File - fadml_project_dpsvm_p1_(without_libraries)

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C:\Users\Lenovo\anaconda3\python.exe "D:\PycharmProjects\FADML_project\fadml_project_dpsvm_p1_(without_libraries).py"
##################### Loading and Exploratory Data Analysis #####################

   Pregnancies  Glucose  BloodPressure  ...  DiabetesPedigreeFunction  Age  Outcome
0            6      148             72  ...                     0.627   50        1
1            1       85             66  ...                     0.351   31        0
2            8      183             64  ...                     0.672   32        1
3            1       89             66  ...                     0.167   21        0
4            0      137             40  ...                     2.288   33        1

[5 rows x 9 columns]

Shape:  (768, 9)

Check nulls:
Pregnancies              0
Glucose                  0
BloodPressure            0
SkinThickness            0
Insulin                  0
BMI                      0
DiabetesPedigreeFunction    0
Age                      0
Outcome                  0
dtype: int64

Check # unique items:
Pregnancies               17
Glucose                  136
BloodPressure             47
SkinThickness             51
Insulin                  186
BMI                      248
DiabetesPedigreeFunction    517
Age                       52
Outcome                    2
dtype: int64

Check Outcome values:
[1 0]


##################### Preprocessing #####################

X_train:  (614, 8)
y_train:  (614,)
X_test:  (154, 8)
y_test:  (154,)

Before Normalization
Mean:  [  3.80944625 120.46579805  68.90390879  20.45602606  81.25081433
  31.92964169   0.46809609  33.26547231]

Std Dev:  [  3.3727943   31.93358289  19.9171464   16.05001916 116.85211132
   8.13016266   0.32893469  11.84177225]

After Normalization
Mean:  [-0. -0. -0.  0.  0. -0. -0. -0.]

Std Dev:  [1. 1. 1. 1. 1. 1. 1. 1.]


##################### Training SVM and Hyperparameter Tuning #####################

