

Medical match

Question 1 What is unraveling in a matching market?

- (A) The matching is not stable, so matched pairs are “unmatched”
- (B) Some pairs match before the market, leading other participants to also match before the market.
- (C) The matching algorithm never manages to calculate matches
- (D) None of the above.

Question 2 Consider a medical match problem with three hospitals, h_1 , h_2 and h_3 , and four doctors d_1 , d_2 , d_3 and d_4 . The capacities are $q_{h_1} = 2$, $q_{h_2} = 1$ and $q_{h_3} = 1$. The preferences are given by the table below (we assume that each doctor find both hospitals acceptable and each hospital finds each doctor acceptable),

P_{d_1}	P_{d_2}	P_{d_3}	P_{d_4}	P_{h_1}	P_{h_2}	P_{h_3}
h_3	h_2	h_1	h_1	d_1	d_1	d_3
h_1	h_1	h_3	h_2	d_2	d_2	d_1
h_2	h_3	h_2	h_3	d_3	d_3	d_2
				d_4	d_4	d_4

1. Find the doctor-optimal stable matching.
2. Find the hospital-optimal stable matching.
3. Consider the following matching μ :

$$\mu(h_1) = \{d_2, d_4\}, \mu(h_2) = \{d_1\} \text{ and } \mu(h_3) = \{d_3\}.$$

If we use the Deferred Acceptance algorithm with hospitals proposing, is there a preference list over doctors that hospitals have to submit to get that matching?

Question 3 Consider the marriage model. If a man is not matched at a stable matching then he is not matched at any stable matching.

- (A) True
- (B) False