

Gymnastic Report

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1 Rules Reminder

1.1 Apparatus

women(6): team all-around, individual all-around, vault, uneven bars, balance beam, and floor exercise
men (8): team all-around, individual all-around, floor exercise, pommel horse, still rings, vault, parallel bars,
and high bar

Specifically,

For women: (4 apparatus)

BB = Balanced Beam

VT = Vault

FX = Floor Exercise

UB = Uneven Bars

For men: (6 apparatus)

VT = Vault

SR = (Still) Rings

PH = Pommel Horse

PB = Parallel Bars

HB = Horizontal Bars

FX = Floor Exercise

Note: VT indicates that only 1 vault was performed VT1 may indicate that only 1 vault was performed OR it could indicate the 1 st of 2 vaults that were performed

1.2 Initial Setting

Category	Men	Women
Total Athletes	96	96
Number of Teams	12	12
Athletes per Team	5	5
Total Athletes in Team Events	60 (12 teams x 5 athletes)	60 (12 teams x 5 athletes)
Individual Athletes (from countries without full teams)	36 (Max 3 per country)	36 (Max 3 per country)

1.3 Rules Summary

Phase	Rule
Team Composition	Each team consists of 5 athletes, but only 4 compete on each apparatus during the qualifying round.
Qualifying Round (4 up, 3 count)	4 out of the 5 athletes on each team compete on each apparatus. The top 3 scores on each apparatus are summed for team placement.
Team Finals (3 up, 3 count)	Top 8 teams from the qualifying round compete. Scores are based on the "3 up, 3 count" rule, meaning all 3 athletes' scores on each apparatus count towards the team total.
Individual All-Around Finals	Athletes must compete on all apparatuses in the qualifying round to be eligible. The top 24 athletes qualify, with a max of 2 gymnasts per country.
Apparatus Finals	The top 8 athletes on each apparatus from the qualifying round advance, with a maximum of 2 gymnasts per country.

1.4 Note: Qualifying Round

Individual Qualification: Countries that do not have a full team can qualify a maximum of 3 individual athletes per gender. These individual gymnasts are allowed to compete in the qualifying round to get into apparatus final.

Apparatus Participation: The individual gymnasts representing countries without a full team can participate on all apparatuses in the qualifying round. This allows them to be considered for both the individual all-around and apparatus finals.

1.5 Rules by Event

1.5.1 Team All-Around Event

Event	Rule
Qualifying Round	<ul style="list-style-type: none">- Each team has 5 athletes.- 4 out of the 5 athletes compete on each apparatus.- Top 3 scores on each apparatus are summed for the team's total.- Top 8 teams based on this total advance to the final.
Team All-Around Final	<ul style="list-style-type: none">- Qualifying scores are discarded; teams start fresh.- Each team can use any of its 5 athletes on each apparatus.- Scores of 3 athletes on each apparatus count ("3 up, 3 count").- Team with the highest total across all apparatuses wins.

1.5.2 Individual All-Around Event

Phase	Rule
Qualifying	<ul style="list-style-type: none">- Athletes must compete on all apparatuses in the qualifying round to be eligible.- The top 24 athletes based on their combined scores across all apparatuses advance.- Maximum of two gymnasts per country can qualify for the individual all-around final.
Final	<ul style="list-style-type: none">- Qualifying scores are discarded; gymnasts start fresh.- Gymnasts compete on all apparatuses.- Combined scores across all apparatuses determine final placements.- The gymnast with the highest total score is the winner.

1.5.3 Each Apparatus Event

Phase	Rule
Qualifying	<ul style="list-style-type: none">- Athletes compete on their chosen apparatuses during the qualifying round.- The top 8 athletes on each apparatus advance to the final for that apparatus.- Maximum of two gymnasts per country can qualify for each apparatus final.
Final	<ul style="list-style-type: none">- Qualifying scores for the apparatus are discarded; gymnasts start fresh.- Gymnasts compete on the specific apparatus for which they qualified.- The athlete with the highest score on that apparatus is the winner.

2 Data Organization

2.1 Basis Classes and Objects

2.2 Functions Explained

3 Predicting Model

3.1 Countries and Teams

3.2 Gymnasts

4 Result

Remark

We would like to express that translating Python code to R code is indeed a challenging task. We sincerely apologize for the projects written in Python; however, we would like to mention that we have dedicated several days to translating them. We kindly request future students in this course to refrain from attempting this, as it will ultimately result in a significant waste of time.

References