C=0.5, kernel=linear, lr=0.001, gamma=None, degree=None || acc=0.7689, prec=0.7606, rec=0.4832, f1=0.5842
C=0.5, kernel=linear, lr=0.005, gamma=None, degree=None || acc=0.5213, prec=0.3630, rec=0.5086, f1=0.4209
C=0.5, kernel=linear, lr=0.0001, gamma=None, degree=None || acc=0.7689, prec=0.7583, rec=0.4888, f1=0.5874
C=0.5, kernel=linear, lr=0.0005, gamma=None, degree=None || acc=0.7689, prec=0.7606, rec=0.4832, f1=0.5842
C=0.5, kernel=poly, lr=0.001, gamma=None, degree=2 || acc=0.7475, prec=0.7413, rec=0.4066, f1=0.5160
C=0.5, kernel=poly, lr=0.001, gamma=None, degree=3 || acc=0.7410, prec=0.7766, rec=0.3534, f1=0.4754
C=0.5, kernel=poly, lr=0.001, gamma=None, degree=4 || acc=0.6475, prec=0.5150, rec=0.2989, f1=0.3398
C=0.5, kernel=poly, lr=0.005, gamma=None, degree=2 || acc=0.7475, prec=0.7413, rec=0.4066, f1=0.5160
C=0.5, kernel=poly, lr=0.005, gamma=None, degree=3 || acc=0.4230, prec=0.2733, rec=0.3416, f1=0.2930
C=0.5, kernel=poly, lr=0.005, gamma=None, degree=4 || acc=0.6180, prec=0.4695, rec=0.3581, f1=0.3432
C=0.5, kernel=poly, lr=0.0001, gamma=None, degree=2 || acc=0.7574, prec=0.7392, rec=0.4530, f1=0.5529
C=0.5, kernel=poly, lr=0.0001, gamma=None, degree=3 || acc=0.7377, prec=0.7456, rec=0.3634, f1=0.4800
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77 C=0.5, kernel=poly, lr=0.0001, gamma=None, degree=4 || acc=0.7393, prec=0.7641, rec=0.3593, f1=0.4813
78 C=0.5, kernel=poly, lr=0.0005, gamma=None, degree=2 || acc=0.7475, prec=0.7413, rec=0.4066, f1=0.5160
79 C=0.5, kernel=poly, lr=0.0005, gamma=None, degree=3 || acc=0.7410, prec=0.7766, rec=0.3534, f1=0.4754
80 C=0.5, kernel=poly, lr=0.0005, gamma=None, degree=4 || acc=0.6230, prec=0.4473, rec=0.3108, f1=0.3390
81 C=0.5, kernel=rbf, lr=0.001, gamma=0.001, degree=None || acc=0.6574, prec=0.0000, rec=0.0000, f1=0.0000
82 C=0.5, kernel=rbf, lr=0.001, gamma=0.005, degree=None || acc=0.7377, prec=0.8190, rec=0.3129, f1=0.4419
83 C=0.5, kernel=rbf, lr=0.001, gamma=0.01, degree=None || acc=0.7607, prec=0.8113, rec=0.4035, f1=0.5280
84 C=0.5, kernel=rbf, lr=0.001, gamma=0.02, degree=None || acc=0.7672, prec=0.7841, rec=0.4531, f1=0.5669
85 C=0.5, kernel=rbf, lr=0.001, gamma=0.03, degree=None || acc=0.7672, prec=0.7763, rec=0.4571, f1=0.5673
86 C=0.5, kernel=rbf, lr=0.001, gamma=0.04, degree=None || acc=0.7672, prec=0.7587, rec=0.4720, f1=0.5744
87 C=0.5, kernel=rbf, lr=0.001, gamma=0.05, degree=None || acc=0.7639, prec=0.7561, rec=0.4639, f1=0.5666
88 C=0.5, kernel=rbf, lr=0.001, gamma=0.060000000000000005, degree=None || acc=0.7689, prec=0.7599, rec=0.4801, f1=0.5788
89 C=0.5, kernel=rbf, lr=0.001, gamma=0.06999999999999999, degree=None || acc=0.7689, prec=0.7593, rec=0.4808, f1=0.5779
90 C=0.5, kernel=rbf, lr=0.001, gamma=0.08, degree=None || acc=0.7656, prec=0.7503, rec=0.4845, f1=0.5764
91 C=0.5, kernel=rbf, lr=0.001, gamma=0.09, degree=None || acc=0.7672, prec=0.7514, rec=0.4930, f1=0.5855
92 C=0.5, kernel=rbf, lr=0.001, gamma=0.09999999999999999, degree=None || acc=0.7639, prec=0.7370, rec=0.4930, f1=0.5822
93 C=0.5, kernel=rbf, lr=0.001, gamma=0.5, degree=None || acc=0.7164, prec=0.6356, rec=0.3770, f1=0.4653
94 C=0.5, kernel=rbf, lr=0.001, gamma=1, degree=None || acc=0.6607, prec=0.5504, rec=0.1139, f1=0.1829
95 C=0.5, kernel=rbf, lr=0.005, gamma=0.001, degree=None || acc=0.6574, prec=0.0000, rec=0.0000, f1=0.0000
96 C=0.5, kernel=rbf, lr=0.005, gamma=0.005, degree=None || acc=0.7361, prec=0.8190, rec=0.3086, f1=0.4353
97 C=0.5, kernel=rbf, lr=0.005, gamma=0.01, degree=None || acc=0.7607, prec=0.8113, rec=0.4035, f1=0.5280
98 C=0.5, kernel=rbf, lr=0.005, gamma=0.02, degree=None || acc=0.7672, prec=0.7841, rec=0.4531, f1=0.5669
99 C=0.5, kernel=rbf, lr=0.005, gamma=0.03, degree=None || acc=0.7689, prec=0.7800, rec=0.4626, f1=0.5727
100 C=0.5, kernel=rbf, lr=0.005, gamma=0.04, degree=None || acc=0.7705, prec=0.7653, rec=0.4831, f1=0.5849
101 C=0.5, kernel=rbf, lr=0.005, gamma=0.05, degree=None || acc=0.7639, prec=0.7561, rec=0.4639, f1=0.5666
102 C=0.5, kernel=rbf, lr=0.005, gamma=0.060000000000000005, degree=None || acc=0.7689, prec=0.7599, rec=0.4801, f1=0.5788
103 C=0.5, kernel=rbf, lr=0.005, gamma=0.06999999999999999, degree=None || acc=0.7689, prec=0.7593, rec=0.4808, f1=0.5779
104 C=0.5, kernel=rbf, lr=0.005, gamma=0.08, degree=None || acc=0.7656, prec=0.7503, rec=0.4845, f1=0.5764
105 C=0.5, kernel=rbf, lr=0.005, gamma=0.09, degree=None || acc=0.7672, prec=0.7514, rec=0.4930, f1=0.5855
106 C=0.5, kernel=rbf, lr=0.005, gamma=0.09999999999999999, degree=None || acc=0.7639, prec=0.7370, rec=0.4930, f1=0.5822
107 C=0.5, kernel=rbf, lr=0.005, gamma=0.5, degree=None || acc=0.7164, prec=0.6356, rec=0.3770, f1=0.4653
108 C=0.5, kernel=rbf, lr=0.005, gamma=1, degree=None || acc=0.6607, prec=0.5504, rec=0.1139, f1=0.1829
