

Output table	Method 1	Method 2	Method 3
1 Couple, Capacity=2	1064,372,685	1089,382,701	1122,370,746
2 Couples, Capacity=2	82,34,47	79,29,49	346,123,191
2 Couples, Capacity=3	24,0,5	1,0,0	3119,1,671

#### **Input:**

30 Interns,

10 Hospitals,

Full order of preferences for both (randomly generated).

Hostel capacity is 2 or 3,

Number of couples is 1 or 2,

Couple's preference list was generated using Method1/Method2/Method3.

#### **Algo:**

We run 10,000 iterations of HRCC.

For each, we check if there's FSA.

If there is, we add a new intern – put him in a random spot in each hospitals' preference list, and also \*randomize the intern's preference list.

#### **Output:**

#times FSA was found,

#times the SAME FSA was found after adding the new intern,

#times a DIFFERENT FSA was found after adding a new intern

#### **Methods: (Couple is c1,c2)**

**C1 preference list:**

H1	H2	H3	H4	H5
----	----	----	----	----

**C2 preference list:**

H2	H1	H4	H3	H5
----	----	----	----	----

**Method 1:**

Go over c1's preference list, from most wanted to least wanted hospital. Denote the hospital with 'h'

For each, if we can add it to the couple's preference list while maintaining consistency (for c1 will always be consistent, we need to check for c2), then we add (h,h) to the couple's preference list.

Ex:

(C1,C2):

(H1,H1)	(H3,H3)	(H5,H5)		
---------	---------	---------	--	--

**Method 2:**

For 10 (amount of hospitals) times, we randomize indices i1,i2 for both c1's,c2's preference list.

If the chosen hospitals for the picked indices maintain consistency, we add it to the couple's preference list.

We do not allow for the same hospital to appear more than once for each intern.

Ex:

(C1,C2): (Non deterministic, so just a random example)

(H2,H4)	(H4,H3)			
---------	---------	--	--	--

**Method 3:**

For j in between 0 to (Min(Length of c1's preference list, Length of c2's preference list)-1) times, we add:

(c1's j favorite hospital, c2's j favorite hospital), and (c1's j favorite hospital, c2's j+1 favorite hospital).

Consistency is obvious.

Ex:

(C1,C2):

(H1,H2)	(H1,H1)	(H2,H1)	(H2,H4)	(H3,H4)
(H3,H3)	(H4,H3)	(H4,H5)	(H5,H5)	

**NOTE: For all of the combinations above (of number of couples and capacity amount): in every iteration which: an FSA was found, and an FSA was found after adding a new intern aswell, every intern's (besides the one that was added) match in the 1<sup>st</sup> FSA was weakly better than his match in the 2<sup>nd</sup> FSA.**