

Trinity Area School District  
 Template for Curriculum Mapping, 2017-2018

<b>Course: Honors Oracle III</b> <b>Grade: 10 - 12</b>	<b>Overview of Course:</b> <b>This course engages students to analyze complex business scenarios and create a data model—a conceptual representation of an organization’s information. This course culminates with a project that challenges students to design, implement, and demonstrate a database solution for a business or organization.</b>
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**Overarching Big Ideas, Enduring Understandings, and Essential Questions**

Big Idea	Standard(s) Addressed	Enduring Understanding(s)	Essential Question(s)
SQL – Structured Query Language: Retrieving and manipulating data from a database	<p><b>Standards Used:</b>  <b>CSTA K – 12 Computer Science Standards</b> <a href="http://csta.acm.org/Curriculum/sub/K12Standards.html">http://csta.acm.org/Curriculum/sub/K12Standards.html</a></p> <p><b>5.3.A Computer Science in the Modern World - Computational Thinking</b>            4. Compare techniques for analyzing massive data collections.            6. Analyze the representation and trade-offs among various forms of digital information.            7. Describe how various types of data are stored in a computer system.</p> <p><b>5.3.A Computer Science in the Modern World - Collaboration</b>            1. Work in a team to design and develop a software artifact.</p> <p><b>5.3.A Computer Science in the Modern World - Computing Practice and Programming</b>            3. Use various debugging and testing methods to ensure program correctness (e.g., test cases, unit testing, white box, black box, integration testing).            4. Apply analysis, design, and implementation techniques to solve problems (e.g., use one or more software lifecycle models).            5. Use Application Program Interfaces (APIs) and libraries to facilitate programming solutions.            6. Select appropriate file formats for various types and uses of data.            8. Explain the program execution process.            9. Explain the principles of security by examining encryption, cryptography, and authentication techniques.            11. Describe techniques for locating and collecting small and large-scale data sets.            12. Describe how mathematical and statistical functions, sets, and logic are used in computation.</p> <p><b>5.3.A Computer Science in the Modern World - Computers and Communications Devices</b>            5. Explain the multiple levels of hardware and software that support program execution (e.g., compilers,</p>	<p>The purpose of a database is to be able to retrieve data that will become information.</p> <p>Proper design of a database insures that the data is found in only one place, and in the right place.</p> <p>SQL is the international standard database language for accessing data.</p>	<p>What is SQL?</p> <p>Why is SQL important to a database?</p>

interpreters, operating systems, networks).

**5.3.A Computer Science in the Modern World - Community, Global, and Ethical Impacts**

2. Discuss the impact of computing technology on business and commerce (e.g., automated tracking of goods, automated financial transactions, e-commerce, cloud computing).

10. Describe security and privacy issues that relate to computer networks.

**5.3.B Computer Science Concepts and Practices - Computational Thinking**

3. Critically examine classical algorithms and implement an original algorithm.

4. Evaluate algorithms by their efficiency, correctness, and clarity.

5. Use data analysis to enhance understanding of complex natural and human systems.

9. Analyze data and identify patterns through modeling and simulation.

**5.3.B Computer Science Concepts and Practices - Collaboration**

1. Use project collaboration tools, version control systems, and Integrated Development Environments (IDEs) while working on a collaborative software project.

2. Demonstrate the software life cycle process by participating on a software project team.

3. Evaluate programs written by others for readability and usability.

**5.3.B Computer Science Concepts and Practices - Computing Practice and Programming**

4. Explore principles of system design in scaling, efficiency, and security.

5. Deploy principles of security by implementing encryption and authentication strategies.

6. Anticipate future careers and the technologies that will exist.

7. Use data analysis to enhance understanding of complex natural and human systems.

8. Deploy various data collection techniques for different types of problems.

**5.3.B Computer Science Concepts and Practices - Computers and Communications Devices**

1. Discuss the impact of modifications on the functionality of application programs.

3. Identify and select the most appropriate file format based on trade-offs (e.g., accuracy, speed, ease of manipulation).