109 C=0.5, kernel=rbf, lr=0.0001, gamma=0.001, degree=None || acc=0.6557, prec=0.1000, rec=0.0037, f1=0.0071
110 C=0.5, kernel=rbf, lr=0.0001, gamma=0.005, degree=None || acc=0.7393, prec=0.7997, rec=0.3359, f1=0.4593
111 C=0.5, kernel=rbf, lr=0.0001, gamma=0.01, degree=None || acc=0.7639, prec=0.8072, rec=0.4305, f1=0.5490
112 C=0.5, kernel=rbf, lr=0.0001, gamma=0.02, degree=None || acc=0.7738, prec=0.7912, rec=0.4726, f1=0.5836
113 C=0.5, kernel=rbf, lr=0.0001, gamma=0.03, degree=None || acc=0.7705, prec=0.7606, rec=0.4881, f1=0.5865
114 C=0.5, kernel=rbf, lr=0.0001, gamma=0.04, degree=None || acc=0.7705, prec=0.7609, rec=0.4883, f1=0.5861
115 C=0.5, kernel=rbf, lr=0.0001, gamma=0.05, degree=None || acc=0.7754, prec=0.7643, rec=0.5030, f1=0.5977
116 C=0.5, kernel=rbf, lr=0.0001, gamma=0.060000000000000005, degree=None || acc=0.7705, prec=0.7553, rec=0.4950, f1=0.5890
117 C=0.5, kernel=rbf, lr=0.0001, gamma=0.06999999999999999, degree=None || acc=0.7672, prec=0.7440, rec=0.5006, f1=0.5885
118 C=0.5, kernel=rbf, lr=0.0001, gamma=0.08, degree=None || acc=0.7738, prec=0.7527, rec=0.5202, f1=0.6055
119 C=0.5, kernel=rbf, lr=0.0001, gamma=0.09, degree=None || acc=0.7672, prec=0.7425, rec=0.5066, f1=0.5920
120 C=0.5, kernel=rbf, lr=0.0001, gamma=0.09999999999999999, degree=None || acc=0.7705, prec=0.7423, rec=0.5165, f1=0.6007
121 C=0.5, kernel=rbf, lr=0.0001, gamma=0.5, degree=None || acc=0.7230, prec=0.6603, rec=0.3988, f1=0.4919
122 C=0.5, kernel=rbf, lr=0.0001, gamma=1, degree=None || acc=0.6557, prec=0.5000, rec=0.1187, f1=0.1865
123 C=0.5, kernel=rbf, lr=0.0005, gamma=0.001, degree=None || acc=0.6574, prec=0.0000, rec=0.0000, f1=0.0000
124 C=0.5, kernel=rbf, lr=0.0005, gamma=0.005, degree=None || acc=0.7377, prec=0.8190, rec=0.3129, f1=0.4419
125 C=0.5, kernel=rbf, lr=0.0005, gamma=0.01, degree=None || acc=0.7607, prec=0.8113, rec=0.4035, f1=0.5280
126 C=0.5, kernel=rbf, lr=0.0005, gamma=0.02, degree=None || acc=0.7672, prec=0.7841, rec=0.4531, f1=0.5669
127 C=0.5, kernel=rbf, lr=0.0005, gamma=0.03, degree=None || acc=0.7672, prec=0.7763, rec=0.4571, f1=0.5673
128 C=0.5, kernel=rbf, lr=0.0005, gamma=0.04, degree=None || acc=0.7672, prec=0.7587, rec=0.4720, f1=0.5744
129 C=0.5, kernel=rbf, lr=0.0005, gamma=0.05, degree=None || acc=0.7639, prec=0.7561, rec=0.4639, f1=0.5666
130 C=0.5, kernel=rbf, lr=0.0005, gamma=0.060000000000000005, degree=None || acc=0.7689, prec=0.7599, rec=0.4801, f1=0.5788
131 C=0.5, kernel=rbf, lr=0.0005, gamma=0.06999999999999999, degree=None || acc=0.7689, prec=0.7593, rec=0.4808, f1=0.5779
132 C=0.5, kernel=rbf, lr=0.0005, gamma=0.08, degree=None || acc=0.7656, prec=0.7503, rec=0.4845, f1=0.5764
133 C=0.5, kernel=rbf, lr=0.0005, gamma=0.09, degree=None || acc=0.7672, prec=0.7514, rec=0.4930, f1=0.5855
134 C=0.5, kernel=rbf, lr=0.0005, gamma=0.09999999999999999, degree=None || acc=0.7639, prec=0.7370, rec=0.4930, f1=0.5822
135 C=0.5, kernel=rbf, lr=0.0005, gamma=0.5, degree=None || acc=0.7164, prec=0.6356, rec=0.3770, f1=0.4653
136 C=0.5, kernel=rbf, lr=0.0005, gamma=1, degree=None || acc=0.6607, prec=0.5504, rec=0.1139, f1=0.1829
137 C=1, kernel=linear, lr=0.001, gamma=None, degree=None || acc=0.7689, prec=0.7606, rec=0.4832, f1=0.5842
138 C=1, kernel=linear, lr=0.005, gamma=None, degree=None || acc=0.5213, prec=0.3630, rec=0.5086, f1=0.4209
139 C=1, kernel=linear, lr=0.0001, gamma=None, degree=None || acc=0.7721, prec=0.7381, rec=0.5348, f1=0.6114
140 C=1, kernel=linear, lr=0.0005, gamma=None, degree=None || acc=0.7689, prec=0.7606, rec=0.4832, f1=0.5842
141 C=1, kernel=poly, lr=0.001, gamma=None, degree=2 || acc=0.7525, prec=0.7378, rec=0.4317, f1=0.5382
142 C=1, kernel=poly, lr=0.001, gamma=None, degree=3 || acc=0.7410, prec=0.7336, rec=0.3823, f1=0.4942
143 C=1, kernel=poly, lr=0.001, gamma=None, degree=4 || acc=0.6508, prec=0.5154, rec=0.2884, f1=0.3289
144 C=1, kernel=poly, lr=0.005, gamma=None, degree=2 || acc=0.7525, prec=0.7378, rec=0.4317, f1=0.5382
145 C=1, kernel=poly, lr=0.005, gamma=None, degree=3 || acc=0.4197, prec=0.2697, rec=0.3379, f1=0.2892
146 C=1, kernel=poly, lr=0.005, gamma=None, degree=4 || acc=0.6197, prec=0.4483, rec=0.3420, f1=0.3238
147 C=1, kernel=poly, lr=0.0001, gamma=None, degree=2 || acc=0.7639, prec=0.7180, rec=0.5304, f1=0.6002
148 C=1, kernel=poly, lr=0.0001, gamma=None, degree=3 || acc=0.7590, prec=0.7138, rec=0.5066, f1=0.5845
149 C=1, kernel=poly, lr=0.0001, gamma=None, degree=4 || acc=0.7443, prec=0.7095, rec=0.4469, f1=0.5380
150 C=1, kernel=poly, lr=0.0005, gamma=None, degree=2 || acc=0.7525, prec=0.7378, rec=0.4317, f1=0.5382
151 C=1, kernel=poly, lr=0.0005, gamma=None, degree=3 || acc=0.7410, prec=0.7336, rec=0.3823, f1=0.4942
152 C=1, kernel=poly, lr=0.0005, gamma=None, degree=4 || acc=0.6361, prec=0.4634, rec=0.2345, f1=0.3025

