Unit 5: Files, GUI & Multimedia

Content Area: **Business**
Course(s): **Java**
Time Period: **4th Marking Period**
Length: **Weeks**
Status: **Published**

Unit Overview

Introduction to file input and output and using Path and Files classes. Introduction to Swing components using JFrame, JLabel and a layout manager. Advanced GUI topics, graphics, applets, images and sound.

Transfer

Students will be able to independently use their learning to...

-What kinds of long term, independent accomplilshments are desired?

Learn about computer files usign Path and Filles classes.

Understand Swing components.

Use JPanel, JScrollPanes and the AWTEvent class methods.

Meaning

Understandings

Students will understand that...

-What specifically do you want students to understand?

-What inferences should they make/grasp/realize?

Write programs to create graphic objects.

Draw lines, retangles, ovals, arcs and polygons.

Create graphics using loops and if statements.

Use various features of the graphics class.

Contruct a query-driven terminal interface.

Construct a menu driven interface.

Construct a GUI.

Write a method to handle users' interactions with command buttons.

Manipulate window objects to input and output integers, doubles and text.

Use apprppriate markup tags to include images in web pages.

Convert Java application to an applet and embed the applet in a web page.

Understand the constrants on applets that distiguish them from Java applications.

Essential Questions

Students will keep considering...

What thought provoking questions will foster inquiry, meaning making and transfer?

How do you use Path and File classes.

What is the process of reading and writing to a file?

What are Swing components?

How do you use the JFrame and JLabel classes?

What is event-driven programming?

Why do we use a layout manager?

How does JPanel increase layout options.

What are JScrollPanes used for?

How are the AWTEvent class methods used?

How are the paint() and repaint() method used?

What methods do you use to draw lines and shapes.

What are applets?

How do you use the init() method?

What are the components of the JApplet?

How does multimedia work with JApplet?

Application of Knowledge and Skill

Students will know...
Students will know...

What facts and basic concepts should students know and be able to recall?

Path class is used to gather file information, such as location, size and creation date.

Files class is used to perform operations on files and directories.

InputStream, OutputStream and Reader are subclasses of the Object class that are used for input and output.

Swing components are UI elements such as dialog boxes and buttons.

A JFrame holds and displays other objects.

JLabel is a built-in Java Swing class that holds text you can display.

You must use a layout manager to place multiple components at specified positions in a container.

A class can implement as many event listeners as it needs.

The Color class defines 13 colors for you to use in your application.

JPanel is a plain, border less surface that can hold lightweight UI components.

The AWTEvent classes contain methods that return information about an event.

Painting operations are performed by Componentpaint() method.

The drawString method allows you to draw a String.

Java provides you with several methods for drawing a variety of lines and geometric shapes.

An applet is a program that is called within another application.

To view an applet, it must be called from another document written in HTML.

Multimedia describes the use of sound, images, graphics and video in computer programs.

Students will be skilled at...

What discrete skills and processes should students be able to use?

Using the Path and Files classes.

Implementing file organization, streams and buffers.

Using Java's IO classes to write and read from a file.

Writing and reading records to and from a random access data file.

Understanding Swing components.

Using the JFrame class, Jlabel class and a layout manager.

Understanding Swing event listeners and event-driven programming.

Using content panes and color.

Using JPanel to increase layout options and creating JScrollPanes.

Using the AWTEvent class methods.

Learning about paint() and repaint() methods.

Using the drawString() method to draw Strings using various fonts and colors.

Using applets and writing an HTML document to host an applet.

Using the init() method.

Understanding the JApplet and using mutlimedia and images.

Academic Vocabulary

text files data files binary files path path delimiter factory methods absolute path relative path stream buffer flushing batch processing seekable wrapped Swing components Java foundation classes container pixels layout manager flow layout manager event source event handler top-level container containment history content pane primary surface back buffer viewpoint adapter class action key menus rerender painting leading fill patterns acyclic gradient cyclic gradient stroke applet HTML XTML applet viewer sandbox multimedia image.

Learning Goal 1

Students will be able to use classes for file input and output.

Target 1

SWBAT use the path and files classes and learn about file organization, streams and buffers.

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.E	Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
TECH.8.2.12.E.3	Use a programming language to solve problems or accomplish a task (e.g., robotic functions, website designs, applications, and games).
TECH.8.2.12.E.CS1	Computational thinking and computer programming as tools used in design and engineering.

Target 2

SWBAT use Java's IO classes to write to and read from a file.

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.E	Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
TECH.8.2.12.E.3	Use a programming language to solve problems or accomplish a task (e.g., robotic functions, website designs, applications, and games).
TECH.8.2.12.E.CS1	Computational thinking and computer programming as tools used in design and engineering.

Target 3

SWBAT learn about random access files and write records to a random access file and read records from a random access data file.

