Assignment 1: Python Basics and Data Types

1. **Variable Manipulation:**
   - Define variables to store a student's name, age, GPA, and list of subjects.
   - Convert age from years to months and display the result.
   - Concatenate and print a sentence using all the defined variables.
2. **Type Conversion Practice:**
   - Convert a float to an integer, and explain what happens to the decimal part.

Assignment 2: Data Structures - List, Tuple, Set, and Dictionary

1. **Working with Lists:**
   - Create a list of integers and:
     - Append a new number.
     - Insert a number at a specific index.
     - Remove duplicates and print the final list.
2. **Tuple Manipulation:**
   - Define a tuple of 5 colors.
   - Try to add a new color to the tuple (observe and explain why it fails).
   - Convert the tuple to a list, add the color, and convert it back to a tuple.
3. **Set Operations:**
   - Create two sets of random numbers.
   - Find and print their union, intersection, and difference.
   - Remove one element from the first set and add a new element.
4. **Dictionary Practice:**
   - Define a dictionary for a library system with book titles as keys and available copies as values.
   - Update the count of a specific book after it is borrowed.
   - Add a new book to the dictionary and print the updated dictionary.

Mini Project: Personal Library Management System

1. **Overview:** Create a Python program that simulates a basic personal library system using dictionaries and lists.
2. **Requirements:**
   - Initialize a dictionary where book titles are keys and values represent lists with details like author, publication year, and availability status.
3. **Additional Features:** Allow users to search for books by author or year, and display all available books.

Practice Questions

1. **Data Types and Variables:**

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- o What is the difference between `int` and `float` data types?
- o Describe the difference between mutable and immutable data types.

2. **Lists and Tuples:**
   - o How does a list differ from a tuple?
   - o Write a code snippet to remove all even numbers from a list of integers.

3. **Dictionaries:**
   - o Explain the difference between keys and values in a dictionary.
   - o Write code to merge two dictionaries.