.836734693877551
                                                        : train_acc: 0.9630434782608696, validation_acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=7.040816326530612
                                                        : train_acc: 0.9652173913043478, validation_acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=7.244897959183674
                                                        : train_acc: 0.9652173913043478, validation_acc:0.72727272727273
for gamma=0.38887755102040816 and C=7.448979591836735
                                                        : train_acc: 0.9695652173913043 , validation_acc:0.72727272727273
for gamma=0.38887755102040816 and C=7.653061224489796
                                                        : train_acc: 0.9717391304347827, validation_acc: 0.72727272727273
                                                        : train_acc: 0.9717391304347827, validation_acc: 0.7337662337662337
for gamma=0.38887755102040816 and C=7.857142857142858
for gamma=0.38887755102040816 and C=8.061224489795919
                                                        : train acc: 0.9739130434782609, validation acc: 0.7337662337662337
for gamma=0.38887755102040816 and C=8.26530612244898 : train_acc: 0.9760869565217392 , validation_acc: 0.7337662337662337
                                                       : train_acc: 0.9760869565217392, validation_acc: 0.7337662337662337
for gamma=0.38887755102040816 and C=8.46938775510204
for gamma=0.38887755102040816 and C=8.673469387755102
                                                        : train_acc: 0.9760869565217392, validation_acc: 0.7337662337662337
for gamma=0.38887755102040816 and C=8.877551020408163
                                                        : train acc: 0.9760869565217392, validation acc: 0.7272727272727273
for gamma=0.38887755102040816 and C=9.081632653061224
                                                        : train_acc: 0.9782608695652174, validation_acc: 0.7272727272727273
for gamma=0.38887755102040816 and C=9.285714285714285
                                                        : train_acc: 0.9782608695652174, validation_acc: 0.7272727272727273
for gamma=0.38887755102040816 and C=9.489795918367347
                                                        : train_acc: 0.9782608695652174, validation_acc: 0.72727272727273
for gamma=0.38887755102040816 and C=9.693877551020408
                                                        : train acc: 0.9782608695652174, validation acc: 0.72727272727273
for gamma=0.38887755102040816 and C=10.10204081632653
                                                        : train acc: 0.9804347826086957, validation acc: 0.72727272727273
for gamma=0.38887755102040816 and C=10.306122448979592
                                                         : train_acc: 0.9804347826086957 , validation_acc: 0.7337662337662337
for gamma=0.38887755102040816 and C=10.510204081632654
                                                         : train_acc: 0.9804347826086957, validation_acc: 0.7337662337662337
for gamma=0.38887755102040816 and C=10.714285714285715
                                                         : train_acc: 0.9804347826086957, validation_acc: 0.7337662337662337
for gamma=0.38887755102040816 and C=10.918367346938776
                                                         : train acc: 0.9826086956521739, validation acc: 0.72727272727273
for gamma=0.38887755102040816 and C=11.122448979591837
                                                         : train_acc: 0.9826086956521739 , validation_acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=11.326530612244898
                                                         : train_acc: 0.9826086956521739, validation_acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=11.53061224489796 : train_acc: 0.9826086956521739 , validation_acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=11.73469387755102
                                                        : train_acc: 0.9826086956521739, validation_acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=11.938775510204081
                                                         : train_acc: 0.9826086956521739, validation_acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=12.142857142857142
                                                         : train_acc: 0.9826086956521739, validation_acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=12.346938775510203
                                                         : train_acc: 0.9847826086956522 , validation_acc:0.7207792207792207
for gamma=0.38887755102040816 and C=12.551020408163264
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
                                                         : train acc: 0.9869565217391304 , validation_acc: 0.7272727272727273
for gamma=0.38887755102040816 and C=12.755102040816327
for gamma=0.38887755102040816 and C=12.959183673469388 : train_acc: 0.9869565217391304, validation_acc: 0.72727272727272727
for gamma=0.38887755102040816 and C=13.36734693877551
                                                        : train_acc: 0.9869565217391304 , validation_acc: 0.72727272727273
for gamma=0.38887755102040816 and C=13.571428571428571 : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=13.775510204081632
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=13.979591836734695
                                                         : train acc: 0.9869565217391304, validation acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=14.183673469387756
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
                                                        : train acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=14.387755102040817
for gamma=0.38887755102040816 and C=14.591836734693878 : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=14.795918367346939
                                                        : train acc: 0.9869565217391304, validation acc: 0.7207792207792207
for gamma=0.38887755102040816 and C=15.0 : train_acc: 0.9891304347826086 , validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=5.0 : train acc: 0.9586956521739131, validation acc: 0.7402597402597403
                                                      : train_acc: 0.9586956521739131 , validation_acc: 0.7337662337662337
for gamma=0.3989795918367347 and C=5.204081632653061
for gamma=0.3989795918367347 and C=5.408163265306122
                                                       : train_acc: 0.9586956521739131, validation_acc: 0.72727272727273
for gamma=0.3989795918367347 and C=5.612244897959184
                                                       : train_acc: 0.9586956521739131 , validation_acc: 0.7272727272727273
for gamma=0.3989795918367347 and C=5.816326530612245
                                                      : train_acc: 0.9608695652173913, validation_acc: 0.7207792207792207
                                                      : train_acc: 0.9608695652173913 , validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=6.020408163265306
                                                       : train_acc: 0.9630434782608696 , validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=6.224489795918368
for gamma=0.3989795918367347 and C=6.428571428571429
                                                       : train_acc: 0.9630434782608696, validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=6.63265306122449 : train_acc: 0.9652173913043478 , validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=6.836734693877551
                                                       : train_acc: 0.9652173913043478, validation_acc: 0.7272727272727273
for gamma=0.3989795918367347 and C=7.040816326530612
                                                       train_acc: 0.9695652173913043, validation_acc:0.7272727272727273
for gamma=0.3989795918367347 and C=7.244897959183674
                                                       : train_acc: 0.9717391304347827 , validation_acc: 0.7272727272727273
for gamma=0.3989795918367347 and C=7.448979591836735
                                                       : train_acc: 0.9717391304347827, validation_acc: 0.72727272727273
for gamma=0.3989795918367347 and C=7.653061224489796
                                                       : train_acc: 0.9760869565217392, validation_acc: 0.7337662337662337
for gamma=0.3989795918367347 and C=7.857142857142858
                                                       : train_acc: 0.9760869565217392, validation_acc: 0.7272727272727273
for gamma=0.3989795918367347 and C=8.061224489795919
                                                       : train_acc: 0.9760869565217392, validation_acc: 0.72727272727273
for gamma=0.3989795918367347 and C=8.26530612244898 : train acc: 0.9760869565217392 , validation acc: 0.727272727272727
for gamma=0.3989795918367347 and C=8.46938775510204
                                                     : train_acc: 0.9760869565217392 , validation_acc: 0.7272727272727273
for gamma=0.3989795918367347 and C=8.673469387755102
                                                       : train_acc: 0.9782608695652174, validation_acc: 0.7272727272727273
for gamma=0.3989795918367347 and C=8.877551020408163 : train_acc: 0.9782608695652174, validation_acc: 0.72727272727272727
```

```
for gamma=0.3989795918367347 and C=9.081632653061224 : train_acc: 0.9782608695652174, validation_acc: 0.7272727272727272727
for gamma=0.3989795918367347 and C=9.285714285714285 : train_acc: 0.9804347826086957 , validation_acc: 0.72727272727272727
for gamma=0.3989795918367347 and C=9.489795918367347
                                                        : train_acc: 0.9804347826086957, validation_acc: 0.72727272727273
for gamma=0.3989795918367347 and C=9.693877551020408
                                                       : train_acc: 0.9804347826086957, validation_acc: 0.7337662337662337
for gamma=0.3989795918367347 and C=9.89795918367347 : train_acc: 0.9804347826086957 , validation_acc: 0.7337662337662337
for gamma=0.3989795918367347 and C=10.10204081632653 : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.3989795918367347 and C=10.306122448979592
                                                         : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.3989795918367347 and C=10.510204081632654
                                                         : train acc: 0.9826086956521739, validation acc: 0.72727272727273
for gamma=0.3989795918367347 and C=10.714285714285715
                                                         : train_acc: 0.9826086956521739 , validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=10.918367346938776
                                                         : train_acc: 0.9826086956521739, validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=11.122448979591837
                                                         : train_acc: 0.9826086956521739, validation_acc: 0.7207792207792207
                                                         : train_acc: 0.9826086956521739 , validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=11.326530612244898