153 C=1, kernel=rbf, lr=0.001, gamma=0.001, degree=None || acc=0.6869, prec=0.8133, rec=0.1051, f1=0.1792
154 C=1, kernel=rbf, lr=0.001, gamma=0.005, degree=None || acc=0.7557, prec=0.8005, rec=0.3953, f1=0.5189
155 C=1, kernel=rbf, lr=0.001, gamma=0.01, degree=None || acc=0.7705, prec=0.7927, rec=0.4571, f1=0.5733
156 C=1, kernel=rbf, lr=0.001, gamma=0.02, degree=None || acc=0.7721, prec=0.7754, rec=0.4841, f1=0.5876
157 C=1, kernel=rbf, lr=0.001, gamma=0.03, degree=None || acc=0.7672, prec=0.7565, rec=0.4775, f1=0.5781
158 C=1, kernel=rbf, lr=0.001, gamma=0.04, degree=None || acc=0.7705, prec=0.7601, rec=0.4888, f1=0.5860
159 C=1, kernel=rbf, lr=0.001, gamma=0.05, degree=None || acc=0.7705, prec=0.7559, rec=0.4944, f1=0.5879
160 C=1, kernel=rbf, lr=0.001, gamma=0.060000000000000005, degree=None || acc=0.7738, prec=0.7565, rec=0.5099, f1=0.5991
161 C=1, kernel=rbf, lr=0.001, gamma=0.06999999999999999, degree=None || acc=0.7705, prec=0.7484, rec=0.5103, f1=0.5965
162 C=1, kernel=rbf, lr=0.001, gamma=0.08, degree=None || acc=0.7656, prec=0.7313, rec=0.5128, f1=0.5933
163 C=1, kernel=rbf, lr=0.001, gamma=0.09, degree=None || acc=0.7656, prec=0.7331, rec=0.5140, f1=0.5949
164 C=1, kernel=rbf, lr=0.001, gamma=0.09999999999999999, degree=None || acc=0.7672, prec=0.7336, rec=0.5187, f1=0.5984
165 C=1, kernel=rbf, lr=0.001, gamma=0.5, degree=None || acc=0.7197, prec=0.6226, rec=0.4607, f1=0.5233
166 C=1, kernel=rbf, lr=0.001, gamma=1, degree=None || acc=0.6705, prec=0.5529, rec=0.2780, f1=0.3611
167 C=1, kernel=rbf, lr=0.005, gamma=0.001, degree=None || acc=0.6869, prec=0.8133, rec=0.1051, f1=0.1792
168 C=1, kernel=rbf, lr=0.005, gamma=0.005, degree=None || acc=0.7557, prec=0.8005, rec=0.3953, f1=0.5189
169 C=1, kernel=rbf, lr=0.005, gamma=0.01, degree=None || acc=0.7705, prec=0.7927, rec=0.4571, f1=0.5733
170 C=1, kernel=rbf, lr=0.005, gamma=0.02, degree=None || acc=0.7721, prec=0.7754, rec=0.4841, f1=0.5876
171 C=1, kernel=rbf, lr=0.005, gamma=0.03, degree=None || acc=0.7705, prec=0.7621, rec=0.4886, f1=0.5879
172 C=1, kernel=rbf, lr=0.005, gamma=0.04, degree=None || acc=0.7738, prec=0.7657, rec=0.4999, f1=0.5958
173 C=1, kernel=rbf, lr=0.005, gamma=0.05, degree=None || acc=0.7738, prec=0.7615, rec=0.5055, f1=0.5977
174 C=1, kernel=rbf, lr=0.005, gamma=0.060000000000000005, degree=None || acc=0.7754, prec=0.7590, rec=0.5154, f1=0.6038
175 C=1, kernel=rbf, lr=0.005, gamma=0.06999999999999999, degree=None || acc=0.7705, prec=0.7491, rec=0.5121, f1=0.5979
176 C=1, kernel=rbf, lr=0.005, gamma=0.08, degree=None || acc=0.7672, prec=0.7339, rec=0.5183, f1=0.5981
177 C=1, kernel=rbf, lr=0.005, gamma=0.09, degree=None || acc=0.7656, prec=0.7331, rec=0.5140, f1=0.5949
178 C=1, kernel=rbf, lr=0.005, gamma=0.09999999999999999, degree=None || acc=0.7672, prec=0.7336, rec=0.5187, f1=0.5984
179 C=1, kernel=rbf, lr=0.005, gamma=0.5, degree=None || acc=0.7197, prec=0.6226, rec=0.4607, f1=0.5233
180 C=1, kernel=rbf, lr=0.005, gamma=1, degree=None || acc=0.6705, prec=0.5529, rec=0.2780, f1=0.3611
181 C=1, kernel=rbf, lr=0.0001, gamma=0.001, degree=None || acc=0.7393, prec=0.7791, rec=0.3519, f1=0.4697
182 C=1, kernel=rbf, lr=0.0001, gamma=0.005, degree=None || acc=0.7738, prec=0.7521, rec=0.5198, f1=0.6067
183 C=1, kernel=rbf, lr=0.0001, gamma=0.01, degree=None || acc=0.7754, prec=0.7470, rec=0.5363, f1=0.6159
184 C=1, kernel=rbf, lr=0.0001, gamma=0.02, degree=None || acc=0.7836, prec=0.7541, rec=0.5549, f1=0.6328
185 C=1, kernel=rbf, lr=0.0001, gamma=0.03, degree=None || acc=0.7869, prec=0.7593, rec=0.5601, f1=0.6379
186 C=1, kernel=rbf, lr=0.0001, gamma=0.04, degree=None || acc=0.7820, prec=0.7360, rec=0.5699, f1=0.6371
187 C=1, kernel=rbf, lr=0.0001, gamma=0.05, degree=None || acc=0.7836, prec=0.7417, rec=0.5706, f1=0.6384
188 C=1, kernel=rbf, lr=0.0001, gamma=0.060000000000000005, degree=None || acc=0.7770, prec=0.7359, rec=0.5515, f1=0.6232
189 C=1, kernel=rbf, lr=0.0001, gamma=0.06999999999999999, degree=None || acc=0.7705, prec=0.7162, rec=0.5515, f1=0.6165
190 C=1, kernel=rbf, lr=0.0001, gamma=0.08, degree=None || acc=0.7705, prec=0.7135, rec=0.5573, f1=0.6201