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.E	Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
TECH.8.2.12.E.3	Use a programming language to solve problems or accomplish a task (e.g., robotic functions, website designs, applications, and games).
TECH.8.2.12.E.CS1	Computational thinking and computer programming as tools used in design and engineering.

Learning Goal 2

Students will be able to understand Swing components.

Target 1

SWBAT understand swing components and use the jframe class and the jlabel class.

| 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.E	Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
TECH.8.2.12.E.3	Use a programming language to solve problems or accomplish a task (e.g., robotic functions, website designs, applications, and games).
TECH.8.2.12.E.CS1	Computational thinking and computer programming as tools used in design and engineering.

Target 2

SWBAT use a layout manager and extend the jframe class.

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.E	Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
TECH.8.2.12.E.3	Use a programming language to solve problems or accomplish a task (e.g., robotic functions, website designs, applications, and games).
TECH.8.2.12.E.CS1	Computational thinking and computer programming as tools used in design and engineering.

Target 3

SWBAT learn about event-driven programming and understand swing event listeners.

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.E	Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
TECH.8.2.12.E.3	Use a programming language to solve problems or accomplish a task (e.g., robotic functions, website designs, applications, and games).
TECH.8.2.12.E.CS1	Computational thinking and computer programming as tools used in design and engineering.

Learning Goal 3

Students will be able to use advanced GUI procedues.

Target 1

SWBAT use content panes and use color.

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.E	Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
TECH.8.2.12.E.3	Use a programming language to solve problems or accomplish a task (e.g., robotic functions, website designs, applications, and games).
TECH.8.2.12.E.CS1	Computational thinking and computer programming as tools used in design and engineering.

Target 2

SWBAT use JPanel to increase layout options and create JScrollPanes.

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.
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TECH.8.2.12.E.CS1	Computational thinking and computer programming as tools used in design and engineering.

Target 3

SWBAT use the AWTEvent class methods and use menus.

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.E	Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
TECH.8.2.12.E.3	Use a programming language to solve problems or accomplish a task (e.g., robotic functions, website designs, applications, and games).
TECH.8.2.12.E.CS1	Computational thinking and computer programming as tools used in design and engineering.

Learning Goal 4

Students will be able to incorporate graphics into a Java program.

Target 1

SWBAT use the paint(), repaint() and drawstring() methods.

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.E	Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
TECH.8.2.12.E.3	Use a programming language to solve problems or accomplish a task (e.g., robotic functions, website designs, applications, and games).
TECH.8.2.12.E.CS1	Computational thinking and computer programming as tools used in design and engineering.

Target 2

SWBAT draw with Java 2D graphics.

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.E	Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.

TECH.8.2.12.E.3	Use a programming language to solve problems or accomplish a task (e.g., robotic functions, website designs, applications, and games).
TECH.8.2.12.E.CS1	Computational thinking and computer programming as tools used in design and engineering.

Learning Goal 5

Students will be able to add applets, images and sound to a Java program.

Target 1

SWBAT work with the JApplet life cycle and use the init() method.

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.E	Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
TECH.8.2.12.E.3	Use a programming language to solve problems or accomplish a task (e.g., robotic functions, website designs, applications, and games).
TECH.8.2.12.E.CS1	Computational thinking and computer programming as tools used in design and engineering.

Target 2

SWBAT work with and understand the JApplet life cycle and use images and sound.

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.E	Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
TECH.8.2.12.E.3	Use a programming language to solve problems or accomplish a task (e.g., robotic functions, website designs, applications, and games).
TECH.8.2.12.E.CS1	Computational thinking and computer programming as tools used in design and engineering.

Summative Assessment

Unit assessment, project based assessments, tests and quizzes.

21st Century Life and Careers

CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
CRP.K-12.CRP6.1	Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.
CRP.K-12.CRP8.1	Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.

Formative Assessment and Performance Opportunities

Oral question & answer discussion, in-class observation, written exercises, classwork & homework assignments, power point w/ notes, projects, portfolios, quizzes and tests.

Accommodations/Modifications

Supplemental Guide - See Attached Document

All instruction, labs, activities, and assessments will be modified and enhanced to adhere to individual student's IEPs and 504s. As well differentiated classroom management strategies will be utilized as to adhere to these students individual plans as well.

Unit Resources

Computer, textbook, supplemental textbook materials, Internet resources, teacher generated power points & notes and lab materials.

- Computer Work Station
- Internet Resources
- Lab Materials
- Supplemental Textbook
- Teacher Created Power Points
- Textbook

Interdisciplinary Connections

MA.K-12.1	Make sense of problems and persevere in solving them.
LA.RST.11-12.1	Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions.
LA.RST.11-12.5	Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
LA.RST.11-12.9	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
LA.WHST.11-12.1.A	Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.