for gamma=0.3989795918367347 and C=11.53061224489796 : train_acc: 0.9826086956521739 , validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=11.73469387755102
                                                        : train_acc: 0.9847826086956522, validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=11.938775510204081
                                                         : train acc: 0.9869565217391304, validation acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=12.142857142857142
                                                         : train acc: 0.9869565217391304, validation acc: 0.7272727272727273
for gamma=0.3989795918367347 and C=12.346938775510203
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.72727272727273
for gamma=0.3989795918367347 and C=12.551020408163264
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7272727272727273
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=12.755102040816327
for gamma=0.3989795918367347 and C=12.959183673469388
                                                         : train acc: 0.9869565217391304, validation acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=13.16326530612245 : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=13.36734693877551
                                                        : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=13.571428571428571
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=13.775510204081632
                                                         : train acc: 0.9869565217391304, validation acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=13.979591836734695
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=14.183673469387756
                                                         : train acc: 0.9891304347826086, validation acc: 0.7207792207792207
                                                         : train_acc: 0.9891304347826086 , validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=14.387755102040817
for gamma=0.3989795918367347 and C=14.591836734693878
                                                         : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=14.795918367346939
                                                         : train_acc: 0.9891304347826086 , validation_acc: 0.7207792207792207
for gamma=0.3989795918367347 and C=15.0 : train acc: 0.9891304347826086, validation acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=5.0 : train_acc: 0.9586956521739131 , validation_acc: 0.7337662337662337
for gamma=0.4090816326530612 and C=5.204081632653061
                                                       : train_acc: 0.9586956521739131, validation_acc: 0.72727272727273
for gamma=0.4090816326530612 and C=5.408163265306122
                                                       : train_acc: 0.9608695652173913, validation_acc: 0.7272727272727273
for gamma=0.4090816326530612 and C=5.612244897959184
                                                        : train_acc: 0.9630434782608696 , validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=5.816326530612245
                                                        : train_acc: 0.9608695652173913, validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=6.020408163265306
                                                        : train_acc: 0.9630434782608696, validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=6.224489795918368
                                                        : train_acc: 0.9652173913043478 , validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=6.428571428571429
                                                        train_acc: 0.9652173913043478, validation_acc:0.7207792207792207
for gamma=0.4090816326530612 and C=6.63265306122449 : train_acc: 0.9695652173913043 , validation_acc: 0.727272727272727
for gamma=0.4090816326530612 and C=6.836734693877551
                                                       : train_acc: 0.9717391304347827 , validation_acc: 0.7272727272727273
                                                        : train_acc: 0.9739130434782609 , validation_acc: 0.7272727272727273
for gamma=0.4090816326530612 and C=7.040816326530612
for gamma=0.4090816326530612 and C=7.244897959183674
                                                        : train_acc: 0.9760869565217392 , validation_acc: 0.7272727272727273
for gamma=0.4090816326530612 and C=7.448979591836735
                                                       : train_acc: 0.9760869565217392, validation_acc: 0.7272727272727273
for gamma=0.4090816326530612 and C=7.653061224489796
                                                       : train_acc: 0.9760869565217392 , validation_acc: 0.72727272727273
for gamma=0.4090816326530612 and C=7.857142857142858
                                                        : train_acc: 0.9760869565217392, validation_acc: 0.72727272727273
for gamma=0.4090816326530612 and C=8.061224489795919
                                                        : train_acc: 0.9760869565217392 , validation_acc: 0.7272727272727273
for gamma=0.4090816326530612 and C=8.26530612244898 : train_acc: 0.9782608695652174, validation_acc: 0.72727272727272727
for gamma=0.4090816326530612 and C=8.673469387755102
                                                       : train_acc: 0.9804347826086957, validation_acc: 0.7272727272727273
for gamma=0.4090816326530612 and C=8.877551020408163
                                                        : train_acc: 0.9804347826086957, validation_acc: 0.72727272727273
for gamma=0.4090816326530612 and C=9.081632653061224
                                                        : train acc: 0.9804347826086957, validation acc: 0.7337662337662337
                                                        : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.4090816326530612 and C=9.285714285714285
for gamma=0.4090816326530612 and C=9.489795918367347
                                                        : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.4090816326530612 and C=9.693877551020408
                                                        : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.4090816326530612 and C=9.89795918367347 : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.4090816326530612 and C=10.10204081632653 : train_acc: 0.9826086956521739 , validation_acc: 0.7272727272727272727
                                                         : train_acc: 0.9826086956521739 , validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=10.306122448979592
for gamma=0.4090816326530612 and C=10.510204081632654
                                                         : train_acc: 0.9826086956521739, validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=10.714285714285715
                                                         : train_acc: 0.9826086956521739, validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=10.918367346938776
                                                         : train_acc: 0.9826086956521739 , validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=11.122448979591837
                                                         : train_acc: 0.9847826086956522, validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=11.326530612244898
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=11.53061224489796 : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=11.73469387755102
                                                       : train_acc: 0.9869565217391304, validation_acc: 0.72727272727273
for gamma=0.4090816326530612 and C=11.938775510204081
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=12.142857142857142
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=12.346938775510203
                                                         : train acc: 0.9869565217391304, validation acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=12.551020408163264
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=12.755102040816327
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=12.959183673469388
                                                        : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
```

```
for gamma=0.4090816326530612 and C=13.16326530612245 : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=13.36734693877551 : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=13.571428571428571
                                                          : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=13.775510204081632
                                                          : train_acc: 0.9891304347826086 , validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=13.979591836734695
                                                          : train_acc: 0.9891304347826086 , validation_acc: 0.7142857142857143
for gamma=0.4090816326530612 and C=14.183673469387756
                                                          : train_acc: 0.9891304347826086, validation_acc: 0.7142857142857143
for gamma=0.4090816326530612 and C=14.387755102040817
                                                          : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=14.591836734693878
                                                          : train acc: 0.9891304347826086, validation acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=14.795918367346939 : train_acc: 0.9891304347826086 , validation_acc: 0.7207792207792207
for gamma=0.4090816326530612 and C=15.0 : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=5.0 : train_acc: 0.9608695652173913 , validation_acc: 0.7272727272727273
for gamma=0.41918367346938773 and C=5.204081632653061 : train_acc: 0.9608695652173913 , validation_acc: 0.72727272727272727
for gamma=0.41918367346938773 and C=5.408163265306122
                                                          : train_acc: 0.9630434782608696 , validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=5.612244897959184
                                                          : train_acc: 0.9630434782608696, validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=5.816326530612245
                                                          : train acc: 0.9630434782608696, validation acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=6.020408163265306
                                                          : train acc: 0.9652173913043478, validation acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=6.224489795918368
                                                          : train_acc: 0.9695652173913043, validation_acc: 0.72727272727273
                                                          : train_acc: 0.9717391304347827, validation_acc: 0.72727272727273
for gamma=0.41918367346938773 and C=6.428571428571429
for gamma=0.41918367346938773 and C=6.63265306122449 : train_acc: 0.9739130434782609 , validation_acc: 0.72727272727272727
for gamma=0.41918367346938773 and C=6.836734693877551 : train acc: 0.9760869565217392, validation acc: 0.72727272727272727
for gamma=0.41918367346938773 and C=7.040816326530612
                                                          : train_acc: 0.9760869565217392 , validation_acc: 0.7272727272727273
