Course Information	## 95–703 A: Database Management
	12 Unit Class
	Summer 2022
	
	   Instructor: Janusz Szczypula
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	Office hours: Wednesday, 9 a.m. – 12 noon
	
	Teaching Assistants: TBD
	
	Lectures: Tuesday & Thursday 9:00 a.m. – 10:20 a.m., HbH 1002
	
	Class Website: *www.cmu.edu/canvas*

Prerequisites	There are no prerequisites for this course for students in MISM and MSIT Programs in the Heinz College. For other Heinz College students, 90728 (Introduction to Database Management) is a prerequisite.
Description	Databases systems are central to most organizations' information systems strategies. At any organizational level, users can expect to have frequent contact with database systems. Therefore, skill in using such systems – understanding their capabilities and limitations, knowing how to access data directly or through technical specialists, knowing how to effectively use the information such systems can provide, and skills in designing new systems and related applications – is a distinct advantage and necessity today. The Relational Database Management System (RDBMS) is one type of database systems that is most often used these days, and is the primary focus of this course. Further, to provide students with opportunity to apply the knowledge they learn from the lectures, various homework assignments, SQL assignments, and a database implementation project will be given.

* *The TAs names and office hours will be posted on the class website.*

Course Materials	**Lecture Notes:**
	Lecture notes will be provided for each class. They can be used during the semester you take the class. They cannot be shared after the class is concluded without permission of the instructor.
	Textbook:
	Casteel, J., "Oracle 12c: SQL," Course Technology, 2016
	Suggested Books:
	Connolly, T. and C. Begg, "Database Systems: A Practical Approach to Design, Implementation, and Management," 6th edition, Addison-Wesley, 2015
	Coronel, C. and S. Morris, "Database Systems: Design, Implementation, & Management," 12th edition, Cengage Learning, 2017
	Hoffer, J. A., R. Venkataraman, and Heikki Topi, "Modern Database Management," 11th edition, Prentice Hall, 2012
	Price, J., "Oracle Database 12c: SQL," Mc Graw Hill, 2014
	Software:
	We will use Oracle Database 21c Express Edition for Windows.
	No other components of Oracle Software will be used in this class.

Course Objectives

Objective	How Assessed
Gain good understanding of relational data model in terms of data structure, data integrity, and data manipulation.	Homework Assignments, Final Exam
Understand and create conceptual database models utilizing entity-relationship modeling.	Homework Assignments, Final Exam
Design data structures that will limit redundancy and enforce data integrity while conforming to organizational requirements utilizing normalization methodology.	Homework Assignments, Final Exam
Understand the theory behind the relational data model as it applies to interactions with current database management systems.	Homework Assignments, Final Exam
Read and interpret a given data model to query the database and transform the data into information using Structured Query Language (SQL).	SQL Assignments, Project
Implement a data model in a current relational database management system.	Project
Create reports, based on transactional data, including elements such as groupings & aggregating data and Analytic SQL functions.	SQL Assignments, Project

Evaluation Method	Student's performance in the class will be evaluated based on the following components:

Homework Assignments	20%
SQL Assignments	20%
Project	20%
Final Exam	40%
	100%

Homework Assignments:

The homework assignments require students to employ holistic critical thinking to design database models applying the concepts learnt in the lectures. The focus is on understanding business requirement and designing data models to capture good quality data. The range of topics covered in the assignments includes: conceptual and logical database modeling, normalization, and relational algebra. The relational algebra assignment is a foundation for learning the Structured Query Language (SQL).

SQL Assignments:

The SQL assignments are hands-on assignments that require students to create and execute various SQL statements and queries using Oracle Database 21c Express Edition. The submitted assignments are required to be well formatted and readable.

Project:

Based on the logical model of a small database, the project consists of implementing the data structure, performing specific queries, data manipulation tasks, and querying system catalog to retrieve metadata. The project will integrate and apply the concepts you have learned in class. Detailed guidelines for the project assignment will be distributed and discussed in a later part of the semester.

Exam:

The exam will be a comprehensive, closed book, closed notes exam. The exam is to be completed by you individually *without* help of any other student. The exam will be graded by the Instructor and class TAs.

Final grades will be posted in the official Student Information System that can be accessed by students directly through the Internet.