191 C=1, kernel=rbf, lr=0.0001, gamma=0.09, degree=None || acc=0.7656, prec=0.7014, rec=0.5573, f1=0.6143
192 C=1, kernel=rbf, lr=0.0001, gamma=0.09999999999999999, degree=None || acc=0.7689, prec=0.7043, rec=0.5658, f1=0.6210
193 C=1, kernel=rbf, lr=0.0001, gamma=0.5, degree=None || acc=0.7311, prec=0.6322, rec=0.5203, f1=0.5629
194 C=1, kernel=rbf, lr=0.0001, gamma=1, degree=None || acc=0.6689, prec=0.5477, rec=0.2730, f1=0.3563
195 C=1, kernel=rbf, lr=0.0005, gamma=0.001, degree=None || acc=0.6869, prec=0.8133, rec=0.1051, f1=0.1792
196 C=1, kernel=rbf, lr=0.0005, gamma=0.005, degree=None || acc=0.7525, prec=0.7907, rec=0.3906, f1=0.5131
197 C=1, kernel=rbf, lr=0.0005, gamma=0.01, degree=None || acc=0.7689, prec=0.7863, rec=0.4571, f1=0.5713
198 C=1, kernel=rbf, lr=0.0005, gamma=0.02, degree=None || acc=0.7721, prec=0.7754, rec=0.4841, f1=0.5876
199 C=1, kernel=rbf, lr=0.0005, gamma=0.03, degree=None || acc=0.7656, prec=0.7554, rec=0.4732, f1=0.5736
200 C=1, kernel=rbf, lr=0.0005, gamma=0.04, degree=None || acc=0.7705, prec=0.7601, rec=0.4888, f1=0.5860
201 C=1, kernel=rbf, lr=0.0005, gamma=0.05, degree=None || acc=0.7705, prec=0.7559, rec=0.4944, f1=0.5879
202 C=1, kernel=rbf, lr=0.0005, gamma=0.060000000000000005, degree=None || acc=0.7721, prec=0.7517, rec=0.5099, f1=0.5974
203 C=1, kernel=rbf, lr=0.0005, gamma=0.06999999999999999, degree=None || acc=0.7689, prec=0.7466, rec=0.5066, f1=0.5931
204 C=1, kernel=rbf, lr=0.0005, gamma=0.08, degree=None || acc=0.7656, prec=0.7313, rec=0.5128, f1=0.5933
205 C=1, kernel=rbf, lr=0.0005, gamma=0.09, degree=None || acc=0.7656, prec=0.7331, rec=0.5140, f1=0.5949
206 C=1, kernel=rbf, lr=0.0005, gamma=0.09999999999999999, degree=None || acc=0.7656, prec=0.7323, rec=0.5140, f1=0.5943
207 C=1, kernel=rbf, lr=0.0005, gamma=0.5, degree=None || acc=0.7197, prec=0.6226, rec=0.4607, f1=0.5233
208 C=1, kernel=rbf, lr=0.0005, gamma=1, degree=None || acc=0.6705, prec=0.5529, rec=0.2780, f1=0.3611
209 C=5, kernel=linear, lr=0.001, gamma=None, degree=None || acc=0.7689, prec=0.7583, rec=0.4888, f1=0.5874
210 C=5, kernel=linear, lr=0.005, gamma=None, degree=None || acc=0.5213, prec=0.3630, rec=0.5086, f1=0.4209
211 C=5, kernel=linear, lr=0.0001, gamma=None, degree=None || acc=0.7787, prec=0.7412, rec=0.5563, f1=0.6272
212 C=5, kernel=linear, lr=0.0005, gamma=None, degree=None || acc=0.7721, prec=0.7381, rec=0.5348, f1=0.6114
213 C=5, kernel=poly, lr=0.001, gamma=None, degree=2 || acc=0.7508, prec=0.7078, rec=0.4757, f1=0.5610
214 C=5, kernel=poly, lr=0.001, gamma=None, degree=3 || acc=0.7410, prec=0.6867, rec=0.4537, f1=0.5382
215 C=5, kernel=poly, lr=0.001, gamma=None, degree=4 || acc=0.5770, prec=0.4212, rec=0.4361, f1=0.3806
216 C=5, kernel=poly, lr=0.005, gamma=None, degree=2 || acc=0.7525, prec=0.7199, rec=0.4606, f1=0.5538
217 C=5, kernel=poly, lr=0.005, gamma=None, degree=3 || acc=0.4246, prec=0.2766, rec=0.3469, f1=0.2981
218 C=5, kernel=poly, lr=0.005, gamma=None, degree=4 || acc=0.6213, prec=0.4363, rec=0.3117, f1=0.3083
219 C=5, kernel=poly, lr=0.0001, gamma=None, degree=2 || acc=0.7623, prec=0.7066, rec=0.5495, f1=0.6068
220 C=5, kernel=poly, lr=0.0001, gamma=None, degree=3 || acc=0.7557, prec=0.6956, rec=0.5338, f1=0.5947
221 C=5, kernel=poly, lr=0.0001, gamma=None, degree=4 || acc=0.7492, prec=0.6961, rec=0.4900, f1=0.5660
222 C=5, kernel=poly, lr=0.0005, gamma=None, degree=2 || acc=0.7541, prec=0.6942, rec=0.5232, f1=0.5876
223 C=5, kernel=poly, lr=0.0005, gamma=None, degree=3 || acc=0.7459, prec=0.6764, rec=0.4962, f1=0.5650
224 C=5, kernel=poly, lr=0.0005, gamma=None, degree=4 || acc=0.5639, prec=0.3786, rec=0.3850, f1=0.3619
225 C=5, kernel=rbf, lr=0.001, gamma=0.001, degree=None || acc=0.7557, prec=0.7892, rec=0.4046, f1=0.5240
226 C=5, kernel=rbf, lr=0.001, gamma=0.005, degree=None || acc=0.7754, prec=0.7745, rec=0.4980, f1=0.5994
227 C=5, kernel=rbf, lr=0.001, gamma=0.01, degree=None || acc=0.7738, prec=0.7613, rec=0.5034, f1=0.5987
228 C=5, kernel=rbf, lr=0.001, gamma=0.02, degree=None || acc=0.7787, prec=0.7663, rec=0.5191, f1=0.6095

