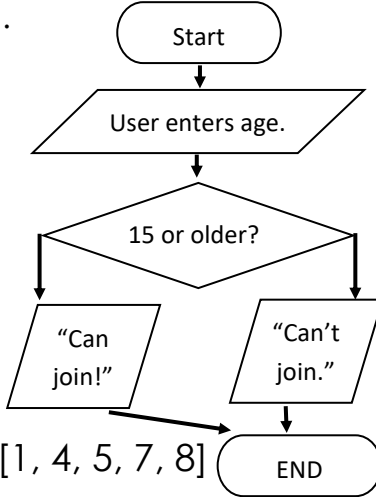
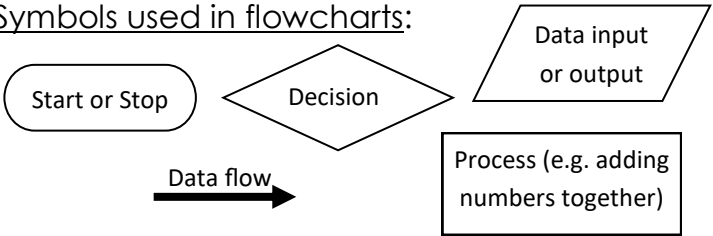


Key Words	Computational Thinking	Key Knowledge
<u>Abstraction</u>: The process of filtering out unnecessary information, focusing on only the important parts. <u>Decomposition</u>: The process of breaking down a complex task into separate, simpler parts. <u>Pattern Recognition</u>: The process of looking for patterns in decomposed problems. <u>Algorithm</u>: A step by step set of instructions to carry out a task or solve a problem. <u>Flowchart</u>: A visual way of representing an algorithm using shapes and arrows. <u>Pseudocode</u>: A generalisation of all programming languages. A simpler version of computer code. <u>Boolean Logic</u>: The idea that things can only be true or false, yes or no, 1 or 0.	Key Skills <u>Representing Processes</u>: User enters their age. Program checks if they are 15 years or older and outputs a message to say if they are eligible to join. <pre> age ← USERINPUT IF age >= 15 THEN OUTPUT "Can join!" ELSE OUTPUT "Can't join." ENDIF </pre>  <u>Binary Search</u>: Is 4 in [1, 4, 5, 7, 8] <pre> 1 4 5 7 8 4 < 5 (1) 4 4 > 1 (4) 4 = 4 4 in list = True </pre> <u>Bubble Sort</u>: [3, 1, 4, 5] <pre> 3 1 4 5 1 3 4 5 1 3 4 5 1 3 4 5 1 3 4 5 1 3 4 5 </pre> <u>Merge Sort</u>: <pre> [3, 1, 4, 5] [3, 1] [4, 5] [3] [1] [4] [5] [1, 3] [4, 5] [1, 3, 4, 5] </pre>	<u>Symbols used in flowcharts</u>:  <u>Pseudocode notation</u>: Assigning to variables: ← e.g. x ← 10 Selection: IF e.g. IF x = 10 THEN Iteration: FOR or WHILE e.g. WHILE n1 < 10 Structure: Use ENDIF or ENDWHILE etc. to signify the end of the command. User Input : USERINPUT e.g. x ← USERINPUT <u>Searching Algorithms</u>: Linear Search: Checks through each element in a list one by one. Slow Binary Search: Looks at the median value in sorted list. If your search criterion is lower, it will only look at values to the left. If higher, values to the right. Repeats process with remaining list. <u>Sorting Algorithms</u>: Bubble Sort: Compares 2 values at a time moving forward as it goes. Inefficient, and slow. Merge Sort: Breaks list into individual elements and sorts as it merges them back together.