



Intro to Computer Science - Unit 1 - Introduction to Computer Programming with Python

Unit Focus

Throughout this course students will develop algorithms and apply logic to use a computer to solve and model a real world problem.

Throughout this course students learn how to use logic and sets of instructions to have a computer accomplish a task.

In this unit, students will gain a general understanding of what a computer program is, how it works, and how to write one using a language such as Visual Basic and an Integrated Development Language such as Microsoft Visual Studio. Students will understand the flow of a program, how to respond to user-generated events, how to add user interface elements to a form, and how to save and run a program. Students will become acquainted with much of the terminology as well as the technology that is used throughout the course.

Stage 1: Desired Results - Key Understandings

Standard(s)	Transfer	
Common Core Mathematics: 9-12 - Make sense of problems and persevere in solving them. (CCSS.MATH.MP.1) - Model with mathematics. (CCSS.MATH.MP.4) - Use appropriate tools strategically. (CCSS.MATH.MP.5) - Look for and make use of structure. (CCSS.MATH.MP.7) Madison Public Schools Profile of a Graduate - Idea Generation: Studying a problem, need or model (mentor text, political piece, documents, art work, etc.) to consider limitations and imagine new solutions/transformations. (POG. 2.1) - Design: Engaging in a process to refine a product for an intended audience and purpose. (POG.2.2)	<i>Students will be able to independently use their learning to...</i> T1 make sense of a problem, initiate a plan, execute it, and evaluate the reasonableness of the solution. T2 use appropriate tools to make reaching solutions more efficient, accessible and accurate. T3 evaluate the accuracy and efficiency of a given solution.	
	Meaning	
	Understanding(s)	Essential Question(s)
	<i>Students will understand that...</i> U1 Effective problem solvers work to make sense of the problem before trying to solve it. U2 Computer scientists flexibly use different tools, strategies, and operations to build conceptual knowledge or solve problems U3 Computer scientists compare the effectiveness of various arguments, by analyzing and critiquing solution pathways. U4 Computer scientists continually evaluate their process and the reasonableness of the intermediate results. U5 Computer scientists apply their domain knowledge to solve problems occurring in everyday life.	<i>Students will keep considering...</i> Q1 What is the problem? Q2 How can I break a problem down into manageable parts? Q3 What is another way that this problem could be solved? Q4 What math tools/models/ strategies can I use to solve the problem? Q5 How can I use what I know in the world?
	Acquisition of Knowledge and Skill	
	Knowledge	Skill(s)
	<i>Students will know...</i> K1 what a computer program is	<i>Students will be skilled at...</i> S1 writing a basic Scratch program

Stage 1: Desired Results - Key Understandings

	K2 why computer science is important K3 the difference between hardware and software K4 what devices can be programmed K5 what types of programming languages exist K6 how computers encode data and logic K7 how source code is converted into executable code K8 how a program flows K9 how to create, save, and run a program in Scratch K10 how to create, save, and run a program in VB K11 where to place code to respond to various events (click, double click) K12 how to use an assignment statement K13 vocabulary: bit, byte, IDE, hardware, software, object-oriented, compile, source code, Visual Basic (VB), form, button, textbox, label, listbox, checkbox, frame, option button, taborder, event, property, project, assignment statement, enable/disable, String	S2 following a program's logic by reading the program S3 creating and saving a VB project S4 manipulating the visibility and enabled status of basic user interface objects S5 moving between design and code windows S6 updating the value of properties at design and run time
--	--	--