Instructional Technology
Grade 7
Canterbury Public Schools

Subject	Technology
Grade Level	7th
Unit Title	Block Coding using Scratch
Unit Goals	Create a functioning program that uses compound conditional expressions, conditional expressions, loops, and nested loops. Create a user interface that makes the program user friendly. Create a presentation to the class about an internal component of your project.
Pacing (# of weeks)	(14 sessions @ 45 min.) 6-8 weeks.
Standards	**Computer Science Standards (ISTE) International Society for Technology in Education** **2-AP-12** **Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.** ● Control structures can be combined in many ways. Nested loops are loops placed within loops. Compound conditionals combine two or more conditions in a logical relationship (e.g., using AND, OR, and NOT), and nesting conditionals within one another allows the result of one conditional to lead to another. For example, when programming an interactive story, students could use a compound conditional within a loop to unlock a door only if a character has a key AND is touching the door. **2-AP-13** **Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.** ● Students should break down problems into subproblems, which can be further broken down to smaller parts. Decomposition facilitates aspects of program development by allowing students to focus on one piece at a time (e.g., getting input from the user, processing the data, and displaying the result to the user). Decomposition also enables different students to work on different parts at the same time. For example, animations can be decomposed into multiple scenes, which can be developed independently. **2-AP-14**

	Create procedures with parameters to organize code and make it easier to reuse. ● Students should create procedures and/or functions that are used multiple times within a program to repeat groups of instructions. These procedures can be generalized by defining parameters that create different outputs for a wide range of inputs. For example, a procedure to draw a circle involves many instructions, but all of them can be invoked with one instruction, such as “drawCircle.” By adding a radius parameter, the user can easily draw circles of different sizes. I can use Scratch to create a functioning program that demonstrates use of conditional expressions, compound conditional expressions, nested loops, and loops I can provide user feedback to assist a peer in debugging a program. I can communicate my thoughts and ideas that lead to the creation of my program I can communicate how and why I selected the code that I dent when programming solutions to any issues that came up during its creation. I can transfer my knowledge of programming language to learning new technologies and programming languages.
Content/Conceptual Knowledge (know)	● Program creation and development is an on-going process with each version improving upon the previous version. ● Creating nested loops within the code of a program can save a programmer time as it runs the same set of code over and over in a particular order. ● Conditional expressions allow a program to check and take action based on a variety of input ● The goal of a program can be coded in a variety of ways. ● A user interface is important in creating a program that is user friendly
Skills (be able to do)	Students will be able to: ● Use block code to create program. ● Navigate the schools internal network to save work to their individual drive space. ● Provide meaningful feedback with peers when beta testing. ● Reflect and problem solve (debug) to find new solutions to an existing problem ● Communicate purpose of program and explain its inner workings.
Essential Questions	What is a conditional expression and how do they help a program to function ? What is a nested loop and how can they be used to streamline an algorithm/code?

	What is a user interface and what is its purpose?
Enduring Understandings	These are general statements or take aways from all the study. Computer programs are used in many different devices and vocations. For example: ● Programs can be created using a variety of different programming languages however they all contain a similar root language. ● More people will be needed to create programs to fulfill the jobs of the future. ● The demand for programming knowledge will increase with the amount of technology being consumed. ● Debugging is a central part of programming. ● Trial and error is necessary to produce a quality product. ● Programs have numerous amounts of iterations.
Vocabulary	Conditional expression, compound conditional expression, nested loop, program, algorithm, bug, debug, loop, block programming, iterations, alpha testing, beta testing, network drive, user friendly, user interface, user, sprite, coordinate plane, keybinding.
Common Learning Experiences broken down by standard addressed in the unit	These are your lesson plan activities: ● Explore programs that have been created using Scratch. ● Explore the Scratch program. ● Explore the basics of coding movement of a sprite and keybinding. ● Create an introductory program that moves a sprite and keybinds sounds ● Introduce the concept of conditional expressions and compound conditional expressions. ● Review looping/loops and introduce the concept of nested loops. ● Introduce final project… explanation of rubric and revision process. ● Alpha test program and debug ● Beta test program with peers, get feedback, and debug. ● Create a presentation of your program ● Present your program to the class.
Assessments	Performance Based/ Project Based/Presentation
Resources	Scratch App
Student Resources	Scratch App, Student computers, network drives
Teacher Resources	Scratch App, Projector, Computer
Strategies	Think, pair, share, jigsaw writing,
Behaviors or dispositions	Persevere, follow directions, work with precision, listen to others ,provide Constructive feedback, learn how to use a rubric, use strategies that will use work

	Strategies that will increase productivity, learn to be cooperative and collaborative When working with peers, manage conflicts when necessary , reflect and problem Solve to find new solutions to existing problems