**5.3.B Computer Science Concepts and Practices - Community, Global, and Ethical Impacts**

3. Summarize how financial markets, transactions, and predictions have been transformed by automation.

4. Summarize how computation has revolutionized the way people build real and virtual organizations and infrastructures.

6. Analyze the impact of government regulation on privacy and security.

7. Differentiate among open source, freeware, and proprietary software licenses and their applicability to

	<p>different types of software.</p> <p><b>5.3.C Topics in Computer Science</b></p> <p><b>5.3.C.1 AP Computer Science A</b></p> <p><b>5.3.C.2 Projects-Based Courses</b></p> <p><b>5.3.C.3 Courses Leading to Industry Certification</b></p>		
<p>DDL – Data Definition Language: Creating database tables</p>	<p><b>5.3.A Computer Science in the Modern World - Computational Thinking</b></p> <p>4. Compare techniques for analyzing massive data collections.</p> <p>6. Analyze the representation and trade-offs among various forms of digital information.</p> <p>7. Describe how various types of data are stored in a computer system.</p> <p><b>5.3.A Computer Science in the Modern World - Collaboration</b></p> <p>1. Work in a team to design and develop a software artifact.</p> <p><b>5.3.A Computer Science in the Modern World - Computing Practice and Programming</b></p> <p>3. Use various debugging and testing methods to ensure program correctness (e.g., test cases, unit testing, white box, black box, integration testing).</p> <p>4. Apply analysis, design, and implementation techniques to solve problems (e.g., use one or more software lifecycle models).</p> <p>5. Use Application Program Interfaces (APIs) and libraries to facilitate programming solutions.</p> <p>6. Select appropriate file formats for various types and uses of data.</p> <p>8. Explain the program execution process.</p> <p>9. Explain the principles of security by examining encryption, cryptography, and authentication techniques.</p> <p>11. Describe techniques for locating and collecting small and large-scale data sets.</p> <p>12. Describe how mathematical and statistical functions, sets, and logic are used in computation.</p> <p><b>5.3.A Computer Science in the Modern World - Computers and Communications Devices</b></p> <p>5. Explain the multiple levels of hardware and software that support program execution (e.g., compilers, interpreters, operating systems, networks).</p> <p><b>5.3.A Computer Science in the Modern World - Community, Global, and Ethical Impacts</b></p>	<p>DDL is a subset of SQL that works on objects, tables, rows and columns to create and modify database objects.</p>	<p>How do you create a table in a database?</p> <p>What other objects are part of DDL?</p>

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<p>DML – Data Manipulation Language: Adding data to a database and Modifying data in a database</p>	<p><b>5.3.A Computer Science in the Modern World - Computational Thinking</b></p> <p>4. Compare techniques for analyzing massive data collections. 6. Analyze the representation and trade-offs among various forms of digital information. 7. Describe how various types of data are stored in a computer system.</p> <p><b>5.3.A Computer Science in the Modern World - Collaboration</b></p> <p>1. Work in a team to design and develop a software artifact.</p> <p><b>5.3.A Computer Science in the Modern World - Computing Practice and Programming</b></p> <p>3. Use various debugging and testing methods to ensure program correctness (e.g., test cases, unit testing, white box, black box, integration testing). 4. Apply analysis, design, and implementation techniques to solve problems (e.g., use one or more software lifecycle models). 5. Use Application Program Interfaces (APIs) and libraries to facilitate programming solutions. 6. Select appropriate file formats for various types and uses of data. 8. Explain the program execution process. 9. Explain the principles of security by examining encryption, cryptography, and authentication techniques. 11. Describe techniques for locating and collecting small and large-scale data sets. 12. Describe how mathematical and statistical functions, sets, and logic are used in computation.</p> <p><b>5.3.A Computer Science in the Modern World - Computers and Communications Devices</b></p> <p>5. Explain the multiple levels of hardware and software that support program execution (e.g., compilers, interpreters, operating systems, networks).</p> <p><b>5.3.A Computer Science in the Modern World - Community, Global, and Ethical Impacts</b></p> <p>2. Discuss the impact of computing technology on business and commerce (e.g., automated tracking of goods, automated financial transactions, e-commerce, cloud computing).</p>	<p>DML is a subset of SQL that makes changes to data in the database.</p> <p>These changes include adding data, changing data, deleting data, and merging data from multiple sources.</p>	<p>How are changes made to a database?</p> <p>What rules are important when making these changes?</p>

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**5.3.C Topics in Computer Science**

