

RESEARCH PROJECT IN FAIR DIVISION

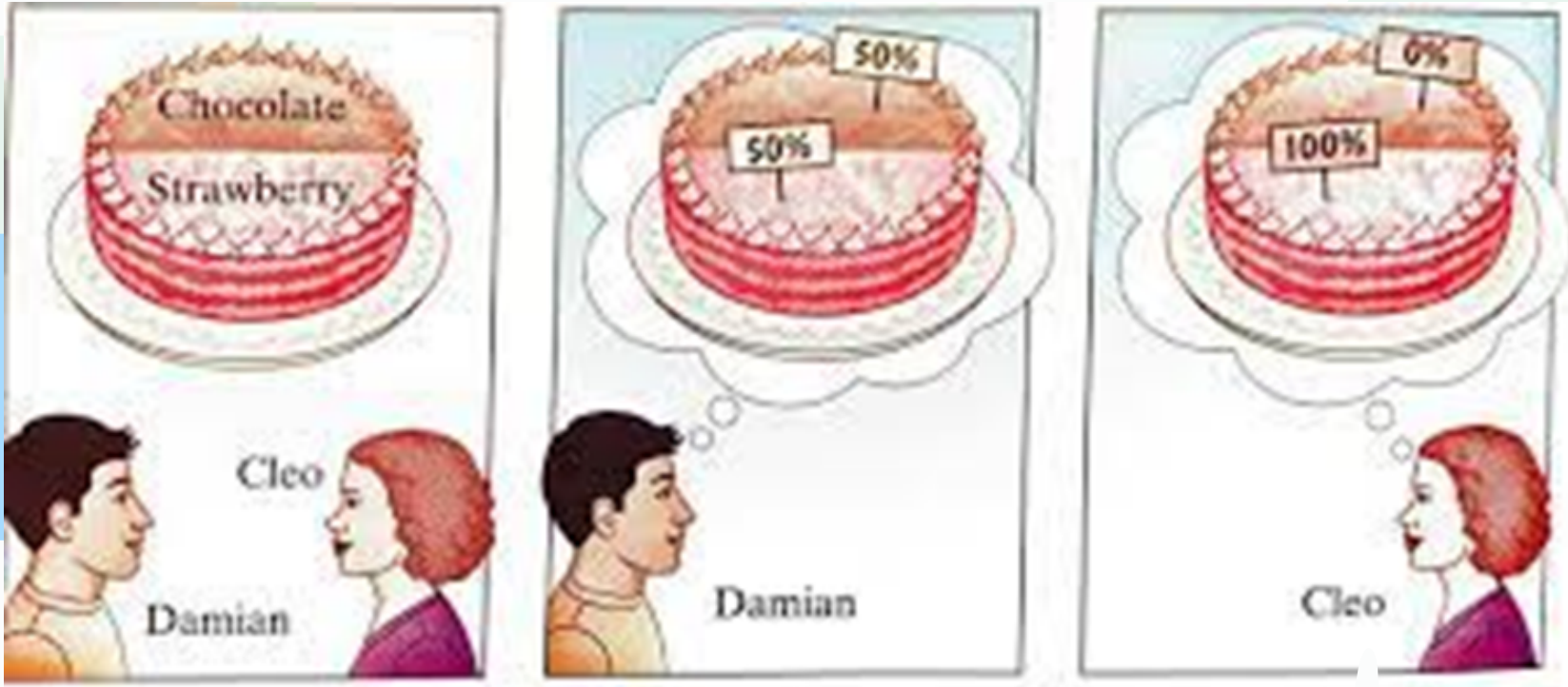
PRESENTERS: LIAD NAGI AND MORIYA ELGRABLI
INSTRUCTOR: EREL SEGAL HALEVI

CONTRIBUTION/PROJECT GOAL

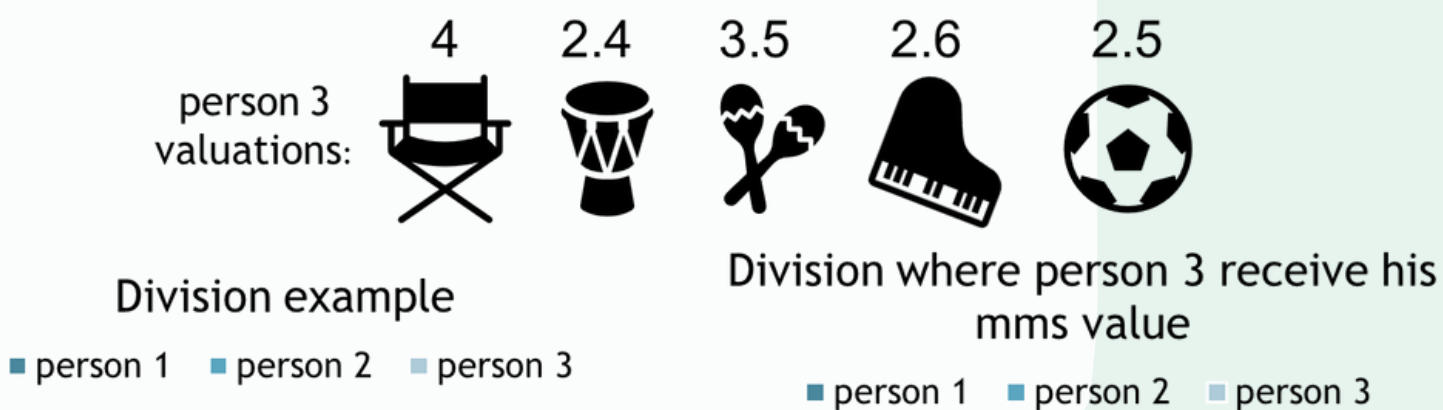


- Implementation of algorithm for fair division from the article “An Improved Approximation Algorithm for Maximin Shares” by Jugal Garg and Setareh Taki, published in the journal: “Artificial Intelligence”, into an open-source library in Python named Fairpy.
- Comparing performance of the algorithm to other algorithms for fair division, and the concentrating conclusions to an article.

