Student Name:_____

Student ID: _____

CSCI3170 Introduction to Database Systems (Fall 2022) Assignment 2

Please answer the questions below and submit this sheet to the blackboard ***before 4 Nov 2022, 23:59***

Consider the following relation schema for a video sharing website:
User (uID: integer, uName: string, uAge: integer, uEmail: string)
Video (vID: integer, vTitle: string, vDuration: integer, vFormat: string)
Watch (uID: integer, vID: integer)
Company (cID: integer, cName: string)
Advertisement (vID: integer, cID: integer, aFee: integer)

The key fields are underlined, and the domain of each field is shown after the field name. In table *Advertisement*, the placement fee of each advertisement is represented by *aFee* (in terms of million US dollars). Meanwhile, the *vDuration* and *vFormat* attributes in *Video* refer to the length (in terms of minutes) and file format (in terms of file extension e.g. mp4, avi, mkv) of each video respectively.

Write the following queries in **relational algebra**.

1. Find the *uID(s)* and *uName(s)* of *User(s)* who have watched at least one video longer than 30 minutes.

2. Find the *uID(s)* and *uName(s)* of *User(s)* who have watched at least one mp4 video with an advertisement from 'General Computer Inc'.

3. Find the *uID(s)* and *uName(s)* of *User(s)* who have watched at least one video entitled "Introduction to Java Programming" and at least one video entitled "Introduction to Oracle SQL Client".

4. Find the *vID(s)* of non-mp4 *Video(s)* which have advertisements with *aFee* larger than 5 million dollars.

5. Find the pair(s) of *uID(s)* of *User(s)* who have at least one watched-video in common and the first person is older than the second one.

6. Find the *uID(s)* of the oldest *User(s)*.

7. Find the *vID(s)* of *Video(s)* which have been watched by exactly two *Users*.