	<p><b>5.3.C.1 AP Computer Science A</b></p> <p><b>5.3.C.2 Projects-Based Courses</b></p> <p><b>5.3.C.3 Courses Leading to Industry Certification</b></p>		
<p>Database Integrity – Database Constraints</p>	<p><b>5.3.A Computer Science in the Modern World - Computational Thinking</b>  4. Compare techniques for analyzing massive data collections.  6. Analyze the representation and trade-offs among various forms of digital information.  7. Describe how various types of data are stored in a computer system.</p> <p><b>5.3.A Computer Science in the Modern World - Collaboration</b>  1. Work in a team to design and develop a software artifact.</p> <p><b>5.3.A Computer Science in the Modern World - Computing Practice and Programming</b>  3. Use various debugging and testing methods to ensure program correctness (e.g., test cases, unit testing, white box, black box, integration testing).  4. Apply analysis, design, and implementation techniques to solve problems (e.g., use one or more software lifecycle models).  5. Use Application Program Interfaces (APIs) and libraries to facilitate programming solutions.  6. Select appropriate file formats for various types and uses of data.  8. Explain the program execution process.  9. Explain the principles of security by examining encryption, cryptography, and authentication techniques.  11. Describe techniques for locating and collecting small and large-scale data sets.  12. Describe how mathematical and statistical functions, sets, and logic are used in computation.</p> <p><b>5.3.A Computer Science in the Modern World - Computers and Communications Devices</b>  5. Explain the multiple levels of hardware and software that support program execution (e.g., compilers, interpreters, operating systems, networks).  <b>5.3.A Computer Science in the Modern World - Community, Global, and Ethical Impacts</b>  2. Discuss the impact of computing technology on business and commerce (e.g., automated tracking of goods, automated financial transactions, e-commerce, cloud computing).  10. Describe security and privacy issues that relate to computer networks.</p> <p><b>5.3.B Computer Science Concepts and Practices - Computational Thinking</b></p>	<p>Database constraints are database rules that are a part of SQL.</p> <p>Database constraints insure that the data is secure and reliable.</p>	<p>What is the purpose of a database constraint?</p> <p>What are the five types of constraints?</p> <p>What is the purpose of each?</p>

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**5.3.C.1 AP Computer Science A**

**5.3.C.2 Projects-Based Courses**



	<p><b>5.3.C.3 Courses Leading to Industry Certification</b></p>		
<p>DCL – Database Control Language: Granting and Revoking database privileges</p>	<p><b>5.3.A Computer Science in the Modern World - Computational Thinking</b></p> <ol style="list-style-type: none"> <li>4. Compare techniques for analyzing massive data collections.</li> <li>6. Analyze the representation and trade-offs among various forms of digital information.</li> <li>7. Describe how various types of data are stored in a computer system.</li> </ol> <p><b>5.3.A Computer Science in the Modern World - Collaboration</b></p> <ol style="list-style-type: none"> <li>1. Work in a team to design and develop a software artifact.</li> </ol> <p><b>5.3.A Computer Science in the Modern World - Computing Practice and Programming</b></p> <ol style="list-style-type: none"> <li>3. Use various debugging and testing methods to ensure program correctness (e.g., test cases, unit testing, white box, black box, integration testing).</li> <li>4. Apply analysis, design, and implementation techniques to solve problems (e.g., use one or more software lifecycle models).</li> <li>5. Use Application Program Interfaces (APIs) and libraries to facilitate programming solutions.</li> <li>6. Select appropriate file formats for various types and uses of data.</li> <li>8. Explain the program execution process.</li> <li>9. Explain the principles of security by examining encryption, cryptography, and authentication techniques.</li> <li>11. Describe techniques for locating and collecting small and large-scale data sets.</li> <li>12. Describe how mathematical and statistical functions, sets, and logic are used in computation.</li> </ol> <p><b>5.3.A Computer Science in the Modern World - Computers and Communications Devices</b></p> <ol style="list-style-type: none"> <li>5. Explain the multiple levels of hardware and software that support program execution (e.g., compilers, interpreters, operating systems, networks).</li> </ol> <p><b>5.3.A Computer Science in the Modern World - Community, Global, and Ethical Impacts</b></p> <ol style="list-style-type: none"> <li>2. Discuss the impact of computing technology on business and commerce (e.g., automated tracking of goods, automated financial transactions, e-commerce, cloud computing).</li> <li>10. Describe security and privacy issues that relate to computer networks.</li> </ol> <p><b>5.3.B Computer Science Concepts and Practices - Computational Thinking</b></p> <ol style="list-style-type: none"> <li>3. Critically examine classical algorithms and implement an original algorithm.</li> <li>4. Evaluate algorithms by their efficiency, correctness, and clarity.</li> <li>5. Use data analysis to enhance understanding of complex natural and human systems.</li> </ol>	<p>DCL is a subset of SQL that will allow a database administrator to grant access to the database or parts of the database.</p>	<p>Why is it important to restrict access to databases?</p> <p>What kind of data needs to be protected, and why?</p>