for gamma=0.41918367346938773 and C=7.244897959183674 for gamma=0.41918367346938773 and C=7.448979591836735
                                                          : train_acc: 0.9760869565217392 , validation_acc: 0.7272727272727273
                                                          : train_acc: 0.9760869565217392, validation_acc: 0.72727272727273
for gamma=0.41918367346938773 and C=7.653061224489796
                                                          : train acc: 0.9760869565217392, validation acc: 0.72727272727273
for gamma=0.41918367346938773 and C=7.857142857142858
                                                          : train_acc: 0.9782608695652174, validation_acc: 0.7272727272727273
for gamma=0.41918367346938773 and C=8.061224489795919
                                                          : train acc: 0.9804347826086957, validation acc: 0.72727272727273
for gamma=0.41918367346938773 and C=8.26530612244898 : train_acc: 0.9804347826086957 , validation_acc: 0.72727272727272727
for gamma=0.41918367346938773 and C=8.46938775510204 : train_acc: 0.9804347826086957 , validation_acc: 0.7337662337662337
for gamma=0.41918367346938773 and C=8.673469387755102 : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.41918367346938773 and C=8.877551020408163
                                                          : train acc: 0.9826086956521739, validation acc: 0.7337662337662337
for gamma=0.41918367346938773 and C=9.081632653061224
                                                          : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.41918367346938773 and C=9.285714285714285
                                                          : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.41918367346938773 and C=9.489795918367347
                                                          : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.41918367346938773 and C=9.693877551020408
                                                          : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.41918367346938773 and C=9.89795918367347 : train_acc: 0.9826086956521739 , validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=10.10204081632653 : train_acc: 0.9826086956521739, validation_acc: 0.7207792207792207
                                                           : train_acc: 0.9847826086956522 , validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=10.306122448979592
for gamma=0.41918367346938773 and C=10.510204081632654
                                                           : train_acc: 0.9847826086956522, validation_acc: 0.7207792207792207
                                                           : train acc: 0.9847826086956522 , validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=10.714285714285715
for gamma=0.41918367346938773 and C=10.918367346938776 : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=11.122448979591837
                                                           : train_acc: 0.9869565217391304, validation_acc: 0.7142857142857143
for gamma=0.41918367346938773 and C=11.326530612244898
                                                           : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=11.53061224489796 : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=11.73469387755102 : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=11.938775510204081
                                                           : train acc: 0.9869565217391304, validation acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=12.142857142857142
                                                           : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=12.346938775510203 : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=12.551020408163264 : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=12.755102040816327
                                                           : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=12.959183673469388
                                                           : train_acc: 0.9891304347826086, validation_acc: 0.7142857142857143
for gamma=0.41918367346938773 and C=13.16326530612245 : train acc: 0.9891304347826086, validation acc: 0.7142857142857143
                                                          : train_acc: 0.9891304347826086 , validation_acc: 0.7142857142857143
for gamma=0.41918367346938773 and C=13.36734693877551
for gamma=0.41918367346938773 and C=13.571428571428571
                                                           : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=13.775510204081632
                                                           : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=13.979591836734695 : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=14.183673469387756 : train_acc: 0.9891304347826086 , validation_acc: 0.7207792207792207
                                                           : train_acc: 0.9891304347826086 , validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=14.387755102040817
for gamma=0.41918367346938773 and C=14.591836734693878
                                                           : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=14.795918367346939
                                                           : train_acc: 0.991304347826087, validation_acc: 0.7207792207792207
for gamma=0.41918367346938773 and C=15.0 : train_acc: 0.991304347826087 , validation_acc: 0.7207792207792207
for gamma=0.42928571428571427 and C=5.0 : train_acc: 0.9630434782608696, validation_acc: 0.72727272727272727
for gamma=0.42928571428571427 and C=5.204081632653061 : train_acc: 0.9630434782608696 , validation_acc: 0.7207792207792207
for gamma=0.42928571428571427 and C=5.408163265306122
                                                          : train_acc: 0.9652173913043478, validation_acc: 0.7207792207792207
                                                          : train_acc: 0.9630434782608696 , validation_acc:0.7207792207792207
for gamma=0.42928571428571427 and C=5.612244897959184
for gamma=0.42928571428571427 and C=5.816326530612245
                                                           : train_acc: 0.967391304347826 , validation_acc: 0.7207792207792207
for gamma=0.42928571428571427 and C=6.020408163265306
                                                          : train_acc: 0.9717391304347827, validation_acc: 0.72727272727273
for gamma=0.42928571428571427 and C=6.224489795918368
                                                          : train acc: 0.9717391304347827, validation acc: 0.72727272727273
for gamma=0.42928571428571427 and C=6.428571428571429
                                                          : train_acc: 0.9760869565217392 , validation_acc: 0.7272727272727273
for gamma=0.42928571428571427 and C=6.63265306122449 : train_acc: 0.9760869565217392 , validation_acc: 0.727272727272727
for gamma=0.42928571428571427 and C=6.836734693877551 : train_acc: 0.9760869565217392, validation_acc: 0.72727272727272727
```

```
for gamma=0.42928571428571427 and C=7.244897959183674 : train_acc: 0.9760869565217392 , validation_acc: 0.7272727272727272727
for gamma=0.42928571428571427 and C=7.448979591836735
                                                        : train_acc: 0.9782608695652174, validation_acc: 0.72727272727273
for gamma=0.42928571428571427 and C=7.653061224489796
                                                        : train_acc: 0.9804347826086957, validation_acc: 0.7272727272727273
for gamma=0.42928571428571427 and C=7.857142857142858
                                                        : train_acc: 0.9804347826086957, validation_acc: 0.72727272727273
for gamma=0.42928571428571427 and C=8.061224489795919
                                                        : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.42928571428571427 and C=8.26530612244898 : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.42928571428571427 and C=8.46938775510204 : train acc: 0.9826086956521739 , validation acc: 0.7337662337662337
for gamma=0.42928571428571427 and C=8.673469387755102 : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.42928571428571427 and C=8.877551020408163
                                                        : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.42928571428571427 and C=9.081632653061224
                                                        : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
                                                        : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.42928571428571427 and C=9.285714285714285
for gamma=0.42928571428571427 and C=9.489795918367347
                                                        : train_acc: 0.9826086956521739 , validation_acc:0.7272727272727273
for gamma=0.42928571428571427 and C=9.693877551020408
                                                        : train_acc: 0.9847826086956522, validation_acc: 0.7207792207792207
for gamma=0.42928571428571427 and C=9.89795918367347 : train_acc: 0.9847826086956522 , validation_acc:0.7207792207792207
for gamma=0.42928571428571427 and C=10.10204081632653 : train acc: 0.9847826086956522 , validation acc: 0.7207792207792207
for gamma=0.42928571428571427 and C=10.306122448979592 : train_acc: 0.9847826086956522 , validation_acc: 0.7207792207792207
for gamma=0.42928571428571427 and C=10.510204081632654
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7142857142857143
for gamma=0.42928571428571427 and C=10.714285714285715
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7142857142857143
for gamma=0.42928571428571427 and C=10.918367346938776
                                                         : train acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.42928571428571427 and C=11.122448979591837
for gamma=0.42928571428571427 and C=11.326530612244898
                                                         : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.42928571428571427 and C=11.53061224489796 : train_acc; 0.9869565217391304, validation_acc; 0.7207792207792207
for gamma=0.42928571428571427 and C=11.73469387755102 : train acc: 0.9869565217391304 , validation acc: 0.7207792207792207
for gamma=0.42928571428571427 and C=11.938775510204081 : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.42928571428571427 and C=12.142857142857142
                                                         : train acc: 0.9891304347826086, validation acc: 0.7142857142857143
for gamma=0.42928571428571427 and C=12.346938775510203
                                                         : train_acc: 0.9891304347826086 , validation_acc: 0.7142857142857143
for gamma=0.42928571428571427 and C=12.551020408163264
                                                         : train_acc: 0.9891304347826086, validation_acc: 0.7142857142857143
for gamma=0.42928571428571427 and C=12.755102040816327
                                                         : train_acc: 0.9891304347826086 , validation_acc: 0.7207792207792207
for gamma=0.42928571428571427 and C=12.959183673469388
