**Output of the Entire Code**

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| **Project Done by:** | |  |
|  | **Sameer Akhtar Syed** | **(Student ID: 105152677)** |

**FAR,FRR,Classification of Each User as Sheeps and goats:-**

s002 0.79 Sheep

FRR for s002 = 0.20999999999999996

FAR for s002 = 0.35

s003 0.6025 Goat

FRR for s003 = 0.39749999999999996

FAR for s003 = 0.253

s004 0.7725 Sheep

FRR for s004 = 0.22750000000000004

FAR for s004 = 0.484

s005 0.855 Sheep

FRR for s005 = 0.14500000000000002

FAR for s005 = 0.444

s007 0.85 Sheep

FRR for s007 = 0.15000000000000002

FAR for s007 = 0.439

s008 0.7825 Sheep

FRR for s008 = 0.21750000000000003

FAR for s008 = 0.422

s010 0.8575 Sheep

FRR for s010 = 0.14249999999999996

FAR for s010 = 0.31

s011 0.71 Sheep

FRR for s011 = 0.29000000000000004

FAR for s011 = 0.124

s012 0.755 Sheep

FRR for s012 = 0.245

FAR for s012 = 0.259

s013 0.7075 Sheep

FRR for s013 = 0.2925

FAR for s013 = 0.416

s015 0.5875 Goat

FRR for s015 = 0.4125

FAR for s015 = 0.206

s016 0.7475 Sheep

FRR for s016 = 0.25249999999999995

FAR for s016 = 0.296

s017 0.86 Sheep

FRR for s017 = 0.14

FAR for s017 = 0.444

s018 0.485 Goat

FRR for s018 = 0.515

FAR for s018 = 0.307

s019 0.89 Sheep

FRR for s019 = 0.10999999999999999

FAR for s019 = 0.148

s020 0.465 Goat

FRR for s020 = 0.5349999999999999

FAR for s020 = 0.404

s021 0.8125 Sheep

FRR for s021 = 0.1875

FAR for s021 = 0.373

s022 0.5975 Goat

FRR for s022 = 0.40249999999999997

FAR for s022 = 0.14

s024 0.8075 Sheep

FRR for s024 = 0.1925

FAR for s024 = 0.174

s025 0.8 Sheep

FRR for s025 = 0.19999999999999996

FAR for s025 = 0.089

s026 0.7425 Sheep

FRR for s026 = 0.25749999999999995

FAR for s026 = 0.394

s027 0.835 Sheep

FRR for s027 = 0.16500000000000004

FAR for s027 = 0.139

s028 0.8175 Sheep

FRR for s028 = 0.1825

FAR for s028 = 0.349

s029 0.83 Sheep

FRR for s029 = 0.17000000000000004

FAR for s029 = 0.466

s030 0.7375 Sheep

FRR for s030 = 0.26249999999999996

FAR for s030 = 0.444

s031 0.64 Goat

FRR for s031 = 0.36

FAR for s031 = 0.509

s032 0.5825 Goat

FRR for s032 = 0.4175

FAR for s032 = 0.404

s033 0.57 Goat

FRR for s033 = 0.43000000000000005

FAR for s033 = 0.285

s034 0.51 Goat

FRR for s034 = 0.49

FAR for s034 = 0.198

s035 0.6575 Goat

FRR for s035 = 0.3425

FAR for s035 = 0.394

s036 0.74 Sheep

FRR for s036 = 0.26

FAR for s036 = 0.076

s037 0.74 Sheep

FRR for s037 = 0.26

FAR for s037 = 0.418

s038 0.74 Sheep

FRR for s038 = 0.26

FAR for s038 = 0.311

s039 0.79 Sheep

FRR for s039 = 0.20999999999999996

FAR for s039 = 0.364

s040 0.54 Goat

FRR for s040 = 0.45999999999999996

FAR for s040 = 0.429

s041 0.6925 Goat

FRR for s041 = 0.3075

FAR for s041 = 0.37

s042 0.8775 Sheep

FRR for s042 = 0.12250000000000005

FAR for s042 = 0.309

s043 0.8125 Sheep

FRR for s043 = 0.1875

FAR for s043 = 0.195

s044 0.6875 Goat

FRR for s044 = 0.3125

FAR for s044 = 0.18

s046 0.6625 Goat

FRR for s046 = 0.3375

FAR for s046 = 0.234

s047 0.555 Goat

FRR for s047 = 0.44499999999999995

FAR for s047 = 0.163

s048 0.795 Sheep

FRR for s048 = 0.20499999999999996

FAR for s048 = 0.388

s049 0.5525 Goat

FRR for s049 = 0.4475

FAR for s049 = 0.194

s050 0.6525 Goat

FRR for s050 = 0.34750000000000003