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**5.3.C.1 AP Computer Science A**

**5.3.C.2 Projects-Based Courses**

**5.3.C.3 Courses Leading to Industry Certification**

<p>TCL – Transaction Control Language: Control the flow of database transactions</p>	<p><b>5.3.A Computer Science in the Modern World - Computational Thinking</b>  4. Compare techniques for analyzing massive data collections.  6. Analyze the representation and trade-offs among various forms of digital information.  7. Describe how various types of data are stored in a computer system.</p> <p><b>5.3.A Computer Science in the Modern World - Collaboration</b>  1. Work in a team to design and develop a software artifact.</p> <p><b>5.3.A Computer Science in the Modern World - Computing Practice and Programming</b>  3. Use various debugging and testing methods to ensure program correctness (e.g., test cases, unit testing, white box, black box, integration testing).  4. Apply analysis, design, and implementation techniques to solve problems (e.g., use one or more software lifecycle models).  5. Use Application Program Interfaces (APIs) and libraries to facilitate programming solutions.  6. Select appropriate file formats for various types and uses of data.  8. Explain the program execution process.  9. Explain the principles of security by examining encryption, cryptography, and authentication techniques.  11. Describe techniques for locating and collecting small and large-scale data sets.  12. Describe how mathematical and statistical functions, sets, and logic are used in computation.</p> <p><b>5.3.A Computer Science in the Modern World - Computers and Communications Devices</b>  5. Explain the multiple levels of hardware and software that support program execution (e.g., compilers, interpreters, operating systems, networks).</p> <p><b>5.3.A Computer Science in the Modern World - Community, Global, and Ethical Impacts</b>  2. Discuss the impact of computing technology on business and commerce (e.g., automated tracking of goods, automated financial transactions, e-commerce, cloud computing).  10. Describe security and privacy issues that relate to computer networks.</p> <p><b>5.3.B Computer Science Concepts and Practices - Computational Thinking</b>  3. Critically examine classical algorithms and implement an original algorithm.  4. Evaluate algorithms by their efficiency, correctness, and clarity.  5. Use data analysis to enhance understanding of complex natural and human systems.  9. Analyze data and identify patterns through modeling and simulation.</p> <p><b>5.3.B Computer Science Concepts and Practices - Collaboration</b></p>	<p>TCL is a subset of SQL that will allow changes to the database to be reversed, or to be committed permanently.</p>	<p>Why is it important to be able to reverse a change (undo) to a database?</p> <p>Why are some transactions committed automatically?</p>
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**Big Ideas, Enduring Understandings, and Essential Questions Per Unit of Study**