                                                         : train acc: 0.9891304347826086, validation acc: 0.7207792207792207
for gamma=0.42928571428571427 and C=13.16326530612245 : train_acc: 0.9891304347826086 , validation_acc: 0.7207792207792207
for gamma=0.42928571428571427 and C=13.36734693877551
                                                        : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.42928571428571427 and C=13.571428571428571
                                                         : train_acc: 0.9891304347826086 , validation_acc: 0.7207792207792207
for gamma=0.42928571428571427 and C=13.775510204081632
                                                         : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.42928571428571427 and C=13.979591836734695
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.42928571428571427 and C=14.183673469387756
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.42928571428571427 and C=14.387755102040817
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.42928571428571427 and C=14.591836734693878
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.42928571428571427 and C=14.795918367346939 : train acc: 0.991304347826087, validation acc: 0.7142857142857143
for gamma=0.42928571428571427 and C=15.0 :train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=5.0 : train_acc: 0.9630434782608696 , validation_acc: 0.7207792207792207
for gamma=0.4393877551020408 and C=5.204081632653061 : train_acc: 0.9652173913043478 , validation_acc: 0.7207792207792207
for gamma=0.4393877551020408 and C=5.408163265306122
                                                      : train_acc: 0.967391304347826 , validation_acc: 0.7207792207792207
for gamma=0.4393877551020408 and C=5.612244897959184
                                                       : train_acc: 0.9695652173913043, validation_acc: 0.7207792207792207
for gamma=0.4393877551020408 and C=5.816326530612245
                                                       : train acc: 0.9717391304347827, validation acc: 0.72727272727273
for gamma=0.4393877551020408 and C=6.020408163265306
                                                       : train_acc: 0.9760869565217392 , validation_acc: 0.72727272727273
                                                       : train acc: 0.9760869565217392 , validation_acc: 0.7272727272727273
for gamma=0.4393877551020408 and C=6.224489795918368
for gamma=0.4393877551020408 and C=6.428571428571429
                                                       : train_acc: 0.9760869565217392 , validation_acc: 0.72727272727273
for gamma=0.4393877551020408 and C=6.836734693877551
                                                       : train_acc: 0.9760869565217392, validation_acc: 0.7272727272727273
for gamma=0.4393877551020408 and C=7.040816326530612
                                                      : train acc: 0.9760869565217392, validation acc: 0.7272727272727273
                                                       : train_acc: 0.9804347826086957, validation_acc: 0.7272727272727273
for gamma=0.4393877551020408 and C=7.244897959183674
for gamma=0.4393877551020408 and C=7.448979591836735
                                                       : train_acc: 0.9826086956521739 , validation_acc: 0.7272727272727273
for gamma=0.4393877551020408 and C=7.653061224489796
                                                       : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.4393877551020408 and C=7.857142857142858
                                                       : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.4393877551020408 and C=8.061224489795919
                                                       : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.4393877551020408 and C=8.26530612244898 : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.4393877551020408 and C=8.46938775510204 : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.4393877551020408 and C=8.673469387755102
                                                      : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
                                                       : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.4393877551020408 and C=8.877551020408163
for gamma=0.4393877551020408 and C=9.081632653061224
                                                       : train_acc: 0.9847826086956522, validation_acc: 0.7337662337662337
                                                       : train_acc: 0.9847826086956522 , validation_acc:0.7272727272727273
for gamma=0.4393877551020408 and C=9.285714285714285
for gamma=0.4393877551020408 and C=9.489795918367347
                                                       : train_acc: 0.9847826086956522, validation_acc: 0.7272727272727273
for gamma=0.4393877551020408 and C=9.693877551020408 : train_acc: 0.9847826086956522 , validation_acc: 0.7207792207792207
for gamma=0.4393877551020408 and C=9.89795918367347 : train_acc: 0.9847826086956522 , validation_acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=10.10204081632653 : train_acc: 0.9869565217391304 , validation_acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=10.306122448979592 : train acc: 0.9869565217391304, validation acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=10.510204081632654
                                                        : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.4393877551020408 and C=10.714285714285715
                                                        : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.4393877551020408 and C=10.918367346938776 : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
```

```
for gamma=0.4393877551020408 and C=11.122448979591837 : train_acc: 0.9869565217391304 , validation_acc:0.7207792207792207
for gamma=0.4393877551020408 and C=11.326530612244898 : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.4393877551020408 and C=11.53061224489796 : train_acc: 0.9891304347826086 , validation_acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=11.73469387755102 : train_acc: 0.9891304347826086 , validation_acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=11.938775510204081 :train_acc: 0.9891304347826086 , validation_acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=12.142857142857142
                                                         : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.4393877551020408 and C=12.346938775510203
                                                         : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.4393877551020408 and C=12.551020408163264
                                                         : train acc: 0.9891304347826086, validation acc: 0.7207792207792207
for gamma=0.4393877551020408 and C=12.755102040816327
                                                         : train_acc: 0.9891304347826086 , validation_acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=12.959183673469388
                                                         : train_acc: 0.9891304347826086, validation_acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=13.16326530612245 : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=13.36734693877551 : train_acc: 0.991304347826087 , validation_acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=13.571428571428571
                                                         : train_acc: 0.991304347826087 , validation_acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=13.775510204081632
                                                          : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=13.979591836734695
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=14.183673469387756
                                                         : train acc: 0.991304347826087, validation acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=14.387755102040817
                                                         : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
                                                         : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=14.591836734693878
for gamma=0.4393877551020408 and C=14.795918367346939
                                                         : train_acc: 0.9934782608695653 , validation_acc: 0.7142857142857143
for gamma=0.4393877551020408 and C=15.0 : train_acc: 0.9934782608695653 , validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=5.0 : train_acc: 0.9652173913043478, validation_acc: 0.7207792207792207
for gamma=0.44948979591836735 and C=5.204081632653061
                                                         : train_acc: 0.9695652173913043, validation_acc: 0.7207792207792207
for gamma=0.44948979591836735 and C=5.408163265306122
                                                          : train_acc: 0.9717391304347827, validation_acc: 0.7207792207792207
for gamma=0.44948979591836735 and C=5.612244897959184
                                                         : train acc: 0.9739130434782609, validation acc: 0.72727272727273
for gamma=0.44948979591836735 and C=5.816326530612245
                                                         : train_acc: 0.9760869565217392 , validation_acc: 0.7272727272727273
for gamma=0.44948979591836735 and C=6.020408163265306
                                                          : train acc: 0.9760869565217392, validation acc: 0.72727272727273
for gamma=0.44948979591836735 and C=6.224489795918368
                                                         : train_acc: 0.9760869565217392 , validation_acc: 0.72727272727273
for gamma=0.44948979591836735 and C=6.428571428571429
                                                         : train_acc: 0.9760869565217392, validation_acc: 0.72727272727273
for gamma=0.44948979591836735 and C=6.63265306122449 : train_acc: 0.9760869565217392 , validation_acc: 0.72727272727272727
for gamma=0.44948979591836735 and C=6.836734693877551
                                                          : train acc: 0.9826086956521739, validation acc: 0.7272727272727273
for gamma=0.44948979591836735 and C=7.040816326530612
                                                          : train_acc: 0.9826086956521739 , validation_acc: 0.7272727272727273
for gamma=0.44948979591836735 and C=7.244897959183674
                                                          : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.44948979591836735 and C=7.448979591836735
                                                         : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.44948979591836735 and C=7.653061224489796
                                                          : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.44948979591836735 and C=7.857142857142858
                                                         : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.44948979591836735 and C=8.061224489795919
                                                         : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.44948979591836735 and C=8.26530612244898 : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.44948979591836735 and C=8.46938775510204
