# CMPT291 - Introduction to File and Database Management Assignment

- Unless your lab instructor says otherwise, the due date for this assignment is June 18th at 23:59. It is your responsibility to leave enough time to resolve unforeseen problems that may arise with the upload process.

- This assignment is worth 12% of your final mark and must be

- Your submission must be a compressed archive (i.e. a TAR-GZ) file. No other format will be accepted. Your lab instructor will help you create this file.

- It is your responsibility to ensure your archive file extracts successfully on GitHub CodeSpaces, and that it includes the correct files and no additional files.

- The file names and formats must be exactly as described in this PDF.

- For questions that ask you to handwrite your answer, you must upload your legibly-written answer in JPG format **rotated to the correct orientation**. Each page must have your name on top and take up less than 300 KB of space. If you write your answer on paper, scan your page(s) via Microsoft Lens (works on both Apple and Android phones) or a similar scanning app.

- Your submission must be entirely your work. Your instructors reserve the right to ask you to explain your work in person at any time.

- Properly acknowledge (add a note and/or hyperlink and/or comment) any help or resource you used. This includes the software(s) you use to create pictures.

- It is your responsibility to periodically back up your files. Keep in mind that Gitub Codespaces are deleted every now and then.

- Failure to comply with any of the instructions will result in a mark of 0.

# Assignment

In this assignment, you read an English description of how Cool University operates. If anything requires clarification, ask your lab instructor for help. After understanding the "business", you must design a database using the Entity-relationship model. Again, if you don't know where to begin or how to approach the design, remember that your lab instructor would be more than happy to help. Once you have done the Entity-Relationship model, you translate the E-R diagram into SQL schemas. At this stage, if you realize that your E-R design is not conducive to a good design, go back and re-do the E-R diagram. Please note that not all the information you need is in this document. For those pieces of information not explicitly mentioned here, you must rely on your own knowledge of the world. For example, nowhere does the following mention the fact that each instructor has a name, but you are expected to know that when you design the database. If in doubt, ask.

# 1 The University Description

Welcome to Cool University! Our renewed campus has multiple buildings (known through their numbers) located at superb addresses[1]. We have many departments that do great work. For example, Department of English, Department of Mathematics and Statistics, Department of Computing Science, Department of Music, Physical Sciences, Biological Sciences, and so on. Each department also has a budget it enjoys. We also have many good instructors who are passionate about teaching. Each instructor works for at least one department in Cool University. An instructor can take a teaching role or an advisory role (i.e. supervising a grad student)[2]. They have their own unique instructor ID, and each receives a competitive salary.

We have many courses offered at Cool, each offered by one and only one department. Each course can be a prerequisite for other courses. A course has an ID (E.g. CMPT291), a title (E.g. Introduction to File and Database Management), and certain number of credits associated with it (E.g. 3).

In Cool, students (if they are not on a leave) are enrolled in sections. For example, at this moment our brightest students are enrolled in AS01 for their CMPT291 lectures, and either of X01L or X02L for their CMPT291 labs. Each section has a code (E.g. AS01), a semester (E.g. Spring), and a year (E.g. 2025). Each section is held in one and only one classroom. Each classroom has a room number (E.g.) and a capacity. Needless to say each classroom is at a particular building. Each department too is located at a building[3]. Needless to say, some buildings host multiple departments. Once you are accepted into Cool, you are assigned a unique student ID. We will also keep record of your first name, last name, and GPA. Needless

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[1] For the purposes of this assignment, an address is comprised of a street number, street name, city, province, and postal code.

[2] or both.

[3] And no department is spread over multiple buildings.

to say, you'll get a grade for every enrollment you have. Each section is assigned particular time slots. Each time slot has a day, a start time, and a finish time. For example one of the assigned time slots for section AS01 of CMPT291 is Tuesday 9:00 - 11:50. There are no asynchronous sections at Cool University.

At Cool University we take research seriously. Every graduate student at Cool has their own unique thesis (and undergrads don't). Grad students are supervised by at least one instructor.

# 2   Tasks

1. Scan your easy-to-read E-R diagram into a file named `macewan.jpg`. If you see that your diagram has too many lines crossing, rearrange the entities so that the visuals become cleaner. Make sure thick and thin lines are clearly distinguishable. Please also ensure that the names are legible. A cluttered or hard-to-read diagram may cost you marks.

2. In a file named `macewan.sql` write the schema derived from your ER diagram. If the schema are not a direct translation of your answer to the last question (i.e. if there are design discrepancies) you lose marks for both questions. Make sure the schema have the necessary integrity constraints. Write comments where needed.

Given the weight of this assignment, I highly recommend you download the recommended scanning app and properly scan your diagram with good lighting and high contrast. Please also cut all the extra pieces. Better yet, you can use a traditional scanner if you own one, or use MacEwan's scanners to which your library cards give access. If your diagram is illegible either because of scan quality or your hand-writing, you can't get marks for your submission.

Use the `tar` utility to archive and compress all your submission files. You must submit one tarball. In general, the name of your tarball should be `cmpt291_assign_X.tar.gz` X is your full initials. For example, Sam Porter Bridges would submit `cmpt291_assign_SPB.tar.gz`.

**Submission:**   For this assignment you must submit a tarball which includes:

1. `macewan.jpg`
2. `macewan.sql`