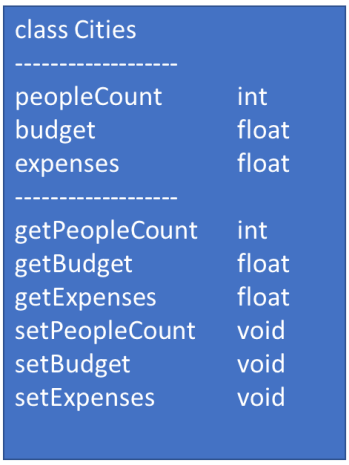
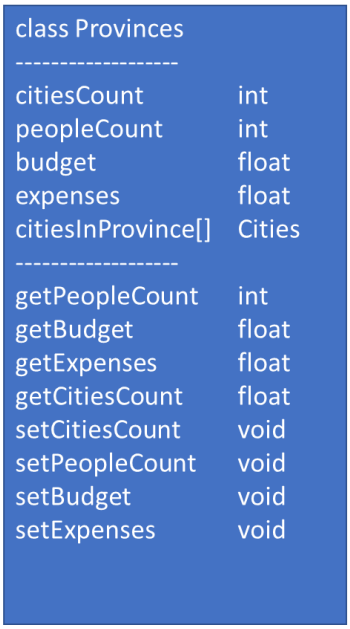
Practice Questions:

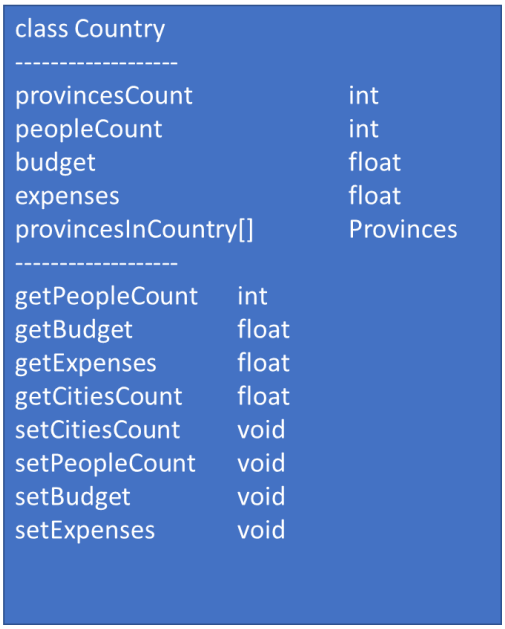
Q1: Write a program for a Laptop and Mobile Phone inventory system of an electronics shop.

a. Write appropriate classes. There should be multiple constructors for initial value and destructors. Each class should have all members variable private. Each member function should have setter and getter methods.
b. The main function should have following logics:
    i. Take last two digits of your ID (For example 34 from K21-1234). Create an array of that many object of Laptop class.
    ii. Take first two digits of your ID (For example 12 from K21-1234). Create an array of that many object of Mobile Phone class.
    iii. Enter purchase price of laptops and mobile phones by showing model number and name of the product.
    iv. Let consider last two digits of your ID (For example 34% from K21-1234) as profit margin in percentage. Change the selling price using purchase price and profit margin. Set updated value for all products.
    v. At the end of the program, the output should be your Name, your ID, Number of objects in each class, Total profit if all products are sold.

Q2: Define a class for a type called CounterType. An object of this type is used to count things, so it records a count that is a nonnegative whole number. Include a mutator function that sets the counter to a count given as an argument. Include member functions to increase the count by one and to decrease the count by one. Also, include a member function that returns the current count value and one that outputs the count. Create a program and show the required functionality.







Q3: A scenario is shown in given UML diagram. Review it to write program for each of the following tasks:

Create classes with defined member variables and functions. Each class must have default and parameterized constructors that assigns initial values to all members and destructors.

Write a main function where:

c. Create one country “Pak” which should have five provinces.
d. One province has four cities.
e. Consider your ID as the total budget in millions for country “Pak”, for example ID is “k21-1234”, so 1234 million budget.
f. Divide that budget and assign equally to each province
g. From assigned budget, equally divide budget to the cities.
h. Print all details in a tabular form that shows all provinces and their members values. All cities and their member values.

Write a function totalExpenses() which asks people count for each city. If each person has a service cost of last two digits of your id (k21-1234 → 34) then calculate total expenses for each city.

Write a function totalExpenses2() which uses expenses values of cities and calculates total expenses of provinces and the country.

Write a function highestExpensesP() which prints details of the province with highest expenses.

Write a function finalFunction() which prints profit or loss using budget and expenses members for each province in a tabular form.

Q4: a. Some of the characteristics of a book are the title, author(s), publisher, ISBN, price, and year of publication. Design a class bookType that defines the book.

i. Each object of the class bookType can hold the following information about a book: title, up to four authors, publisher, ISBN, price, and number of copies in stock. To keep track of the number of authors, add another member variable.

ii. Include the member functions to perform the various operations on objects of type bookType. For example, show the title, set the title, and check whether a title is the same as the actual title of the book. The typical operations that can be performed on the number of copies in stock are to show the number of copies in stock, set the number of copies in stock, update the number of copies in stock, and return the number of copies in stock. Add similar operations for the publisher, ISBN, book price, and authors. Add the appropriate constructors and a destructor (if one is needed).

Write a program that uses the class bookType and tests various operations on the objects of the class bookType. Some of the operations that you should perform are to search for a book by its title, search by ISBN, and update the number of copies of a book.

Q5:A book shop maintains details about the books in its' shop. Each book has a book id, book title, price. The details of the books can be easily viewed.

- A customer can purchase any number of copies for a particular book where the number of copies is initialized by a constructor(DEFAULT = 0).
- The user is required to input the book id, book title, price and number of copies that they want to purchase.
- The user is then displayed the total bill that is needed to be paid for the required book(s).
- The shop also keeps track of the total number of copies sold by a static function/variable.
- Display the bill for two customers who purchase a book from the shop. Use a copy constructor to show to show the bill for the second customer.