                                                        : train_acc: 0.9847826086956522, validation_acc: 0.7337662337662337
                                                         : train acc: 0.9847826086956522 , validation_acc: 0.7337662337662337
for gamma=0.44948979591836735 and C=8.673469387755102
for gamma=0.44948979591836735 and C=8.877551020408163
                                                         : train_acc: 0.9847826086956522 , validation_acc: 0.7272727272727273
for gamma=0.44948979591836735 and C=9.081632653061224
                                                          : train_acc: 0.9847826086956522 , validation_acc: 0.7272727272727273
for gamma=0.44948979591836735 and C=9.285714285714285
                                                          : train_acc: 0.9847826086956522 , validation_acc: 0.7207792207792207
                                                         : train_acc: 0.9847826086956522 , validation_acc:0.7207792207792207
for gamma=0.44948979591836735 and C=9.489795918367347
for gamma=0.44948979591836735 and C=9.693877551020408
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=9.89795918367347 : train_acc: 0.9869565217391304, validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=10.10204081632653 : train_acc: 0.9869565217391304, validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=10.306122448979592 : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.44948979591836735 and C=10.510204081632654 : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.44948979591836735 and C=10.714285714285715
                                                          : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.44948979591836735 and C=10.918367346938776
                                                           : train_acc: 0.9869565217391304, validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=11.122448979591837
                                                          : train acc: 0.9891304347826086, validation acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=11.326530612244898
                                                          : train_acc: 0.9891304347826086 , validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=11.53061224489796
                                                         : train_acc: 0.9891304347826086, validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=11.73469387755102 : train_acc: 0.9891304347826086 , validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=11.938775510204081 : train_acc: 0.9891304347826086 , validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=12.142857142857142
                                                          : train_acc: 0.9891304347826086 , validation_acc: 0.7142857142857143
                                                           : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=12.346938775510203
for gamma=0.44948979591836735 and C=12.551020408163264
                                                           : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=12.755102040816327
                                                           : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=12.959183673469388
                                                          : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=13.16326530612245
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=13.36734693877551
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=13.571428571428571
                                                          : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=13.775510204081632
                                                          : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=13.979591836734695
                                                           : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=14.183673469387756
                                                          : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=14.387755102040817
                                                          : train acc: 0.9934782608695653, validation acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=14.591836734693878
                                                          : train_acc: 0.9934782608695653 , validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=14.795918367346939
                                                          : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.44948979591836735 and C=15.0 : train_acc: 0.9934782608695653 , validation_acc: 0.7142857142857143
```

```
for gamma=0.4595918367346939 and C=5.0 : train_acc: 0.9695652173913043 , validation_acc: 0.7207792207792207
for gamma=0.4595918367346939 and C=5.204081632653061 : train_acc: 0.9739130434782609 , validation_acc: 0.7207792207792207
for gamma=0.4595918367346939 and C=5.408163265306122
                                                        : train_acc: 0.9760869565217392 , validation_acc:0.72727272727273
for gamma=0.4595918367346939 and C=5.612244897959184
                                                        : train_acc: 0.9760869565217392 , validation_acc: 0.7272727272727273
for gamma=0.4595918367346939 and C=5.816326530612245
                                                        : train_acc: 0.9760869565217392 , validation_acc: 0.72727272727273
for gamma=0.4595918367346939 and C=6.020408163265306
                                                        : train_acc: 0.9760869565217392 , validation_acc: 0.7272727272727273
for gamma=0.4595918367346939 and C=6.224489795918368
                                                        : train_acc: 0.9782608695652174 , validation_acc:0.72727272727273
for gamma=0.4595918367346939 and C=6.428571428571429
                                                        : train acc: 0.9804347826086957, validation acc: 0.72727272727273
for gamma=0.4595918367346939 and C=6.63265306122449 : train_acc: 0.9826086956521739 , validation_acc: 0.7272727272727273
for gamma=0.4595918367346939 and C=6.836734693877551
                                                        : train_acc: 0.9826086956521739, validation_acc: 0.72727272727273
for gamma=0.4595918367346939 and C=7.040816326530612
                                                        : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
                                                        : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.4595918367346939 and C=7.244897959183674
                                                        : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.4595918367346939 and C=7.448979591836735
for gamma=0.4595918367346939 and C=7.653061224489796
                                                        : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.4595918367346939 and C=7.857142857142858
                                                        : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.4595918367346939 and C=8.061224489795919
                                                        : train acc: 0.9847826086956522, validation acc: 0.7337662337662337
for gamma=0.4595918367346939 and C=8.46938775510204
                                                       : train_acc: 0.9847826086956522 , validation_acc: 0.7337662337662337
for gamma=0.4595918367346939 and C=8.673469387755102
                                                        : train_acc: 0.9847826086956522, validation_acc: 0.7272727272727273
for gamma=0.4595918367346939 and C=8.877551020408163
                                                        : train acc: 0.9847826086956522 , validation_acc: 0.7207792207792207
for gamma=0.4595918367346939 and C=9.081632653061224
                                                        : train_acc: 0.9847826086956522, validation_acc: 0.7207792207792207
for gamma=0.4595918367346939 and C=9.285714285714285
                                                        : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.4595918367346939 and C=9.489795918367347
                                                        : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.4595918367346939 and C=9.693877551020408
                                                        : train acc: 0.9869565217391304, validation acc: 0.7142857142857143
for\ gamma=0.4595918367346939\ and\ C=9.89795918367347\ \ :\ train\_acc:\ 0.9869565217391304\ \ ,\ validation\_acc:\ 0.71428571428571431304\ \ \ )
for gamma=0.4595918367346939 and C=10.10204081632653
                                                        : train acc: 0.9869565217391304, validation acc: 0.7207792207792207
for gamma=0.4595918367346939 and C=10.306122448979592
                                                         : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.4595918367346939 and C=10.510204081632654
                                                         : train_acc: 0.9891304347826086, validation_acc: 0.7077922077922078
for gamma=0.4595918367346939 and C=10.714285714285715
                                                         : train_acc: 0.9891304347826086 , validation_acc: 0.7077922077922078
for gamma=0.4595918367346939 and C=10.918367346938776
                                                         : train acc: 0.9891304347826086, validation acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=11.122448979591837
                                                         : train_acc: 0.9891304347826086, validation_acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=11.326530612244898
                                                         : train_acc: 0.9891304347826086, validation_acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=11.53061224489796 : train_acc: 0.9891304347826086 , validation_acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=11.73469387755102
                                                        : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=11.938775510204081
for gamma=0.4595918367346939 and C=12.142857142857142
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=12.346938775510203
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=12.551020408163264
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=12.755102040816327
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=12.959183673469388
                                                         : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=13.16326530612245 : train_acc: 0.9934782608695653 , validation_acc:0.7142857142857143
for gamma=0.4595918367346939 and C=13.36734693877551
                                                        : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=13.571428571428571
                                                         : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=13.775510204081632
                                                         : train_acc: 0.9934782608695653 , validation_acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=13.979591836734695
                                                         : train acc: 0.9934782608695653, validation acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=14.183673469387756
                                                         : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=14.387755102040817