INTRODUCTION



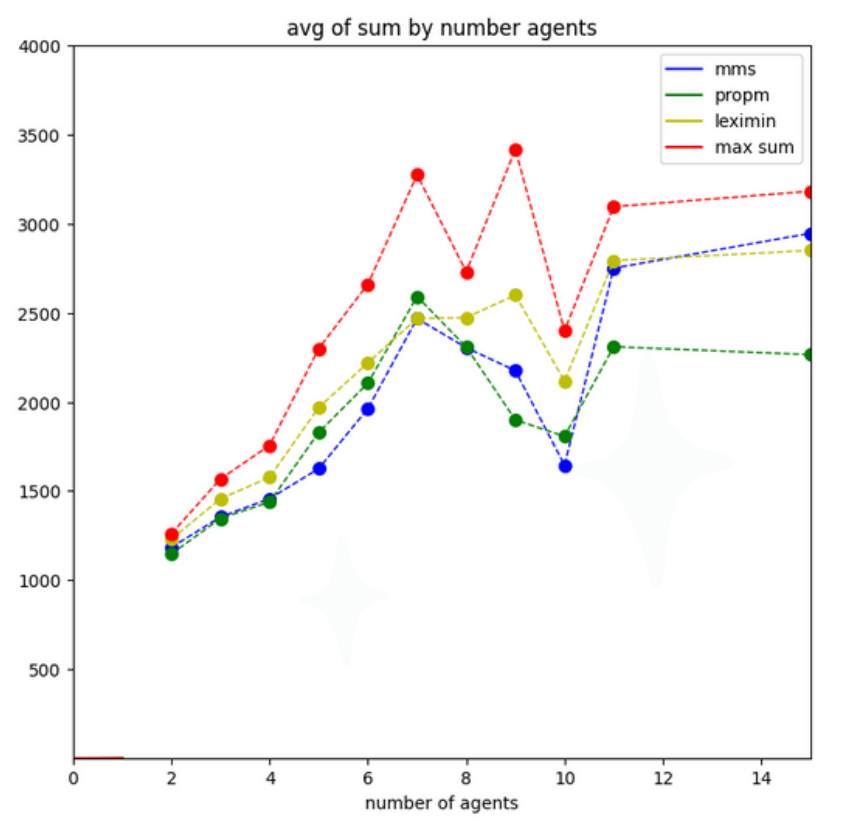
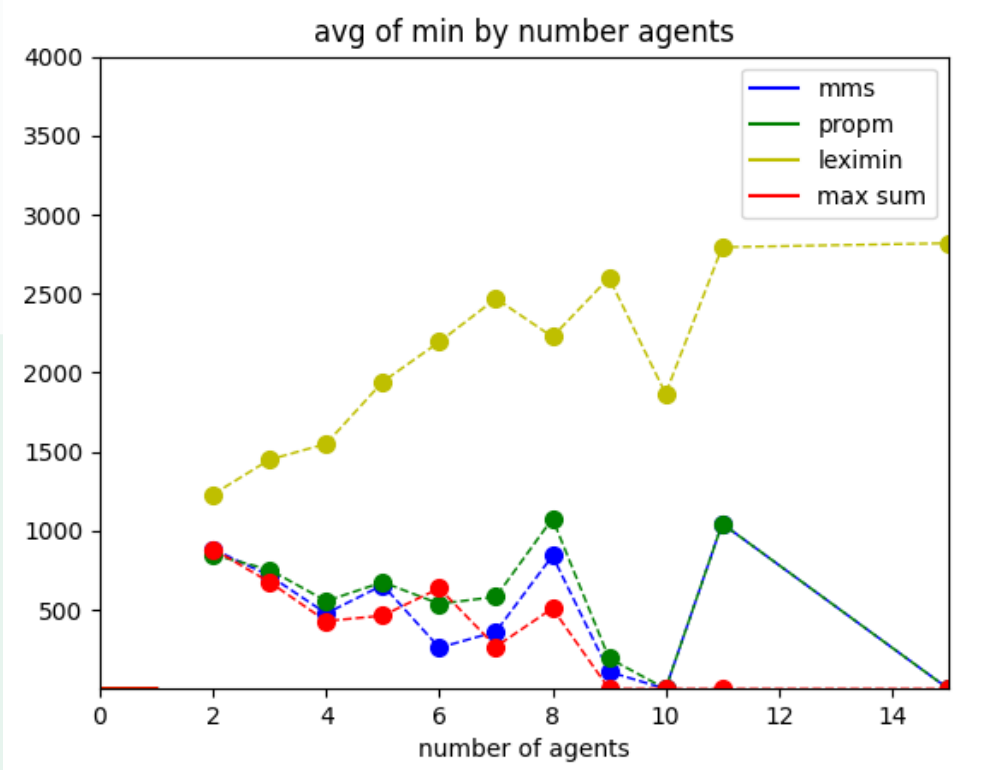
- Fair division:
 - The problem of how to divide resources among several people so that each person receives their due share.
 - Each person may give different value to different items
 - Real world applications: division of inheritance, divorce settlements, electronic frequency allocatio
- Maximin share value:
For agent i , let him divide the items into n bundles (one for each agent). The worst valued bundle is what he gets to keep. The highest value he could get for such division, is his maximin share (MMS) value
- In our project we implemented an algorithm that grantee part of the mms fairness criteria:
Each agent gets at least 0.75 of his MMS value



SOLUTION DESCRIPTION

- Implementation:
 - All 8 sub algorithms from the article are implemented
 - A comprehensive algorithm that receives agents and their items valuations, and returns a 0.75 MMS allocation by using algorithms 4-8.
- In the implementation we used classes and methods defined in the library.

- Unit Tests
- Comparison + Conclusions: The results were put in a concluding article.



SCAN QR CODE FOR OUR ARTICLE AND OTHER PROJECT ANCILLARY FILES (GITHUB)

SCAN QR CODE FOR OUR ALGORITHM IN THE FAIRPY LIBRARY (GITHUB)

