Prompt (I_2)

Response (GPT-40)

Consider a problem where goods need to be allocated among different individuals. Imagine that the individuals involved, i.e. Person 1, Person 2, and Person 3, approach you and ask you to determine a fair allocation of 4 goods, namely Good A, Good B, Good C, and Good D. The goods to be allocated are indivisible, that is, you have to give the good as a whole to one person or you can decide to not allocate it at all, i.e., you throw it away.

Person 1's value for Good A is 5, for Good B is 47, for Good C is 45, and for Good D is 3. Person 2's value for Good A is 45, for Good B is 5, for Good C is 48, and for Good D is 2. Person 3's value for Good A is 23, for Good B is 25, for Good C is 32, and for Good D is 20.

Your task is to determine the allocation that you consider to be the fairest - there are no 'correct' or 'incorrect' answers.

Let's analyze the stated values:

•Person 1: [5 (A), 47 (B), 45 (C), 3 (D)]

•Person 2: [45 (A), 5 (B), 48 (C), 2 (D)]

•Person 3: [23 (A), 25 (B), 32 (C), 20 (D)]

Considering the **Max-Min Fair Allocation** seems reasonable:

•Allocate Good B to Individual 1: Person 1 values Good B the most (47).

Person 1's value: 47

•Allocate Good C to Individual 2: Person 2 values Good C the most (48).

Person 2's value: 48

•Allocate Good D to Individual 3: Person 3 values Good D the most (20).

Person 3's value: 20

Since Good A is still unallocated, we can allocate it to Person 1 (remaining person with lower total value):

•Allocate Good A to Individual 1: Person 1 values Good A (5).

• Person 1's total value: 47 + 5 = 52

Final Allocation:

•Person 1: Good A (5) and Good B (47) → Total value: 52

•Person 2: Good C (48) → Total value: 48

•Person 3: Good D (20) → Total value: 20

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