Instructions:

Try to solve all problems on your own. If you have difficulties, ask the instructor or TAs.

Please follow the instructions given below to prepare your solution notebooks:

- Please use different notebooks for solving different Exercise problems.
- The notebook name for Exercise 1 should be `ROLLNUMBER-labLL-ex1.ipynb`. `ROLLNUMBER-labLL-ex2.ipynb`, etc for others. 'LL' is the two digit lab number (lab-3 is 03, etc).
- Please ask your doubts to TAs or instructors or post in Moodle Discussion Forum channel.
- You should upload on the .ipynb files on Moodle (one per exercise).

Only the questions marked [**R**] need to be answered on paper. Write legible and to-the-point explanations. The work-sheet on which you write needs to be submitted before leaving the session.

Some other questions require plotting graphs (histograms, trajectories, level-sets etc) or tables. Please make sure that the plots are present in the submitted ipython notebooks.

Submission Time: Please check the submission deadline as show on the assignment web-page in Moodle. Late submissions will be accepted upto 24 hours from the deadline. All late submissions will have a penalty of 3 marks. Submissions later than 24 hours after the deadline will not be accepted.

Objective of this Lab is compute Nash equilibrium for games.

Exercise [5 Marks, **R**] Compute saddle points for matrix games using linear programming.

Exercise [5 Marks, **R**] Implement fictitious play for matrix games

Exercise [5 Marks, **R**] Compute Nash equilibria for bi-matrix games using quadratic programming.

Exercise [5 Marks, **R**] Implement fictitious play for bi-matrix games.

Exercise [5 Marks, **R**] Implement gradient dynamics for potential games (discrete as well as genera)