                                                         : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=14.591836734693878 : train_acc: 0.9934782608695653 , validation_acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=14.795918367346939 : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.4595918367346939 and C=15.0 : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=5.0 ; train acc; 0.9760869565217392, validation acc; 0.7207792207792207
for gamma=0.4696938775510204 and C=5.204081632653061 : train_acc: 0.9782608695652174, validation_acc: 0.72727272727272727
for gamma=0.4696938775510204 and C=5.408163265306122
                                                        : train_acc: 0.9782608695652174, validation_acc:0.72727272727273
for gamma=0.4696938775510204 and C=5.612244897959184
                                                        : train_acc: 0.9782608695652174, validation_acc: 0.72727272727273
for gamma=0.4696938775510204 and C=5.816326530612245
                                                        : train_acc: 0.9782608695652174 , validation_acc: 0.7272727272727273
for gamma=0.4696938775510204 and C=6.020408163265306
                                                        : train_acc: 0.9804347826086957, validation_acc: 0.7272727272727273
                                                        : train_acc: 0.9826086956521739 , validation_acc: 0.7272727272727273
for gamma=0.4696938775510204 and C=6.224489795918368
for gamma=0.4696938775510204 and C=6.428571428571429
                                                        : train_acc: 0.9826086956521739 , validation_acc: 0.7272727272727273
for gamma=0.4696938775510204 and C=6.63265306122449 : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.4696938775510204 and C=6.836734693877551
                                                        : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.4696938775510204 and C=7.040816326530612
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for gamma=0.4696938775510204 and C=7.244897959183674
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for gamma=0.4696938775510204 and C=7.448979591836735
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for gamma=0.4696938775510204 and C=7.653061224489796
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for gamma=0.4696938775510204 and C=7.857142857142858
                                                        : train_acc: 0.9847826086956522, validation_acc: 0.7337662337662337
for gamma=0.4696938775510204 and C=8.061224489795919
                                                        : train_acc: 0.9847826086956522, validation_acc: 0.7337662337662337
for gamma=0.4696938775510204 and C=8.26530612244898 : train acc: 0.9847826086956522 , validation acc: 0.72727272727272727
for gamma=0.4696938775510204 and C=8.46938775510204 : train_acc: 0.9847826086956522 , validation_acc: 0.7207792207792207
for gamma=0.4696938775510204 and C=8.673469387755102
                                                        : train_acc: 0.9847826086956522, validation_acc: 0.7207792207792207
for gamma=0.4696938775510204 and C=8.877551020408163 : train_acc: 0.9847826086956522, validation_acc: 0.7207792207792207
```

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for gamma=0.4696938775510204 and C=9.081632653061224 : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.4696938775510204 and C=9.285714285714285 : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.4696938775510204 and C=9.489795918367347
                                                        : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.4696938775510204 and C=9.693877551020408
                                                        : train_acc: 0.9869565217391304 , validation_acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=9.89795918367347 : train_acc: 0.9869565217391304, validation_acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=10.10204081632653 : train_acc: 0.9891304347826086, validation_acc: 0.7077922077922078
for gamma=0.4696938775510204 and C=10.306122448979592
                                                         : train_acc: 0.9891304347826086, validation_acc: 0.7077922077922078
for gamma=0.4696938775510204 and C=10.510204081632654
                                                         : train acc: 0.9891304347826086, validation acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=10.714285714285715
                                                         : train_acc: 0.9891304347826086 , validation_acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=10.918367346938776
                                                         : train_acc: 0.9891304347826086, validation_acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=11.122448979591837
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=11.326530612244898
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=11.53061224489796 : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=11.73469387755102
                                                        : train\_acc: 0.991304347826087 \ , \ validation\_acc: 0.7142857142857143
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=11.938775510204081
for gamma=0.4696938775510204 and C=12.142857142857142
                                                         : train acc: 0.991304347826087, validation acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=12.346938775510203
                                                         : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=12.551020408163264
                                                         : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=12.755102040816327
                                                         : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=12.959183673469388
                                                         : train acc: 0.9934782608695653, validation acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=13.16326530612245 : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=13.36734693877551
                                                        : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=13.571428571428571
                                                         : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=13.775510204081632
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for gamma=0.4696938775510204 and C=13.979591836734695
                                                         : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.4696938775510204 and C=14.183673469387756
                                                         : train acc: 0.9956521739130435, validation acc: 0.7077922077922078
for gamma=0.4696938775510204 and C=14.387755102040817
                                                         : train_acc: 0.9956521739130435 , validation_acc: 0.7077922077922078
for gamma=0.4696938775510204 and C=14.591836734693878
                                                         : train_acc: 0.9956521739130435, validation_acc: 0.7077922077922078
                                                         : train_acc: 0.9956521739130435 , validation_acc:0.7077922077922078
for gamma=0.4696938775510204 and C=14.795918367346939
for gamma=0.4696938775510204 and C=15.0 : train acc: 0.9956521739130435, validation acc: 0.7077922077922078
for gamma=0.4797959183673469 and C=5.204081632653061 : train_acc: 0.9782608695652174, validation_acc: 0.72727272727272727
for gamma=0.4797959183673469 and C=5.408163265306122
                                                        : train_acc: 0.9782608695652174 , validation_acc: 0.72727272727273
for gamma=0.4797959183673469 and C=5.612244897959184
                                                        : train_acc: 0.9782608695652174, validation_acc: 0.72727272727273
for gamma=0.4797959183673469 and C=5.816326530612245
                                                        : train_acc: 0.9804347826086957, validation_acc: 0.72727272727273
for gamma=0.4797959183673469 and C=6.020408163265306
                                                        : train_acc: 0.9826086956521739, validation_acc: 0.7272727272727273
                                                        : train_acc: 0.9826086956521739 , validation_acc: 0.7272727272727273
for gamma=0.4797959183673469 and C=6.224489795918368
for gamma=0.4797959183673469 and C=6.428571428571429
                                                         train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.4797959183673469 and C=6.63265306122449 : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.4797959183673469 and C=6.836734693877551
                                                        : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.4797959183673469 and C=7.040816326530612
                                                        : train_acc: 0.9847826086956522 , validation_acc: 0.7337662337662337
for gamma=0.4797959183673469 and C=7.244897959183674
                                                        : train_acc: 0.9847826086956522, validation_acc: 0.7337662337662337
for gamma=0.4797959183673469 and C=7.448979591836735
                                                        : train_acc: 0.9847826086956522, validation_acc: 0.7337662337662337
for gamma=0.4797959183673469 and C=7.653061224489796
                                                        : train_acc: 0.9847826086956522 , validation_acc: 0.7337662337662337
for gamma=0.4797959183673469 and C=7.857142857142858
                                                        : train_acc: 0.9847826086956522, validation_acc: 0.7272727272727273
                                                        : train_acc: 0.9847826086956522 , validation_acc: 0.7207792207792207
for gamma=0.4797959183673469 and C=8.061224489795919
for gamma=0.4797959183673469 and C=8.26530612244898 : train_acc: 0.9847826086956522 , validation_acc: 0.7207792207792207
for gamma=0.4797959183673469 and C=8.46938775510204 : train_acc: 0.9847826086956522 , validation_acc: 0.7207792207792207
for gamma=0.4797959183673469 and C=8.673469387755102
                                                        : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.4797959183673469 and C=8.877551020408163
                                                        : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.4797959183673469 and C=9.081632653061224
                                                        : train acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
                                                        : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.4797959183673469 and C=9.285714285714285
for gamma=0.4797959183673469 and C=9.489795918367347
                                                        : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.4797959183673469 and C=9.693877551020408
                                                        : train_acc: 0.9891304347826086 , validation_acc: 0.7077922077922078
for gamma=0.4797959183673469 and C=9.89795918367347 : train_acc: 0.9891304347826086 , validation_acc: 0.7142857142857143