Month of Instruction	Title of Unit	Big Idea(s)	Standard(s) Addressed Standards Used: CSTA K - 12 Computer Science Standards <a href="http://csta.acm.org/Curriculum/sub/K12Standards.html">http://csta.acm.org/Curriculum/sub/K12Standards.html</a>	Enduring Understanding(s)	Essential Question(s)	Common Assessment(s)*	Common Resource(s)* Used
August	Creating and Managing Views	Creating Views  DML Operations and Views  Managing Views	<p><b>5.3.A Computer Science in the Modern World - Computing Practice and Programming</b></p> <p>3. Use various debugging and testing methods to ensure program correctness (e.g., test cases, unit testing, white box, black box, integration testing).</p> <p>5. Use Application Program Interfaces (APIs) and libraries to facilitate programming solutions.</p> <p><b>5.3.B Computer Science Concepts and Practices - Computational Thinking</b></p> <p>3. Critically examine classical algorithms and implement an original algorithm.</p> <p>4. Evaluate algorithms by their efficiency, correctness, and clarity.</p> <p>5. Use data analysis to enhance understanding of complex natural and human systems.</p> <p>9. Analyze data and identify patterns through modeling and simulation.</p> <p><b>5.3.B Computer Science Concepts and Practices - Collaboration</b></p> <p>3. Evaluate programs written by others for readability and usability.</p>	<ul style="list-style-type: none"> <li>• Create a view with and without column aliases in the subquery using a single base table.</li> <li>• Create a complex view that contains group functions to display values from two tables.</li> <li>• Retrieve data from a view and write and execute a query that performs DML operations on a simple view.</li> <li>• Write and execute a query using the WITH CHECK OPTION clause.</li> <li>• Apply the WITH READ ONLY option to a view to restrict DML operations.</li> <li>• Create and execute a SQL statement that removes a view.</li> </ul>	<p>What are three uses for views from the standpoint of a database administrator?</p> <p>Explain, from a business perspective, why it is important to be able to create and use logical subsets of data derived from one or more tables?</p> <p>What are the conditions that restrict your ability to modify a view using DML operations?</p> <p>What is the use of WITH CHECK OPTION as it applies to integrity constraints and data validation?</p>	<p>Exercises Quizzes Midterm Final Exam</p> <p><b>Vocabulary</b></p> <ul style="list-style-type: none"> <li>- DML operations (Data Manipulation Language)</li> <li>- WITH CHECK OPTION clause</li> <li>- WITH READ ONLY</li> <li>- top-n-analysis query</li> </ul>	<p><a href="http://ilearning.ornet.com">http://ilearning.ornet.com</a></p> <p><a href="http://iacademy.ornet.com">http://iacademy.ornet.com</a></p>

			<p><b>5.3.B Computer Science Concepts and Practices - Computing Practice and Programming</b></p> <p>6. Anticipate future careers and the technologies that will exist. 7. Use data analysis to enhance understanding of complex natural and human systems.</p> <p><b>5.3.B Computer Science Concepts and Practices - Community, Global, and Ethical Impacts</b></p> <p>6. Analyze the impact of government regulation on privacy and security.</p> <p><b>5.3.C.2 Projects-Based Courses</b></p> <p><b>5.3.C.3 Courses Leading to Industry Certification</b></p>	<ul style="list-style-type: none"> <li>• Create and execute a query to create an inline view.</li> <li>• Create and execute a top-n-analysis query.</li> </ul>			
September	Working With Sequences	Working with Sequences  Indexes and Synonyms	<p><b>5.3.A Computer Science in the Modern World - Computing Practice and Programming</b></p> <p>3. Use various debugging and testing methods to ensure program correctness (e.g., test cases, unit testing, white box, black box, integration testing). 5. Use Application Program Interfaces (APIs) and libraries to facilitate programming solutions.</p> <p><b>5.3.B Computer Science Concepts and Practices - Computational Thinking</b></p> <p>3. Critically examine classical algorithms and implement an original algorithm. 4. Evaluate algorithms by their</p>	<ul style="list-style-type: none"> <li>• Write and execute a SQL statement that creates a sequence.</li> <li>• Query the data dictionary using USER_SEQUENCES to confirm a sequence definition.</li> <li>• Apply the rules for using NEXTVAL to generate sequential unique numbers in a table.</li> </ul>	<p>What are at least three useful characteristics of a sequence</p> <p>What are the advantages of caching sequence values?</p> <p>What are the disadvantages of caching sequence values?</p> <p>What are three reasons why gaps can occur in a sequence?</p>	<p>Exercises Quizzes Midterm Final Exam</p> <p><b>Vocabulary</b></p> <ul style="list-style-type: none"> <li>- sequence</li> <li>- NEXTVAL</li> <li>- index</li> <li>- ROWID</li> <li>- function-based index</li> </ul>	<p><a href="http://ilearning.org/acle.com">http://ilearning.org/acle.com</a></p> <p><a href="http://iacademy.org/acle.com">http://iacademy.org/acle.com</a></p>