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C=5, kernel=rbf, lr=0.001, gamma=0.03, degree=None || acc=0.7754, prec=0.7507, rec=0.5228, f1=0.6068
C=5, kernel=rbf, lr=0.001, gamma=0.04, degree=None || acc=0.7639, prec=0.7182, rec=0.5249, f1=0.5981
C=5, kernel=rbf, lr=0.001, gamma=0.05, degree=None || acc=0.7672, prec=0.7197, rec=0.5333, f1=0.6054
C=5, kernel=rbf, lr=0.001, gamma=0.060000000000000005, degree=None || acc=0.7607, prec=0.7068, rec=0.5272, f1=0.5949
C=5, kernel=rbf, lr=0.001, gamma=0.06999999999999999, degree=None || acc=0.7590, prec=0.7011, rec=0.5320, f1=0.5952
C=5, kernel=rbf, lr=0.001, gamma=0.08, degree=None || acc=0.7574, prec=0.6955, rec=0.5375, f1=0.5944
C=5, kernel=rbf, lr=0.001, gamma=0.09, degree=None || acc=0.7508, prec=0.6789, rec=0.5431, f1=0.5891
C=5, kernel=rbf, lr=0.001, gamma=0.09999999999999999, degree=None || acc=0.7426, prec=0.6549, rec=0.5435, f1=0.5803
C=5, kernel=rbf, lr=0.001, gamma=0.5, degree=None || acc=0.7016, prec=0.5717, rec=0.5416, f1=0.5460
C=5, kernel=rbf, lr=0.001, gamma=1, degree=None || acc=0.6820, prec=0.5610, rec=0.4015, f1=0.4592
C=5, kernel=rbf, lr=0.005, gamma=0.001, degree=None || acc=0.7525, prec=0.7962, rec=0.3862, f1=0.5086
C=5, kernel=rbf, lr=0.005, gamma=0.005, degree=None || acc=0.7705, prec=0.7736, rec=0.4781, f1=0.5846
C=5, kernel=rbf, lr=0.005, gamma=0.01, degree=None || acc=0.7705, prec=0.7693, rec=0.4793, f1=0.5826
C=5, kernel=rbf, lr=0.005, gamma=0.02, degree=None || acc=0.7770, prec=0.7670, rec=0.5092, f1=0.6045
C=5, kernel=rbf, lr=0.005, gamma=0.03, degree=None || acc=0.7721, prec=0.7479, rec=0.5153, f1=0.6024
C=5, kernel=rbf, lr=0.005, gamma=0.04, degree=None || acc=0.7705, prec=0.7318, rec=0.5293, f1=0.6069
C=5, kernel=rbf, lr=0.005, gamma=0.05, degree=None || acc=0.7705, prec=0.7251, rec=0.5388, f1=0.6116
C=5, kernel=rbf, lr=0.005, gamma=0.060000000000000005, degree=None || acc=0.7623, prec=0.7106, rec=0.5346, f1=0.5991
C=5, kernel=rbf, lr=0.005, gamma=0.06999999999999999, degree=None || acc=0.7574, prec=0.6991, rec=0.5394, f1=0.5966
C=5, kernel=rbf, lr=0.005, gamma=0.08, degree=None || acc=0.7607, prec=0.7022, rec=0.5486, f1=0.6031
C=5, kernel=rbf, lr=0.005, gamma=0.09, degree=None || acc=0.7557, prec=0.6915, rec=0.5443, f1=0.5953
C=5, kernel=rbf, lr=0.005, gamma=0.09999999999999999, degree=None || acc=0.7426, prec=0.6617, rec=0.5344, f1=0.5772
C=5, kernel=rbf, lr=0.005, gamma=0.5, degree=None || acc=0.7049, prec=0.5777, rec=0.5466, f1=0.5513
C=5, kernel=rbf, lr=0.005, gamma=1, degree=None || acc=0.6787, prec=0.5555, rec=0.4015, f1=0.4566
C=5, kernel=rbf, lr=0.0001, gamma=0.001, degree=None || acc=0.7705, prec=0.7802, rec=0.4769, f1=0.5822
C=5, kernel=rbf, lr=0.0001, gamma=0.005, degree=None || acc=0.7803, prec=0.7391, rec=0.5609, f1=0.6303
C=5, kernel=rbf, lr=0.0001, gamma=0.01, degree=None || acc=0.7770, prec=0.7284, rec=0.5631, f1=0.6291
C=5, kernel=rbf, lr=0.0001, gamma=0.02, degree=None || acc=0.7820, prec=0.7370, rec=0.5744, f1=0.6380
C=5, kernel=rbf, lr=0.0001, gamma=0.03, degree=None || acc=0.7787, prec=0.7240, rec=0.5746, f1=0.6357
C=5, kernel=rbf, lr=0.0001, gamma=0.04, degree=None || acc=0.7738, prec=0.7134, rec=0.5754, f1=0.6301
C=5, kernel=rbf, lr=0.0001, gamma=0.05, degree=None || acc=0.7672, prec=0.6999, rec=0.5654, f1=0.6195
C=5, kernel=rbf, lr=0.0001, gamma=0.060000000000000005, degree=None || acc=0.7672, prec=0.6918, rec=0.5786, f1=0.6242
C=5, kernel=rbf, lr=0.0001, gamma=0.06999999999999999, degree=None || acc=0.7639, prec=0.6870, rec=0.5738, f1=0.6186
C=5, kernel=rbf, lr=0.0001, gamma=0.08, degree=None || acc=0.7623, prec=0.6857, rec=0.5701, f1=0.6158
C=5, kernel=rbf, lr=0.0001, gamma=0.09, degree=None || acc=0.7557, prec=0.6685, rec=0.5757, f1=0.6112
C=5, kernel=rbf, lr=0.0001, gamma=0.09999999999999999, degree=None || acc=0.7541, prec=0.6659, rec=0.5757, f1=0.6096
C=5, kernel=rbf, lr=0.0001, gamma=0.5, degree=None || acc=0.7262, prec=0.6139, rec=0.5677, f1=0.5805
C=5, kernel=rbf, lr=0.0001, gamma=1, degree=None || acc=0.6770, prec=0.5546, rec=0.3469, f1=0.4210
C=5, kernel=rbf, lr=0.0005, gamma=0.001, degree=None || acc=0.7672, prec=0.7365, rec=0.5160, f1=0.5970
C=5, kernel=rbf, lr=0.0005, gamma=0.005, degree=None || acc=0.7787, prec=0.7565, rec=0.5357, f1=0.6192
C=5, kernel=rbf, lr=0.0005, gamma=0.01, degree=None || acc=0.7852, prec=0.7611, rec=0.5502, f1=0.6319
C=5, kernel=rbf, lr=0.0005, gamma=0.02, degree=None || acc=0.7754, prec=0.7358, rec=0.5457, f1=0.6194
C=5, kernel=rbf, lr=0.0005, gamma=0.03, degree=None || acc=0.7754, prec=0.7291, rec=0.5563, f1=0.6238
