**Week 1: Introduction to Algorithms and Python**

1. **collect\_user\_details**:

* **Guide**:
  + This function aims to collect user details such as name, age, and favorite color, and return them in a structured manner. Given that we want to return multiple pieces of data from a function, consider how Python facilitates this. A tuple, being an ordered and immutable sequence type, is an excellent choice to group together diverse types of data.
* **Pseudocode**:
* FUNCTION collect\_user\_details(name, age, color):  
   CREATE a tuple with name, age, and color  
   RETURN the tuple

1. **factorial**:

* **Guide**:
  + Factorials possess a recursive nature; the factorial of n is n multiplied by the factorial of n-1. The challenge here is to implement a recursive function. Remember to handle the base case where n equals 0 or 1, as the factorial of both these values is 1.
* **Pseudocode**:
* FUNCTION factorial(n):  
   IF n is 0 or 1:  
   RETURN 1  
   ELSE:  
   RETURN n multiplied by factorial(n-1)

1. **sort\_numbers**:

* **Guide**:
  + The objective here is to manually order a list of numbers in ascending order. While there are many sorting algorithms, a simple one to consider for this function might be the Bubble Sort or Insertion Sort. At a high level, you’ll be comparing elements and swapping them if they’re out of order, iterating through the list multiple times until it’s sorted.
* **Pseudocode**:
* FUNCTION sort\_numbers(nums):  
   FOR i from 0 to length of nums:  
   FOR j from 0 to length of nums minus i minus 1:  
   IF nums[j] is greater than nums[j+1]:  
   SWAP nums[j] and nums[j+1]  
   RETURN nums