Unit C: Strings, Tuples, List, Dictionaries

Content Area: **CTE**
Course(s): **Prog. in Python with Alice**
Time Period: **November**
Length: **4**
Status: **Published**

Unit Overview:

- students will learn how dictionaries with data pairs are beneficial in programs.
- In this unit, Students will learn about the For structure and when a For Loop is more dependable than a While loop.
- Students will also learn how the sequence of numbers and strings are created through different functions and tuples
- Students will start working with List and Dictionaries. Students will learn how to declare, index and slice lis
- With list, students will also learn how to add and delete elements from the list, as well as, sort the list after a new element was added.

Enduring Understandings:

- Iteration Structures allow a program to repeat a set of actions for a constant or variable number of times
- List and Dictionaries collections are useful for storing lists of data that can be easily manipulated
- Sorting and searching techniques are necessary to effectively organize and process large amounts of data.
- String data can be easily stored in the sequence structure of tuples.

Essential Questions:

- How is data sorted?
- What are the advantages of storing collections of data in an list or dictionaries? Which is the best data structure for a given programming situation?
- What are the pros and cons of using List and Dictionaries?
- What are Tuples? and how are they use in code?
- What is the importance of being able to use a repetition structure in a programming language to allow blocks of code to repeat?
- When is a For Statement a better choice of the While loop?

Standards/Indicators/Student Learning Objectives (SLOs):

- SWBAT: Learn how to properly code the different sequential structures.
- SWBAT: Learn the different sequence methods.

- SWBAT: Understand which sequences are immutable and mutable.

TECH.8.1.12.A	Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.
TECH.8.1.12.B	Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
TECH.8.1.12.C	Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
TECH.8.1.12.D	Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
TECH.8.1.12.E	Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
TECH.8.1.12.F	Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
TECH.8.2.12.A	The Nature of Technology: Creativity and Innovation: Technology systems impact every aspect of the world in which we live.
TECH.8.2.12.B	Technology and Society: Knowledge and understanding of human, cultural and society values are fundamental when designing technology systems and products in the global society.
TECH.8.2.12.C	Design: The design process is a systematic approach to solving problems.
TECH.8.2.12.D	Abilities for a Technological World: The designed world is the product of a design process that provides the means to convert resources into products and systems.
TECH.8.2.12.E	Computational Thinking: Programming: Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.

Lesson Titles:

- Lesson: Dictionaries
- Lesson: Lists
- Lesson: String Methods
- Lesson: Tuples
- Program: Fun with Dictionaries
- Program: Fun with Lists
- Program: Fun with Strings
- Program: Fun with Tuples

Career Readiness, Life Literacies, & Key Skills

12.9.3.IT-PRG.1	Analyze customer software needs and requirements.
12.9.3.IT-PRG.2	Demonstrate the use of industry standard strategies and project planning to meet customer specifications.
12.9.3.IT-PRG.3	Analyze system and software requirements to ensure maximum operating efficiency.

12.9.3.IT-PRG.4	Demonstrate the effective use of software development tools to develop software applications.
12.9.3.IT-PRG.5	Apply an appropriate software development process to design a software application.
12.9.3.IT-PRG.6	Program a computer application using the appropriate programming language.
12.9.3.IT-PRG.7	Demonstrate software testing procedures to ensure quality products.
12.9.3.IT-PRG.8	Perform quality assurance tasks as part of the software development cycle.
12.9.3.IT-PRG.9	Perform software maintenance and customer support functions.
12.9.3.IT-PRG.10	Design, create and maintain a database.
TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
TECH.9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).

Inter-Disciplinary Connections:

- Art
- English
- History
- Math
- Music
- Science

LA.RH.11-12	Reading History
LA.RST.11-12	Reading Science and Technical Subjects
LA.WHST.11-12	Writing History, Science and Technical Subjects
MA.A-CED.A.1	Create equations and inequalities in one variable and use them to solve problems.
MA.A-CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
MA.A-REI.B.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
SOC.9-12.1.3	Critical Thinking
SOC.9-12.1.4.2	Demonstrate effective presentation skills by presenting information in a clear, concise, and well-organized manner taking into consider appropriate use of language for task and audience.
VPA.1.3.12.B	Music
VPA.1.3.12.D	Visual Art

Instructional Strategies, Learning Activities, and Levels of Blooms/DOK:

- IS: • Extra Time to complete Programs
- IS: • One on One tutoring during Delsea One
- IS:• NHS Assistance and Tutoring
- Program: Hangman
- Program: State Capital
- Program: Word Jumble

Modifications

ELL Modifications:

- Choice of test format (multiple-choice, essay, true-false)
- Continue practicing vocabulary
- Provide study guides prior to tests
- Read directions to the student
- Read test passages aloud (for comprehension assessment)
- Vary test formats

IEP & 504 Modifications:

- Allow for redos/retakes
- Assign fewer problems at one time (e.g., assign only odds or evens)
- Differentiated center-based small group instruction
- Extra time on assessments
- Highlight key directions
- If a manipulative is used during instruction, allow its use on a test
- Opportunities for cooperative partner work
- Provide reteach pages if necessary
- Provide several ways to solve a problem if possible
- Provide visual aids and anchor charts
- Test in alternative site
- Tiered lessons and assignments
- Use of a graphic organizer
- Use of concrete materials and objects (manipulatives)
- Use of word processor

G&T Modifications:

- Alternate assignments/enrichment assignments
- Enrichment projects
- Extension activities
- Higher-level cooperative learning activities
- Pairing direct instruction with coaching to promote self-directed learning
- Provide higher-order questioning and discussion opportunities
- Provide texts at a higher reading level
- Tiered assignments
- Tiered centers

At Risk Modifications

- Additional time for assignments
- Adjusted assignment timelines
- Agenda book and checklists
- Answers to be dictated
- Assistance in maintaining uncluttered space
- Books on tape
- Concrete examples
- Extra visual and verbal cues and prompts
- Follow a routine/schedule
- Graphic organizers
- Have students restate information
- No penalty for spelling errors or sloppy handwriting
- Peer or scribe note-taking
- Personalized examples
- Preferential seating
- Provision of notes or outlines
- Reduction of distractions
- Review of directions
- Review sessions
- Space for movement or breaks
- Support auditory presentations with visuals
- Teach time management skills
- Use of a study carrel
- Use of mnemonics
- Varied reinforcement procedures
- Work in progress check

Formative Assessment:

- Anticipatory Set
- Closure
- Pre-Programs
- Program Examples
- Teacher/Student review
- Warm-Up

Summative Assessment:

- Alternate Assessment
- Benchmark
- Group Programs
- Large Programs
- Marking Period Assessment
- Quiz: List Methods
- Quiz: Strings Methods
- Small Programs
- Test: Lists and Dictionaries
- Test: Strings and Tuples

Alternative Assessments

Performance tasks

Project-based assignments

Problem-based assignments

Presentations

Reflective pieces

Concept maps

Case-based scenarios

Portfolios

Benchmark Assessments

Skills-based assessment

Reading response

Writing prompt

Lab practical

Resources & Materials:

- Computer Lab
- Google Classroom
- Michael Dawson, Python Programming Third Edition, 2010, Course Technology: Cengage Learning
- Microsoft Visual Studios
- Powerpoint
- Python Programming for the Absolute Beginner, 3rd Edition - Mike Dawson
- Screen Sharing Software
- Various Websites

Technology:

- Adobe PhotoShop
- Google Classroom
- Microsoft Visual Studios
- Pygame Gaming Library
- Python IDLE
- Screen Sharing Software
- Various Websites: classroom.google.com; classdojo.com; repl.it

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