FAR for s050 = 0.493

s051 0.745 Sheep

FRR for s051 = 0.255

FAR for s051 = 0.426

s052 0.815 Sheep

FRR for s052 = 0.18500000000000005

FAR for s052 = 0.007

s053 0.7725 Sheep

FRR for s053 = 0.22750000000000004

FAR for s053 = 0.212

s054 0.8075 Sheep

FRR for s054 = 0.1925

FAR for s054 = 0.365

s055 0.835 Sheep

FRR for s055 = 0.16500000000000004

FAR for s055 = 0.091

s056 0.7175 Sheep

FRR for s056 = 0.2825

FAR for s056 = 0.423

s057 0.6475 Goat

FRR for s057 = 0.35250000000000004

FAR for s057 = 0.457

Sheep count: 33

Goat count: 18

Overall FRR: 0.27774509803921565

Overall FAR: 0.30919607843137253

**Count of imitations made by and made against each user:-**

s002 can imitate 0 other subjects

s002 can be imitated by 3 other subjects

s003 can imitate 0 other subjects

s003 can be imitated by 0 other subjects

s004 can imitate 0 other subjects

s004 can be imitated by 9 other subjects

s005 can imitate 30 other subjects

s005 can be imitated by 6 other subjects

s007 can imitate 9 other subjects

s007 can be imitated by 5 other subjects

s008 can imitate 2 other subjects

s008 can be imitated by 9 other subjects

s010 can imitate 10 other subjects

s010 can be imitated by 3 other subjects

s011 can imitate 0 other subjects

s011 can be imitated by 0 other subjects

s012 can imitate 3 other subjects

s012 can be imitated by 2 other subjects

s013 can imitate 0 other subjects

s013 can be imitated by 7 other subjects

s015 can imitate 0 other subjects

s015 can be imitated by 3 other subjects

s016 can imitate 0 other subjects

s016 can be imitated by 3 other subjects

s017 can imitate 24 other subjects

s017 can be imitated by 7 other subjects

s018 can imitate 0 other subjects

s018 can be imitated by 3 other subjects

s019 can imitate 7 other subjects

s019 can be imitated by 2 other subjects

s020 can imitate 0 other subjects

s020 can be imitated by 7 other subjects

s021 can imitate 13 other subjects

s021 can be imitated by 5 other subjects

s022 can imitate 0 other subjects

s022 can be imitated by 0 other subjects

s024 can imitate 2 other subjects

s024 can be imitated by 1 other subjects

s025 can imitate 0 other subjects

s025 can be imitated by 0 other subjects

s026 can imitate 5 other subjects

s026 can be imitated by 7 other subjects

s027 can imitate 8 other subjects

s027 can be imitated by 0 other subjects

s028 can imitate 10 other subjects

s028 can be imitated by 4 other subjects

s029 can imitate 17 other subjects

s029 can be imitated by 10 other subjects

s030 can imitate 6 other subjects

s030 can be imitated by 7 other subjects

s031 can imitate 0 other subjects

s031 can be imitated by 8 other subjects

s032 can imitate 0 other subjects

s032 can be imitated by 5 other subjects

s033 can imitate 0 other subjects

s033 can be imitated by 1 other subjects

s034 can imitate 0 other subjects

s034 can be imitated by 2 other subjects

s035 can imitate 0 other subjects

s035 can be imitated by 8 other subjects

s036 can imitate 0 other subjects

s036 can be imitated by 0 other subjects

s037 can imitate 3 other subjects

s037 can be imitated by 6 other subjects

s038 can imitate 3 other subjects

s038 can be imitated by 3 other subjects

s039 can imitate 21 other subjects