for gamma=0.4797959183673469 and C=10.10204081632653 : train_acc: 0.9891304347826086, validation_acc: 0.7142857142857143
                                                         : train_acc: 0.9891304347826086 , validation_acc: 0.7142857142857143
for gamma=0.4797959183673469 and C=10.306122448979592
for gamma=0.4797959183673469 and C=10.510204081632654
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4797959183673469 and C=10.714285714285715
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4797959183673469 and C=10.918367346938776
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for gamma=0.4797959183673469 and C=11.122448979591837
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4797959183673469 and C=11.326530612244898
                                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4797959183673469 and C=11.53061224489796 : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4797959183673469 and C=11.73469387755102
                                                        : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.4797959183673469 and C=11.938775510204081
                                                         : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.4797959183673469 and C=12.142857142857142
                                                         : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.4797959183673469 and C=12.346938775510203
                                                         : train acc: 0.9934782608695653, validation acc: 0.7142857142857143
for gamma=0.4797959183673469 and C=12.551020408163264
                                                         : train_acc: 0.9934782608695653 , validation_acc: 0.7142857142857143
for gamma=0.4797959183673469 and C=12.755102040816327
                                                         : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.4797959183673469 and C=12.959183673469388
                                                         : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
```

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for gamma=0.4797959183673469 and C=13.16326530612245 : train_acc: 0.9934782608695653 , validation_acc: 0.7142857142857143
for gamma=0.4797959183673469 and C=13.36734693877551 : train_acc: 0.9956521739130435 , validation_acc: 0.7077922077922078
for gamma=0.4797959183673469 and C=13.571428571428571
                                                          : train_acc: 0.9956521739130435 , validation_acc: 0.7077922077922078
for gamma=0.4797959183673469 and C=13.775510204081632
                                                          : train_acc: 0.9956521739130435 , validation_acc: 0.7077922077922078
for gamma=0.4797959183673469 and C=13.979591836734695
                                                          : train_acc: 0.9956521739130435 , validation_acc: 0.7077922077922078
for gamma=0.4797959183673469 and C=14.183673469387756
                                                          : train_acc: 0.9956521739130435, validation_acc: 0.7077922077922078
for gamma=0.4797959183673469 and C=14.387755102040817
                                                          : train_acc: 0.9956521739130435, validation_acc: 0.7077922077922078
for gamma=0.4797959183673469 and C=14.591836734693878
                                                          : train acc: 0.9956521739130435, validation acc: 0.7077922077922078
for gamma=0.4797959183673469 and C=14.795918367346939 : train_acc: 0.9956521739130435 , validation_acc: 0.7077922077922078
for gamma=0.4797959183673469 and C=15.0 : train_acc: 0.9956521739130435 , validation_acc: 0.7077922077922078
for gamma=0.48989795918367346 and C=5.0 : train_acc: 0.9782608695652174, validation_acc: 0.7272727272727273
for gamma=0.48989795918367346 and C=5.204081632653061 : train_acc: 0.9782608695652174, validation_acc: 0.72727272727272727
for gamma=0.48989795918367346 and C=5.408163265306122
                                                          : train_acc: 0.9804347826086957 , validation_acc:0.7272727272727273
for gamma=0.48989795918367346 and C=5.612244897959184
                                                          : train_acc: 0.9804347826086957, validation_acc: 0.72727272727273
for gamma=0.48989795918367346 and C=5.816326530612245
                                                          : train acc: 0.9826086956521739, validation acc: 0.72727272727273
for gamma=0.48989795918367346 and C=6.020408163265306
                                                          : train acc: 0.9826086956521739, validation acc: 0.7337662337662337
for gamma=0.48989795918367346 and C=6.224489795918368
                                                          : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
                                                          : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.48989795918367346 and C=6.428571428571429
for gamma=0.48989795918367346 and C=6.63265306122449 : train_acc: 0.9847826086956522 , validation_acc: 0.7337662337662337
for gamma=0.48989795918367346 and C=6.836734693877551 : train acc: 0.9847826086956522, validation acc: 0.7337662337662337
for gamma=0.48989795918367346 and C=7.040816326530612
                                                          : train_acc: 0.9847826086956522, validation_acc: 0.7337662337662337
for gamma=0.48989795918367346 and C=7.244897959183674 for gamma=0.48989795918367346 and C=7.448979591836735
                                                          : train_acc: 0.9847826086956522 , validation_acc: 0.7337662337662337
                                                          : train_acc: 0.9847826086956522, validation_acc: 0.72727272727273
for gamma=0.48989795918367346 and C=7.653061224489796
                                                          : train acc: 0.9847826086956522, validation acc: 0.72727272727273
for gamma=0.48989795918367346 and C=7.857142857142858
                                                          : train_acc: 0.9847826086956522 , validation_acc: 0.7207792207792207
for gamma=0.48989795918367346 and C=8.061224489795919
                                                          : train acc: 0.9847826086956522, validation acc: 0.7207792207792207
for gamma=0.48989795918367346 and C=8.26530612244898 : train_acc: 0.9847826086956522 , validation_acc: 0.7207792207792207
for gamma=0.48989795918367346 and C=8.46938775510204 : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.48989795918367346 and C=8.673469387755102 : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.48989795918367346 and C=8.877551020408163
                                                          : train acc: 0.9869565217391304, validation acc: 0.7207792207792207
for gamma=0.48989795918367346 and C=9.081632653061224
                                                          : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.48989795918367346 and C=9.285714285714285
                                                           : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.48989795918367346 and C=9.489795918367347
                                                          : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.48989795918367346 and C=9.693877551020408
                                                          : train_acc: 0.9891304347826086, validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=9.89795918367347 : train_acc: 0.9891304347826086 , validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=10.10204081632653 : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=10.306122448979592
                                                           : train_acc: 0.991304347826087 , validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=10.510204081632654
                                                           : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=10.714285714285715
                                                           : train acc: 0.991304347826087, validation acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=10.918367346938776 : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=11.122448979591837
                                                           : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=11.326530612244898
                                                           : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=11.53061224489796 : train_acc: 0.9934782608695653 , validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=11.73469387755102 : train_acc: 0.9934782608695653 , validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=11.938775510204081
                                                           : train acc: 0.9934782608695653, validation acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=12.142857142857142
                                                           : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=12.346938775510203 : train_acc: 0.9934782608695653 , validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=12.551020408163264 : train_acc: 0.9934782608695653, validation_acc: 0.7077922077922078
for gamma=0.48989795918367346 and C=12.755102040816327
                                                           : train_acc: 0.9956521739130435, validation_acc: 0.7077922077922078
for gamma=0.48989795918367346 and C=12.959183673469388
                                                           : train_acc: 0.9956521739130435 , validation_acc: 0.7077922077922078
for gamma=0.48989795918367346 and C=13.16326530612245 : train acc: 0.9956521739130435, validation acc: 0.7077922077922078
for gamma=0.48989795918367346 and C=13.36734693877551 : train_acc: 0.9956521739130435 , validation_acc: 0.7077922077922078
for gamma=0.48989795918367346 and C=13.571428571428571
                                                           : train_acc: 0.9956521739130435, validation_acc: 0.7077922077922078
for gamma=0.48989795918367346 and C=13.775510204081632 : train_acc: 0.9956521739130435 , validation_acc: 0.7077922077922078
for gamma=0.48989795918367346 and C=13.979591836734695 : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=14.183673469387756 : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=14.387755102040817
                                                           : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=14.591836734693878 : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=14.795918367346939 : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.48989795918367346 and C=15.0 : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.5 and C=5.0 : train_acc: 0.9782608695652174 , validation_acc: 0.7272727272727273
for gamma=0.5 and C=5.204081632653061 : train_acc: 0.9804347826086957 , validation_acc: 0.72727272727272727
for gamma=0.5 and C=5.408163265306122 : train_acc: 0.9804347826086957, validation_acc: 0.7272727272727273
for gamma=0.5 and C=5.612244897959184 : train_acc: 0.9826086956521739 , validation_acc: 0.7272727272727273
for gamma=0.5 and C=5.816326530612245
                                        : train_acc: 0.9826086956521739, validation_acc: 0.7337662337662337
