Indian Institute of Technology, Kharagpur
Department of Computer Science and Engineering
Software Engineering (CS 29006), Spring 2021

Assignment 0 – Java Programming

Grading guidelines:
1. *Zero marks for a submission if it does not pass the plagiarism test.*
2. *Break-up of Credits will be as follows:*
   (a) *Percentage of features implemented: 70%*
   (b) *Aesthetics: 10%*
   (c) *Whether reasonably able to answer questions: 20%*

Total marks: 70

In a social network, there are a set of nodes. Each *node* can be of type: individual, group, business, or organisation. All nodes have a unique id (int), a set of links to other nodes, a name (String), a creation date, and a set of uploaded or posted content. A *content* can be implemented as a string object, which can be reposted multiple times without duplication. *Individuals* can optionally have birthdays in addition to all the node attributes. *Businesses* and *organisations* have location (2D coordinates) in addition to all node attributes. *Groups* and *organisations* can have linked *individuals* as members. *Businesses* can have *individuals* as owners or customers. *Businesses* can also be members of *groups*. No other forms of links are allowed, e.g. a business cannot be owner of another business, or a group cannot be a member of an organisation.

You have to implement the following functionalities:
1. Create and delete nodes of each type.   [10 marks]
2. Search for nodes using the name or type or birthday.   [10 marks]
3. Print all linked nodes to a given input node.   [10 marks]
4. Create and post content by a user.   [10 marks]
5. Search for content posted by any node.   [10 marks]
6. Display all content posted by nodes linked to a given node. [10 marks]
7. A master text-based interface to print all nodes in the system and utilize all the above functionalities. [10 marks]