Grading Scale

A+	97% – 100 %	B+	85% – 88.99 %	C+	73% – 76.99 %
A	93% – 96.99 %	B	81% – 84.99 %	C	69% – 72.99 %
A–	89% – 92.99 %	B–	77% – 80.99 %	C–	65% – 68.99 %

Scores below 65% equate to a failing grade (R)

Course Policies & Expectations	*Lectures*: While no attendance will be taken, it is in your interest to attend each lecture. Class participation is encouraged and expected. As research on learning shows, unexpected noises and movement automatically divert and capture people's attention. Arriving in the classroom late (after a lecture begins), using cell phones, pagers, laptops, etc. makes noise, are distracting and affect everyone's learning experience. For this reason, I ask you to show up for each class a few minutes early and refrain from using your mobile devices during class. No student may record or tape any classroom activity without the express written consent of the instructor. If a student believes that he/she has a learning disability and needs to record or tape classroom lectures/activities, he/she should contact the Office of Disability Resources to request an appropriate accommodation. *Laptops and other electronic devices:* Laptops, phones, iPods, or any other electronic devices may not be used during lectures or during the exam, except for the week of the Oracle 21c Express Lab. Keep your electronic devices turned off and stowed during the class time. *Missed Classes*: Students are responsible for obtaining class material, which may have been distributed on days when they are absent. This can be done through the class website, contacting a classmate who was present, or by contacting the instructor during his office hours. *Assignments*: All assignments are due at the beginning of class on the day specified. No assignments submitted after the deadline will be accepted, unless permission is granted by the instructor prior to the due date. Late assignments, if approved, should be submitted directly to the instructor. Do not submit any late assignments to class teaching assistants (TA), leave in the instructor's mailbox, send it by email, or slide under the instructor's office door. Each assignment must be typed, and diagrams created using PowerPoint or an equivalent tool. No collaboration in any form on assignments is allowed. All assignments are graded by class TAs and reviewed by the instructor before they are returned to students within a week of submission. Solutions to each assignment will be provided when the graded assignments are returned. Uncollected assignments will be shredded. If you believe that your assignment was graded incorrectly, you may request that it be re-graded. To do this, turn in your graded assignment in question with an explanation of your arguments within a week from the time the assignment was returned to you. *The entire assignment is subject to re-grading, not just the specific item(s) in question and the grade may go up or down*.

Accommodations for Students with Disabilities:
If you have a disability and are registered with the Office of Disability Resources, I encourage you to use their online system to notify me of your accommodations and discuss your needs with me as early in the semester as possible. I will work with you to ensure that accommodations are provided as appropriate. If you suspect that you may have a disability and would benefit from accommodations but are not yet registered with the Office of Disability Resources, I encourage you to contact them at access@andrew.cmu.edu.

Statement of Support for Students' Health & Well-being:
Do your best to maintain a healthy lifestyle this semester by eating well, exercising, avoiding drugs and alcohol, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress.

If you or anyone you know experiences any academic stress, difficult life events, or feelings like anxiety or depression, we strongly encourage you to seek support. Counseling and Psychological Services (CaPS) is here to help: call 412 – 268 – 2922 and visit their website at http://www.cmu.edu/counseling/. Consider reaching out to a friend, faculty or family member you trust for help getting connected to the support that can help.

Academic Honesty and Integrity	All CMU students are expected to follow the ethical guidelines and adhere to the policies as defined in your Program's <u>Student Handbook</u> or in any other source describing such policies as they apply to students at Carnegie Mellon University. These policies and guidelines are available on the CMU web site. Please read them carefully! You will be held accountable for any violations of these policies and guidelines.
	
	Individual assignments must reflect individual effort. Although I expect you to attempt solving each problem on your own, I encourage you to seek help from the class TAs if you struggle with any assignment. Sharing your assignments with any other student in any form (whether it is a paper document, an electronic document such like a MS Word document, or a document in any other format) is not permitted and will be considered cheating. Any "discussion" between students that results in a similar HW submission is also not allowed. If you are in possession of any other person's document or file from this or any other semester, you are in jeopardy.
	
	Any violations of academic integrity in this class will have the following consequences:
	  (a) no credit for assignment in question <u>and</u> lowering final grade by one letter
	      (e.g., from B to C),
	  (b) in more serious offences, failing the class.
	
	All incidents are reported to the Office of Community Standards & Integrity at Carnegie Mellon University. Additional penalties may be imposed.