			<p>efficiency, correctness, and clarity.</p> <p>5. Use data analysis to enhance understanding of complex natural and human systems.</p> <p>9. Analyze data and identify patterns through modeling and simulation.</p> <p><b>5.3.B Computer Science Concepts and Practices - Collaboration</b></p> <p>3. Evaluate programs written by others for readability and usability.</p> <p><b>5.3.B Computer Science Concepts and Practices - Computing Practice and Programming</b></p> <p>6. Anticipate future careers and the technologies that will exist.</p> <p>7. Use data analysis to enhance understanding of complex natural and human systems.</p> <p><b>5.3.C.2 Projects-Based Courses</b></p> <p><b>5.3.C.3 Courses Leading to Industry Certification</b></p>	<ul style="list-style-type: none"> <li>• Create and execute a CREATE INDEX and DROP INDEX statement.</li> <li>• Create and execute a function-based index.</li> <li>• Create a private and public synonym.</li> </ul>	<p>What is use of index as a schema object?</p> <p>How can you use ROWID in locating information in a database?</p> <p>What are the conditions that cause an index to be created automatically?</p>		
September	Fundamentals of Database Security	<p>Controlling User Access</p> <p>Creating and Revoking Object Privileges</p>	<p><b>5.3.A Computer Science in the Modern World - Computing Practice and Programming</b></p> <p>3. Use various debugging and testing methods to ensure program correctness (e.g., test cases, unit testing, white box, black box, integration testing).</p> <p>5. Use Application Program Interfaces (APIs) and libraries to facilitate programming solutions.</p>	<ul style="list-style-type: none"> <li>• Compare the difference between object privileges and system privileges.</li> <li>• Construct the two commands required to enable a user to have access to a database.</li> </ul>	<p>What is difference between object privileges and system privileges?</p> <p>What is a ROLE?</p> <p>What are three advantages to a ROLE?</p>	<p>Exercises</p> <p>Quizzes</p> <p>Midterm</p> <p>Final Exam</p> <p><b><u>Vocabulary</u></b></p> <p>- object privileges</p> <p>- system privileges</p>	<p><a href="http://ilearning.org/acle.com">http://ilearning.org/acle.com</a></p> <p><a href="http://iacademy.org/acle.com">http://iacademy.org/acle.com</a></p>

			<p>9. Explain the principles of security by examining encryption, cryptography, and authentication techniques.</p> <p><b>5.3.A Computer Science in the Modern World - Community, Global, and Ethical Impacts</b></p> <p>10. Describe security and privacy issues that relate to computer networks.</p> <p><b>5.3.B Computer Science Concepts and Practices - Computational Thinking</b></p> <p>3. Critically examine classical algorithms and implement an original algorithm.</p> <p>4. Evaluate algorithms by their efficiency, correctness, and clarity.</p> <p>5. Use data analysis to enhance understanding of complex natural and human systems.</p> <p>9. Analyze data and identify patterns through modeling and simulation.</p> <p><b>5.3.B Computer Science Concepts and Practices - Collaboration</b></p> <p>3. Evaluate programs written by others for readability and usability.</p> <p><b>5.3.B Computer Science Concepts and Practices - Computing Practice and Programming</b></p> <p>5. Deploy principles of security by implementing encryption and authentication strategies.</p> <p>6. Anticipate future careers and the technologies that will exist.</p> <p>7. Use data analysis to enhance</p>	<ul style="list-style-type: none"> <li>• Construct and execute a GRANT... ON ...TO statement to assign privileges to objects in their schema to other users and/or PUBLIC.</li> <li>• Query the data dictionary to confirm privileges granted.</li> <li>• Construct a statement to create a ROLE and GRANT privileges to it.</li> <li>• Construct a GRANT ON TO WITH GRANT OPTION statement to assign privileges to objects in their schema to other users and/or PUBLIC.</li> <li>• Construct and execute a statement to REVOKE object privileges from other users and/or from PUBLIC.</li> <li>• Use regular expressions to search, match, and replace strings in SQL statements.</li> <li>• Construct and execute regular expressions and</li> </ul>	<p>What is the difference between privileges and roles?</p> <p>What is the purpose of a database link?</p> <p>What are regular expressions?</p>	<ul style="list-style-type: none"> <li>- GRANT... ON ...TO statement</li> <li>- role</li> <li>- GRANT ON TO WITH GRANT OPTION statement</li> <li>- PUBLIC</li> <li>- database link</li> <li>- regular expressions</li> </ul>	
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			<p>understanding of complex natural and human systems.</p> <p><b>5.3.C.2 Projects-Based Courses</b></p> <p><b>5.3.C.3 Courses Leading to Industry Certification</b></p>	<p>check constraints.</p>			
September	Understanding Database Transactions	Database Transactions	<p><b>5.3.A Computer Science in the Modern World - Computing Practice and Programming</b></p> <p>3. Use various debugging and testing methods to ensure program correctness (e.g., test cases, unit testing, white box, black box, integration testing).</p> <p>5. Use Application Program Interfaces (APIs) and libraries to facilitate programming solutions.</p> <p><b>5.3.B Computer Science Concepts and Practices - Computational Thinking</b></p> <p>3. Critically examine classical algorithms and implement an original algorithm.</p> <p>4. Evaluate algorithms by their efficiency, correctness, and clarity.</p> <p>5. Use data analysis to enhance understanding of complex natural and human systems.</p> <p>9. Analyze data and identify patterns through modeling and simulation.</p> <p><b>5.3.B Computer Science Concepts and Practices - Collaboration</b></p> <p>3. Evaluate programs written by others for readability and usability.</p>	<ul style="list-style-type: none"> <li>Define the terms COMMIT, ROLLBACK, and SAVEPOINT as they relate to data transactions.</li> <li>There are many advantages of the COMMIT, ROLLBACK, and SAVEPOINT statements.</li> <li>Understand why it is important, from a business perspective, to be able to control the flow of transaction processing.</li> </ul>	<p>What does the term COMMIT mean when related to data transactions?</p> <p>What does the term ROLLBACK mean when related to data transactions?</p> <p>What does the term SAVEPOINT mean when related to data transactions?</p> <p>Why is it important, from a business perspective, to be able to control the flow of transaction processing?</p>	<p>Exercises</p> <p>Quizzes</p> <p>Midterm</p> <p>Final Exam</p> <p><b>Vocabulary</b></p> <p>- Statements: COMMIT ROLLBACK SAVEPOINT (as they relate to data transactions)</p>	<p><a href="http://learning.ornacle.com">http://learning.ornacle.com</a></p> <p><a href="http://iacademy.ornacle.com">http://iacademy.ornacle.com</a></p>