C=5, kernel=rbf, lr=0.0005, gamma=0.04, degree=None || acc=0.7672, prec=0.7058, rec=0.5610, f1=0.6169
C=5, kernel=rbf, lr=0.0005, gamma=0.05, degree=None || acc=0.7607, prec=0.6927, rec=0.5610, f1=0.6109
C=5, kernel=rbf, lr=0.0005, gamma=0.060000000000000005, degree=None || acc=0.7623, prec=0.6942, rec=0.5724, f1=0.6175
C=5, kernel=rbf, lr=0.0005, gamma=0.06999999999999999, degree=None || acc=0.7557, prec=0.6822, rec=0.5669, f1=0.6076
C=5, kernel=rbf, lr=0.0005, gamma=0.08, degree=None || acc=0.7475, prec=0.6649, rec=0.5619, f1=0.5968
C=5, kernel=rbf, lr=0.0005, gamma=0.09, degree=None || acc=0.7443, prec=0.6611, rec=0.5534, f1=0.5892
C=5, kernel=rbf, lr=0.0005, gamma=0.09999999999999999, degree=None || acc=0.7443, prec=0.6588, rec=0.5582, f1=0.5910
C=5, kernel=rbf, lr=0.0005, gamma=0.5, degree=None || acc=0.7049, prec=0.5764, rec=0.5503, f1=0.5529
C=5, kernel=rbf, lr=0.0005, gamma=1, degree=None || acc=0.6803, prec=0.5586, rec=0.4015, f1=0.4582
C=10, kernel=linear, lr=0.001, gamma=None, degree=None || acc=0.7721, prec=0.7381, rec=0.5348, f1=0.6114
C=10, kernel=linear, lr=0.005, gamma=None, degree=None || acc=0.5213, prec=0.3630, rec=0.5086, f1=0.4209
C=10, kernel=linear, lr=0.0001, gamma=None, degree=None || acc=0.7787, prec=0.7412, rec=0.5563, f1=0.6272
C=10, kernel=linear, lr=0.0005, gamma=None, degree=None || acc=0.7787, prec=0.7412, rec=0.5563, f1=0.6272
C=10, kernel=poly, lr=0.001, gamma=None, degree=2 || acc=0.7492, prec=0.6850, rec=0.5185, f1=0.5807
C=10, kernel=poly, lr=0.001, gamma=None, degree=3 || acc=0.7361, prec=0.6541, rec=0.4918, f1=0.5535
C=10, kernel=poly, lr=0.001, gamma=None, degree=4 || acc=0.5770, prec=0.3814, rec=0.3768, f1=0.3534
C=10, kernel=poly, lr=0.005, gamma=None, degree=2 || acc=0.7508, prec=0.7144, rec=0.4606, f1=0.5520
C=10, kernel=poly, lr=0.005, gamma=None, degree=3 || acc=0.3836, prec=0.2279, rec=0.3359, f1=0.2693
C=10, kernel=poly, lr=0.005, gamma=None, degree=4 || acc=0.6131, prec=0.4344, rec=0.3275, f1=0.3093
C=10, kernel=poly, lr=0.0001, gamma=None, degree=2 || acc=0.7607, prec=0.7015, rec=0.5495, f1=0.6051
C=10, kernel=poly, lr=0.0001, gamma=None, degree=3 || acc=0.7541, prec=0.6937, rec=0.5285, f1=0.5909
C=10, kernel=poly, lr=0.0001, gamma=None, degree=4 || acc=0.7459, prec=0.6890, rec=0.4900, f1=0.5632
C=10, kernel=poly, lr=0.0005, gamma=None, degree=2 || acc=0.7492, prec=0.6795, rec=0.5333, f1=0.5872
C=10, kernel=poly, lr=0.0005, gamma=None, degree=3 || acc=0.7279, prec=0.6361, rec=0.5017, f1=0.5513
C=10, kernel=poly, lr=0.0005, gamma=None, degree=4 || acc=0.5475, prec=0.3718, rec=0.4392, f1=0.3906
C=10, kernel=rbf, lr=0.001, gamma=0.001, degree=None || acc=0.7721, prec=0.7368, rec=0.5350, f1=0.6119
C=10, kernel=rbf, lr=0.001, gamma=0.005, degree=None || acc=0.7820, prec=0.7567, rec=0.5394, f1=0.6233
C=10, kernel=rbf, lr=0.001, gamma=0.01, degree=None || acc=0.7770, prec=0.7445, rec=0.5407, f1=0.6179
C=10, kernel=rbf, lr=0.001, gamma=0.02, degree=None || acc=0.7689, prec=0.7150, rec=0.5515, f1=0.6141
C=10, kernel=rbf, lr=0.001, gamma=0.03, degree=None || acc=0.7639, prec=0.7008, rec=0.5555, f1=0.6117
C=10, kernel=rbf, lr=0.001, gamma=0.04, degree=None || acc=0.7590, prec=0.6874, rec=0.5555, f1=0.6063
C=10, kernel=rbf, lr=0.001, gamma=0.05, degree=None || acc=0.7557, prec=0.6821, rec=0.5621, f1=0.6050
C=10, kernel=rbf, lr=0.001, gamma=0.060000000000000005, degree=None || acc=0.7508, prec=0.6677, rec=0.5662, f1=0.6024
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C=10, kernel=rbf, lr=0.001, gamma=0.06999999999999999, degree=None || acc=0.7443, prec=0.6558, rec=0.5563, f1=0.5891
C=10, kernel=rbf, lr=0.001, gamma=0.08, degree=None || acc=0.7410, prec=0.6479, rec=0.5515, f1=0.5828
C=10, kernel=rbf, lr=0.001, gamma=0.09, degree=None || acc=0.7393, prec=0.6443, rec=0.5565, f1=0.5843
C=10, kernel=rbf, lr=0.001, gamma=0.09999999999999999, degree=None || acc=0.7295, prec=0.6235, rec=0.5658, f1=0.5796
C=10, kernel=rbf, lr=0.001, gamma=0.5, degree=None || acc=0.6951, prec=0.5561, rec=0.5528, f1=0.5463
C=10, kernel=rbf, lr=0.001, gamma=1, degree=None || acc=0.6738, prec=0.5433, rec=0.4071, f1=0.4549
C=10, kernel=rbf, lr=0.005, gamma=0.001, degree=None || acc=0.7639, prec=0.7975, rec=0.4294, f1=0.5490
C=10, kernel=rbf, lr=0.005, gamma=0.005, degree=None || acc=0.7672, prec=0.7711, rec=0.4698, f1=0.5753
C=10, kernel=rbf, lr=0.005, gamma=0.01, degree=None || acc=0.7672, prec=0.7603, rec=0.4794, f1=0.5788
C=10, kernel=rbf, lr=0.005, gamma=0.02, degree=None || acc=0.7721, prec=0.7420, rec=0.5190, f1=0.6042
