

| Lesson #1: Programming in Sequence Using Flowcharts |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| <b>Objective</b>                                    | <p>Students will be able to:</p> <ul style="list-style-type: none"> <li>Define the flowchart and its elements.</li> <li>Write a simple flowchart to practice using the symbols that we have learnt during the lesson.</li> <li>Explain the sequence of programs in terms of using the flowchart.</li> <li>Write a simple python code that is represented using the flowchart.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Standards</b>                                    | <p>8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.</p> <ul style="list-style-type: none"> <li>8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.</li> <li>8.2.8.ED.2: Identify the steps in the design process that could be used to solve a problem.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Vocabulary</b>                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Activities</b>                                   | <p><b>Do Now —</b></p> <ul style="list-style-type: none"> <li>Write down your morning routine. Include everything you do from the moment you wake up to when you walk in the door of school.</li> </ul> <p><b>Teacher Lesson —</b></p> <ul style="list-style-type: none"> <li>Watch a video as a class demonstrating an example of a flow chart as seen in the <a href="#">engineering design process</a>. [5-7 mins]</li> <li>After watching the video, have the students create flowchart, step by step, on how to create a peanut butter and jelly sandwich. [5-7 mins]</li> <li>Have students explore the <i>Hello, World!</i> example. [3 mins]</li> <li>Have students explore the <i>Printing Multiple Lines</i> example. [2 mins]</li> <li>Students complete the <i>Introduce Yourself</i> exercise individually. [3-5 mins]</li> <li>Students complete the <i>Fix This Program</i> exercise individually. [3-5 mins]</li> <li>Students complete the <i>Vertical Name</i> exercise individually. [3-10 mins]</li> </ul> <p><b>Student Activity —</b></p> <ul style="list-style-type: none"> <li>Write a flowchart program to find if you're compatible with someone for a first day. <ul style="list-style-type: none"> <li>Think of questions you would like to ask your potential date</li> <li>Plan an appropriate order for the questions</li> <li>Write a minimum of 5 questions</li> </ul> </li> </ul> <p><b>Wrap Up/Reflection</b></p> <ul style="list-style-type: none"> <li>Have students reflect and discuss their responses to the end of class discussion questions. [10 mins]</li> <li>For the final discussion question, the printed text could be written on the board and students are instructed to write the commands to print the text in their sandbox</li> </ul> |
| <b>Solutions</b>                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Problem Guides</b>                               | <p><b>Code HS Lessons:</b></p> <p><a href="#">Printing in Python</a></p> <p><a href="#">Variables and Types</a></p> <p><a href="#">User Input</a></p> <p><a href="#">Mathematical Operators</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

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| <b>Modification:<br/>Special<br/>Education</b> | <ul style="list-style-type: none"><li>• Pair programming with another student</li><li>• Print out video slides for students to reference</li></ul> |
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