



**National University of Computer & Emerging Sciences, Karachi**  
**CS Department**  
**Fall 2020**  
**Assignment I**  
**9<sup>th</sup> October 2020**



An online exam system is required to be developed. An exam is a collection of several questions organized in each section. Each exam has a title, a purpose, a current state (New, Active, Expired, Discarded), a date for each of its state and the historical transition of states. Transition from a state to another is as follows:

1. New → Active → Expired
2. New → Active → Discarded
3. New → Discarded

An exam can have several sections and each section can have several questions. Each question has a question text along with positive points when the answer is correct and may have negative points if the answer is incorrect. Each question may also have points for no response. A response to a question can be of certain type. One of the types could be multiple choices and single selection, another one could be multiple choices and multiple selections. Each of the choice has a choice number, choice text and whether it is a correct choice or not.

A candidate must be registered for an exam. Each candidate has an identification number, name, email address, contact number, city, and country. When the candidate submits the answers, the system calculates points for each answer. Sum total of all points is the exam score for that candidate.

To shortlist the candidates, threshold value for each section must be set. Only those candidates are selected if each of their section score is not lower than the threshold value.

Design classes for each of the objects identified in the requirement above. A class is defined with its name, may have a structure to store the state of an object and its observable behavior. After the completion of this assignment, additional requirements will be given to extend the functionality of the exam system.