			<p><b>5.3.B Computer Science Concepts and Practices - Computing Practice and Programming</b></p> <p>6. Anticipate future careers and the technologies that will exist. 7. Use data analysis to enhance understanding of complex natural and human systems.</p> <p><b>5.3.C.2 Projects-Based Courses</b></p> <p><b>5.3.C.3 Courses Leading to Industry Certification</b></p>				
September	Oracle Proprietary Join Syntax	<p>Cartesian Product and the Join Operations</p> <p>Nonequijoins</p> <p>Outer Joins</p>	<p><b>5.3.A Computer Science in the Modern World - Computational Thinking</b></p> <p>6. Analyze the representation and trade-offs among various forms of digital information.</p> <p><b>5.3.A Computer Science in the Modern World - Computing Practice and Programming</b></p> <p>3. Use various debugging and testing methods to ensure program correctness (e.g., test cases, unit testing, white box, black box, integration testing). 5. Use Application Program Interfaces (APIs) and libraries to facilitate programming solutions.</p> <p><b>5.3.B Computer Science Concepts and Practices - Computational Thinking</b></p> <p>3. Critically examine classical algorithms and implement an original algorithm.</p>	<ul style="list-style-type: none"> <li>• Know the Oracle proprietary joins and their ANSI/ISO SQL: 1999 counterparts and describe the purpose of the join conditions.</li> <li>• Construct and execute a SELECT statement that results in a Cartesian product.</li> <li>• Construct and execute SELECT statements to access data from more than one table using an equijoin.</li> <li>• Construct and execute SELECT statements that add search conditions</li> </ul>	<p>What are the Oracle proprietary joins and their ANSI/ISO SQL: 1999 counterparts?</p> <p>What is the purpose of join conditions?</p>	<p>Exercises Quizzes Midterm Final Exam</p> <p><b>Vocabulary</b></p> <ul style="list-style-type: none"> <li>- proprietary joins</li> <li>- ANSI/ISO SQL: 1999 counterparts</li> <li>- nonequijoin</li> <li>- outer Joins</li> </ul>	<p><a href="http://learning.oracle.com">http://learning.oracle.com</a></p> <p><a href="http://iacademy.oracle.com">http://iacademy.oracle.com</a></p>