s039 can be imitated by 3 other subjects

s040 can imitate 0 other subjects

s040 can be imitated by 6 other subjects

s041 can imitate 0 other subjects

s041 can be imitated by 4 other subjects

s042 can imitate 17 other subjects

s042 can be imitated by 4 other subjects

s043 can imitate 2 other subjects

s043 can be imitated by 2 other subjects

s044 can imitate 1 other subjects

s044 can be imitated by 3 other subjects

s046 can imitate 0 other subjects

s046 can be imitated by 1 other subjects

s047 can imitate 0 other subjects

s047 can be imitated by 2 other subjects

s048 can imitate 11 other subjects

s048 can be imitated by 5 other subjects

s049 can imitate 0 other subjects

s049 can be imitated by 2 other subjects

s050 can imitate 0 other subjects

s050 can be imitated by 11 other subjects

s051 can imitate 1 other subjects

s051 can be imitated by 5 other subjects

s052 can imitate 0 other subjects

s052 can be imitated by 0 other subjects

s053 can imitate 2 other subjects

s053 can be imitated by 1 other subjects

s054 can imitate 8 other subjects

s054 can be imitated by 4 other subjects

s055 can imitate 0 other subjects

s055 can be imitated by 0 other subjects

s056 can imitate 0 other subjects

s056 can be imitated by 4 other subjects

s057 can imitate 0 other subjects

s057 can be imitated by 5 other subjects

**USERS WHO ARE LAMBS,WOLVES OR BOTH(Subjects who can imitate 5 other subjects(Wolf) or get imitated by 5 other subjects(lamb)):**

s004 is Lamb

s005 is Wolf

s005 is Lamb

s007 is Wolf

s008 is Lamb

s010 is Wolf

s013 is Lamb

s017 is Wolf

s017 is Lamb

s019 is Wolf

s020 is Lamb

s021 is Wolf

s026 is Lamb

s027 is Wolf

s028 is Wolf

s029 is Wolf

s029 is Lamb

s030 is Wolf

s030 is Lamb

s031 is Lamb

s035 is Lamb

s037 is Lamb

s039 is Wolf

s040 is Lamb

s042 is Wolf

s048 is Wolf

s050 is Lamb

s054 is Wolf

Generation: 1

Success %: 0.0

Max fitness: 0.8360892632183815

Min fitness: 0.6748491905510933

Avg fitness: 0.7453158257127819

Generation: 2

Success %: 0.0

Max fitness: 0.8360892632183815

Min fitness: 0.7300300846035985

Avg fitness: 0.7702790148298096

Generation: 3

Success %: 0.0

Max fitness: 0.8360892632183815

Min fitness: 0.7628951546796555

Avg fitness: 0.7893245197439973

Generation: 4

Success %: 0.0

Max fitness: 0.8488770310406293

Min fitness: 0.7764564662499972

Avg fitness: 0.8046242813593135

Generation: 5

Success %: 0.0019230769230769232

Max fitness: 0.8502027605527935

Min fitness: 0.7912080208925488

Avg fitness: 0.8179082735329283

Generation: 6

Success %: 0.011538461538461539

Max fitness: 0.8587870573189521

Min fitness: 0.814735998432729

Avg fitness: 0.8286957971778173

Generation: 7

Success %: 0.051923076923076926

Max fitness: 0.8587870573189521

Min fitness: 0.8245057797552525

Avg fitness: 0.83713123293655

Generation: 8

Success %: 0.19230769230769232

Max fitness: 0.865280096779319

Min fitness: 0.8279667013219837

Avg fitness: 0.844541250949467

Generation: 9

Success %: 0.5442307692307692

Max fitness: 0.866451225093559

Min fitness: 0.8417073779532771

Avg fitness: 0.8511759435491996

Generation: 10

Success %: 0.9865384615384616

Max fitness: 0.874845203599848

Min fitness: 0.8466452398565686

Avg fitness: 0.8568452754351167