

**BSc in Information Technology Specializing Data Science**  
**Semester 02**  
**Lab Exercise 07**  
**IT3071 – Machine Learning and Optimization Methods 2023**  
**Reinforcement Learning – Q Learning**

(01) Import the needful libraries to the environment

- a. Numpy
- b. Random Module
- c. Gym

(02) Create the Taxi-v3 environment

(03) Find the number of states & actions

(04) Set the values to the learning rate, the discount factor, and a fix value to overcoming the  
expiration and exploration (Fixing the q values after some duration)

(05) Create the initial Q table with zeros.

(06) Train the Q table with 100000 episodes

(07) Test the goodness of the trained table