			<p>4. Evaluate algorithms by their efficiency, correctness, and clarity.</p> <p>5. Use data analysis to enhance understanding of complex natural and human systems.</p> <p>9. Analyze data and identify patterns through modeling and simulation.</p> <p><b>5.3.B Computer Science Concepts and Practices - Collaboration</b></p> <p>3. Evaluate programs written by others for readability and usability.</p> <p><b>5.3.B Computer Science Concepts and Practices - Computing Practice and Programming</b></p> <p>6. Anticipate future careers and the technologies that will exist.</p> <p>7. Use data analysis to enhance understanding of complex natural and human systems.</p> <p><b>5.3.C.2 Projects-Based Courses</b></p> <p><b>5.3.C.3 Courses Leading to Industry Certification</b></p>	<p>using the AND operator.</p> <ul style="list-style-type: none"> <li>• Apply the rule for using column aliases in a join statement.</li> <li>• Construct and execute a SELECT statement to access data from more than one table using a nonequijoin.</li> <li>• Create and execute a SELECT statement to access data from more than one table using an outer join.</li> </ul>			
October	Ensuring Quality Query Results – Advanced Techniques	Ensuring Quality Query Results – Advanced Techniques	<p><b>5.3.A Computer Science in the Modern World - Collaboration</b></p> <p>1. Work in a team to design and develop a software artifact.</p> <p><b>5.3.A Computer Science in the Modern World - Computing Practice and Programming</b></p>	<ul style="list-style-type: none"> <li>• Create an advanced query to produce specified data.</li> <li>• Modify an advanced query to produce the specified data.</li> </ul>	What prior knowledge must be used to create or modify an advanced query to produce specified data?	Exercises Quizzes Midterm Final Exam	<a href="http://ilearning.oracle.com">http://ilearning.oracle.com</a>  <a href="http://iacademy.oracle.com">http://iacademy.oracle.com</a>

		<p>3. Use various debugging and testing methods to ensure program correctness (e.g., test cases, unit testing, white box, black box, integration testing).</p> <p><b>5.3.A Computer Science in the Modern World - Computing Practice and Programming</b></p> <p>4. Apply analysis, design, and implementation techniques to solve problems (e.g., use one or more software lifecycle models).</p> <p>5. Use Application Program Interfaces (APIs) and libraries to facilitate programming solutions.</p> <p><b>5.3.B Computer Science Concepts and Practices - Computational Thinking</b></p> <p>3. Critically examine classical algorithms and implement an original algorithm.</p> <p>4. Evaluate algorithms by their efficiency, correctness, and clarity.</p> <p>5. Use data analysis to enhance understanding of complex natural and human systems.</p> <p>9. Analyze data and identify patterns through modeling and simulation.</p> <p><b>5.3.B Computer Science Concepts and Practices - Collaboration</b></p> <p>1. Use project collaboration tools, version control systems, and Integrated Development Environments (IDEs) while working on a collaborative software project.</p> <p>2. Demonstrate the software life cycle</p>				
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			<p>process by participating on a software project team.</p> <p>3. Evaluate programs written by others for readability and usability.</p> <p><b>5.3.B Computer Science Concepts and Practices - Computing Practice and Programming</b></p> <p>6. Anticipate future careers and the technologies that will exist.</p> <p>7. Use data analysis to enhance understanding of complex natural and human systems.</p> <p><b>5.3.B Computer Science Concepts and Practices - Community, Global, and Ethical Impacts</b></p> <p>4. Summarize how computation has revolutionized the way people build real and virtual organizations and infrastructures.</p> <p><b>5.3.C.2 Projects-Based Courses</b></p> <p><b>5.3.C.3 Courses Leading to Industry</b></p>				
October – January	Certification Exam Review	Cumulative	<b>Cumulative</b>	Review all prior material from Oracle II and III	Cumulative	Re-take quizzes and exams until 90% mastery.	<a href="http://ilearning.oracle.com">http://ilearning.oracle.com</a>  <a href="http://iacademy.oracle.com">http://iacademy.oracle.com</a>

\* Some teachers may need to think about the assessments and resources used in order to determine the Big Ideas, Enduring Understandings, and Essential Questions embedded in their courses. At this point in your curriculum mapping, you might want to ignore the “Common Assessments” and “Common Resources Used” columns. However, you may use them if you wish.