for gamma=0.5 and C=6.020408163265306 : train_acc: 0.9826086956521739 , validation_acc: 0.7337662337662337
for gamma=0.5 and C=6.224489795918368 : train acc: 0.9847826086956522 , validation acc: 0.7337662337662337
                                        : train_acc: 0.9847826086956522 , validation_acc: 0.7337662337662337
for gamma=0.5 and C=6.428571428571429
for gamma=0.5 and C=6.63265306122449 : train_acc: 0.9847826086956522, validation_acc: 0.7337662337662337
for gamma=0.5 and C=6.836734693877551 : train_acc: 0.9847826086956522 , validation_acc: 0.72727272727272727
```

```
for gamma=0.5 and C=7.040816326530612 : train_acc: 0.9847826086956522 , validation_acc: 0.7272727272727273
for gamma=0.5 and C=7.244897959183674 : train_acc: 0.9847826086956522 , validation_acc: 0.7272727272727273
for gamma=0.5 and C=7.448979591836735
                                       : train_acc: 0.9847826086956522, validation_acc: 0.7272727272727273
for gamma=0.5 and C=7.653061224489796
                                       : train_acc: 0.9847826086956522 , validation_acc: 0.7207792207792207
for gamma=0.5 and C=7.857142857142858
                                       : train_acc: 0.9847826086956522 , validation_acc: 0.7207792207792207
for gamma=0.5 and C=8.061224489795919 : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.5 and C=8.26530612244898 : train_acc: 0.9869565217391304, validation_acc: 0.7207792207792207
for gamma=0.5 and C=8.46938775510204 : train acc: 0.9869565217391304, validation acc: 0.7207792207792207
for gamma=0.5 and C=8.673469387755102 : train_acc: 0.9869565217391304 , validation_acc: 0.7207792207792207
for gamma=0.5 and C=8.877551020408163
                                       : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.5 and C=9.081632653061224
                                        : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.5 and C=9.285714285714285
                                       : train_acc: 0.9891304347826086, validation_acc: 0.7207792207792207
for gamma=0.5 and C=9.489795918367347
                                       : train_acc: 0.991304347826087, validation_acc: 0.7207792207792207
for gamma=0.5 and C=9.693877551020408
                                       : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.5 and C=9.89795918367347 : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.5 and C=10.10204081632653 : train_acc: 0.991304347826087, validation_acc:0.7142857142857143
for gamma=0.5 and C=10.306122448979592 : train_acc: 0.991304347826087 , validation_acc: 0.7142857142857143
                                        : train_acc: 0.991304347826087 , validation_acc: 0.7142857142857143
for gamma=0.5 and C=10.510204081632654
for gamma=0.5 and C=10.714285714285715
                                         : train_acc: 0.991304347826087, validation_acc: 0.7142857142857143
for gamma=0.5 and C=10.918367346938776
                                        : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.5 and C=11.122448979591837
                                        : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.5 and C=11.326530612244898
                                        : train_acc: 0.9934782608695653, validation_acc: 0.7142857142857143
for gamma=0.5 and C=11.53061224489796 : train_acc: 0.9934782608695653 , validation_acc: 0.7142857142857143
for gamma=0.5 and C=11.73469387755102 : train acc: 0.9934782608695653, validation acc: 0.7077922077922078
for gamma=0.5 and C=11.938775510204081 : train_acc: 0.9934782608695653 , validation_acc: 0.7077922077922078
for gamma=0.5 and C=12.142857142857142
                                        : train_acc: 0.9956521739130435 , validation_acc: 0.7077922077922078
                                        : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.5 and C=12.346938775510203
for gamma=0.5 and C=12.551020408163264 : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.5 and C=12.755102040816327
                                        : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.5 and C=12.959183673469388
                                        : train acc: 0.9956521739130435, validation acc: 0.7142857142857143
for gamma=0.5 and C=13.36734693877551 : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.5 and C=13.571428571428571 : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.5 and C=13.775510204081632 : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.5 and C=13.979591836734695 : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.5 and C=14.183673469387756 : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.5 and C=14.387755102040817 : train_acc: 0.9956521739130435 , validation_acc:0.7142857142857143
for gamma=0.5 and C=14.591836734693878 : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.5 and C=14.795918367346939 : train_acc: 0.9956521739130435 , validation_acc: 0.7142857142857143
for gamma=0.5 and C=15.0 : train_acc: 0.9956521739130435 , validation_acc:0.7142857142857143
```

# This search found this result for best C and gamma: C = : 9.89795918367347 and gamma = 0.055510204081632646

train\_acc\_best\_C\_gamma: 0.841304347826087 , best\_validation\_acc: 0.7987012987012987 , best\_validation\_C\_RBF\_new: 9.89795918367347 , best\_gamma\_RBF\_new: 0.055510204081632646

#### mix train and validation data:

 $training_x = np.append(x_train,x_validation).reshape(-1,8) # mix att train and validation training_y = np.append(y_train,y_validation).reshape(-1,1) # mix class train and validation$ 

#### **Retrain Linear\_kernel\_SVC using combined (train + validation)**

#### applying first result for C:

 $\label{eq:continuous} Linear\_kernel\_Final = SVC(C=best\_validation\_C\_linear\ ,\ kernel='linear')\ \ \#\ retrain\ model\ by\ be\ st\ C$ 

Linear\_kernel\_Final.fit(training\_x,training\_y)

```
acc_train_Linear_kernal = Linear_kernel_Final.score(training_x,training_y)
acc_test_Linear_kernal = Linear_kernel_Final.score(x_test,y_test)  # acc best model on test
data
print('acc_train_Linear_kernal: {} , acc_test_Linear_kernal: {}'.format(acc_train_Linear_kernal)
```

#### obtained acc by this chose for C:

acc\_train\_Linear\_kernal: 0.7671009771986971 , acc\_test\_Linear\_kernal: 0.8246753246753247

#### applying secound result for C:

```
\label{linear_kernel_Final} Linear_kernel_Final = SVC(C=best_validation_C_linear_new\ ,\ kernel='linear')\ \#\ retrain\ model\ by\ best\ C\ Linear_kernel_Final.fit(training_x,training_y)\ acc_train_Linear_kernal = Linear_kernel_Final.score(training_x,training_y)\ acc_test_Linear_kernal = Linear_kernel_Final.score(x_test,y_test)\ \#\ acc\ best\ model\ on\ test\ data\ print('acc_train_Linear_kernal:\ \{\ \}'.format(acc_train_Linear_kernal,acc_test_Linear_kernal))
```

#### obtained acc by this chose for C:

acc\_train\_Linear\_kernal: 0.7703583061889251 , acc\_test\_Linear\_kernal: 0.8246753246753247

#### **Retrain RBF\_kernel\_SVC using combined (train + validation)**

#### applying first result for C and gamma:

```
RBF_kernel_Final = SVC(C=best_validation_C_RBF, kernel='rbf', gamma=best_gamma_RB F) # retrain model by best C and gamma RBF_kernel_Final.fit(training_x,training_y) acc_train_RBF_kernal = RBF_kernel_Final.score(training_x,training_y) acc_test_RBF_kernal = RBF_kernel_Final.score(x_test,y_test) # acc_best_model on test data print('acc_train_RBF_kernal: {} , acc_test_RBF_kernal: {}'.format(acc_train_RBF_kernal,acc_test_RBF_kernal))
```

# obtained acc by this chose for C and gamma: acc\_train\_RBF\_kernal: 0.7833876221498371 , acc\_test\_RBF\_kernal: 0.818181818182

#### applying secound result for C and gamma:

```
RBF\_kernel\_Final = SVC(C=best\_validation\_C\_RBF\_new \ , \ kernel='rbf' \ , \ gamma=best\_gamm \ a\_RBF\_new) \ \# \ retrain \ model \ by \ best \ C \ and \ gamma \ RBF\_kernel\_Final.fit(training\_x,training\_y)
```

acc\_train\_RBF\_kernal = RBF\_kernel\_Final.score(training\_x,training\_y)
acc\_test\_RBF\_kernal = RBF\_kernel\_Final.score(x\_test,y\_test) # acc\_best\_model on test\_data
print('acc\_train\_RBF\_kernal: {} , acc\_test\_RBF\_kernal: {}'.format(acc\_train\_RBF\_kernal,acc\_test\_RBF\_kernal))

obtained acc by this chose for C: acc\_train\_RBF\_kernal: 0.8322475570032574 , acc\_test\_RBF\_kernal: 0.7727272727272727

#### **Explain the project process and Conclusion:**

#### **Explain the project process:**

In this case, python programming language have been used. First of all, dataset loaded to python and then, data preprocessing included changing the format of classes and normalizing the data have been done. Data splitted to 60% as training set and 20% as validation set and 20% as test set.

Tuning hyperparameters for both SVM classifiers is done as follow: SVM classifier models (SVM\_linear\_kernel, SVM\_RBF\_kernel) fitted on the training data by different values for c in SVM\_linear\_kernel and different values for c and gamma in SVM\_RBF\_kernel. Each time both models getting fit, the accuracy of SVM classifier models on the validation data have been investigated to find which c in SVM\_linear\_kernel or c and gamma in SVM\_RBF\_kernel has shown max accuracy on validation data. At last the best values of c and (c,gamma) is stored.

Finally training data and validation data have been mixed together and both models is fitted on this data. The accuracy of each model is measured on the testing data by using of best hyperparameters of each model that is found in previous steps.

#### **Conclusion:**

Both models are investigated on testing data by two choices for best c in SVM\_Linear\_kernel and (c, gamma) in SVM\_RBF\_kernel. At first choice values are found by random search and in the second one, values are found by using first choice and searching in specified intervals.

For SVM\_Linear\_kernel in both choices for c the accuracy on testing data is 0.8246753246753247 but the accuracy on mixed training data and validation data for first choice is a little less than second choice.

For SVM\_RBF\_kernel in first choice max accuracy on testing data is found as 0.81818181818182 that is better than second choice 0.7727272727272727. the accuracy of this model on mixed training data for first choice is 0.7833876221498371 that is less than second choice 0.8322475570032574.

So, not only the best accuracy on testing data is obtained by using of SVM\_RBF\_kernel classifier and first choice of hyperparameters, but also the maximum accuracy on mixed training and validation data is obtained by using of SVM\_RBF\_kernel classifier and second choice of hyperparameters.

It is seen that, by use of best hyperparameters for the SVM\_RBF\_kernel model, this model has shown better results rather than SVM\_Linear\_kernel model. But, because of more hyperparameters in SVM\_RBF\_kernel rather than SVM\_Linear\_kernel, finding the best hyperparameters for SVM\_RBF\_kernel model needs more time rather than SVM\_Linear\_kernel model and has more complexity.

In cases where more accuracy is considered, SVM\_RBF\_kernel model is a good choice and in the other hand, in cases where the computational speed of action is considered, SVM\_Linear\_kernel model is better choice.