C=10, kernel=rbf, lr=0.005, gamma=0.03, degree=None || acc=0.7689, prec=0.7276, rec=0.5237, f1=0.6028
C=10, kernel=rbf, lr=0.005, gamma=0.04, degree=None || acc=0.7672, prec=0.7203, rec=0.5333, f1=0.6059
C=10, kernel=rbf, lr=0.005, gamma=0.05, degree=None || acc=0.7639, prec=0.7097, rec=0.5437, f1=0.6064
C=10, kernel=rbf, lr=0.005, gamma=0.060000000000000005, degree=None || acc=0.7639, prec=0.7010, rec=0.5571, f1=0.6106
C=10, kernel=rbf, lr=0.005, gamma=0.06999999999999999, degree=None || acc=0.7475, prec=0.6718, rec=0.5383, f1=0.5850
C=10, kernel=rbf, lr=0.005, gamma=0.08, degree=None || acc=0.7410, prec=0.6537, rec=0.5399, f1=0.5775
C=10, kernel=rbf, lr=0.005, gamma=0.09, degree=None || acc=0.7311, prec=0.6316, rec=0.5436, f1=0.5686
C=10, kernel=rbf, lr=0.005, gamma=0.09999999999999999, degree=None || acc=0.7295, prec=0.6262, rec=0.5494, f1=0.5677
C=10, kernel=rbf, lr=0.005, gamma=0.5, degree=None || acc=0.6951, prec=0.5582, rec=0.5540, f1=0.5460
C=10, kernel=rbf, lr=0.005, gamma=1, degree=None || acc=0.6721, prec=0.5418, rec=0.4071, f1=0.4539
C=10, kernel=rbf, lr=0.0001, gamma=0.001, degree=None || acc=0.7689, prec=0.7686, rec=0.4849, f1=0.5836
C=10, kernel=rbf, lr=0.0001, gamma=0.005, degree=None || acc=0.7803, prec=0.7391, rec=0.5609, f1=0.6303
C=10, kernel=rbf, lr=0.0001, gamma=0.01, degree=None || acc=0.7787, prec=0.7260, rec=0.5728, f1=0.6350
C=10, kernel=rbf, lr=0.0001, gamma=0.02, degree=None || acc=0.7820, prec=0.7362, rec=0.5744, f1=0.6383
C=10, kernel=rbf, lr=0.0001, gamma=0.03, degree=None || acc=0.7770, prec=0.7205, rec=0.5746, f1=0.6340
C=10, kernel=rbf, lr=0.0001, gamma=0.04, degree=None || acc=0.7721, prec=0.7117, rec=0.5706, f1=0.6263
C=10, kernel=rbf, lr=0.0001, gamma=0.05, degree=None || acc=0.7672, prec=0.6999, rec=0.5654, f1=0.6195
C=10, kernel=rbf, lr=0.0001, gamma=0.060000000000000005, degree=None || acc=0.7639, prec=0.6854, rec=0.5738, f1=0.6185
C=10, kernel=rbf, lr=0.0001, gamma=0.06999999999999999, degree=None || acc=0.7623, prec=0.6857, rec=0.5701, f1=0.6158
C=10, kernel=rbf, lr=0.0001, gamma=0.08, degree=None || acc=0.7623, prec=0.6846, rec=0.5757, f1=0.6181
C=10, kernel=rbf, lr=0.0001, gamma=0.09, degree=None || acc=0.7541, prec=0.6659, rec=0.5757, f1=0.6096
C=10, kernel=rbf, lr=0.0001, gamma=0.09999999999999999, degree=None || acc=0.7541, prec=0.6659, rec=0.5757, f1=0.6096
C=10, kernel=rbf, lr=0.0001, gamma=0.5, degree=None || acc=0.7246, prec=0.6120, rec=0.5622, f1=0.5773
C=10, kernel=rbf, lr=0.0001, gamma=1, degree=None || acc=0.6787, prec=0.5580, rec=0.3512, f1=0.4252
C=10, kernel=rbf, lr=0.0005, gamma=0.001, degree=None || acc=0.7754, prec=0.7398, rec=0.5444, f1=0.6198
C=10, kernel=rbf, lr=0.0005, gamma=0.005, degree=None || acc=0.7770, prec=0.7294, rec=0.5572, f1=0.6259
C=10, kernel=rbf, lr=0.0005, gamma=0.01, degree=None || acc=0.7803, prec=0.7398, rec=0.5593, f1=0.6301
C=10, kernel=rbf, lr=0.0005, gamma=0.02, degree=None || acc=0.7689, prec=0.7105, rec=0.5563, f1=0.6173
C=10, kernel=rbf, lr=0.0005, gamma=0.03, degree=None || acc=0.7623, prec=0.6892, rec=0.5658, f1=0.6146
C=10, kernel=rbf, lr=0.0005, gamma=0.04, degree=None || acc=0.7590, prec=0.6816, rec=0.5647, f1=0.6098
C=10, kernel=rbf, lr=0.0005, gamma=0.05, degree=None || acc=0.7525, prec=0.6658, rec=0.5761, f1=0.6085
C=10, kernel=rbf, lr=0.0005, gamma=0.060000000000000005, degree=None || acc=0.7492, prec=0.6625, rec=0.5724, f1=0.6042
C=10, kernel=rbf, lr=0.0005, gamma=0.06999999999999999, degree=None || acc=0.7459, prec=0.6560, rec=0.5765, f1=0.6024
C=10, kernel=rbf, lr=0.0005, gamma=0.08, degree=None || acc=0.7426, prec=0.6511, rec=0.5666, f1=0.5939
C=10, kernel=rbf, lr=0.0005, gamma=0.09, degree=None || acc=0.7344, prec=0.6342, rec=0.5619, f1=0.5833
C=10, kernel=rbf, lr=0.0005, gamma=0.09999999999999999, degree=None || acc=0.7311, prec=0.6217, rec=0.5706, f1=0.5838
C=10, kernel=rbf, lr=0.0005, gamma=0.5, degree=None || acc=0.7049, prec=0.5750, rec=0.5638, f1=0.5599
C=10, kernel=rbf, lr=0.0005, gamma=1, degree=None || acc=0.6770, prec=0.5516, rec=0.4071, f1=0.4575

Best params:  {'kernel': 'rbf', 'C': 1, 'gamma': 0.05, 'degree': None, 'lr': 0.0001}
Best scores:  {'acc': 0.7836065572485891, 'prec': 0.7416971912155301, 'rec': 0.5706458171616322, 'f1': 0.6383676550808968}


#################### Testing and Evaluation ####################

Test Accuracy: 0.7727272726770956
Test Precision: 0.8484848482277318
Test Recall: 0.48275862060642094
Test F1 Score: 0.615384610626736

Process finished with exit code 0
```