

## Programming Assignment 2

AI2017

Due: 14 Sep 2017

Please do not cheat

Do not forget to write your name and roll number on your answer sheet. No queries will be entertained later regarding this

**Q1.** There are 13 persons which can perform 10 different tasks. Entries in the table below show the efficiency of each person corresponding to different tasks. Initial population and mutation rate can affect the outcome of the algorithm and hence need to be properly adjusted. Please also report the effect population size, mutation rate, and termination criteria (one possible termination criteria is number of iterations).

	1	2	3	4	5	6	7	8	9	10
A	34	31	20	27	24	24	18	33	35	19
B	14	14	22	34	26	19	22	29	22	19
C	22	16	21	27	35	25	30	22	23	23
D	17	21	24	16	31	22	20	27	26	17
E	17	29	22	31	18	19	26	24	25	14
F	26	29	37	34	37	20	21	25	27	27
G	30	28	37	28	29	23	19	33	30	21
H	28	21	30	24	35	20	24	24	32	24
I	19	18	19	28	28	27	26	32	23	22
J	30	22	29	19	30	29	29	21	20	18
K	29	25	35	29	27	18	30	28	19	23
L	15	19	19	33	22	24	25	31	33	21
M	27	32	27	29	29	21	19	25	20	27

Using genetic algorithm (GA) find the person-job assignment that produces the best score. (Hint: The best possible score is 323)

**Q2.** Solve the TSP problem for  $n=20$  cities using memetic algorithm (MA) and Ant Colony Optimization (ACO).

**Bonus**

**Q3.** Perform composite face generation using Genetic algorithm.

<http://neerajkumar.org/databases/lfpw/>

<http://www.scbaghdad.edu.iq/library/Computer%20Science/MS.C/2004/Facial%20Composite%20System%20Using%20Genetic%20Algorithm.pdf>

[http://www.mtf.stuba.sk/docs/doc/casopis\\_Vedecke\\_prace/33SN/1-Zahradnikova.pdf](http://www.mtf.stuba.sk/docs/doc/casopis_Vedecke_prace/33SN/1-Zahradnikova.pdf)

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