



Instructions:

- Read the following scenario and assumptions carefully before performing the tasks on the next page.
- During the lecture, we discussed solution for some of the tasks, but you'll still need to submit them.
- Although, if you want, you can make new functions (or variables) as per your need, but whenever you do, you must comment why making that function was necessary.
- Google as much as you want for syntax, but don't share your solution with each other.
- You'll have to make a single complete working program (with a main function) for all of these tasks. It should also have comments that indicate part of code written for each individual task.

Submission:

- You'll need to submit your .cpp (not .exe) file containing your code. When you submit, make sure that your file is placed in a compressed folder first.
- Name your folder as your ID e.g. K21-xxxx.
- **Deadline:** *Thursday, 5th of May, 2022*

"Nine-Tails Gift Delivery Service allows users to book and send gifts within the city. The service allows gifts to be delivered at the doorstep reliably.

The service delivers three types of gifts; that are perfumes, chocolate cakes and flowers. Furthermore, happy bundle is another gift type in which any two of these three gift items are sent together as gifts.

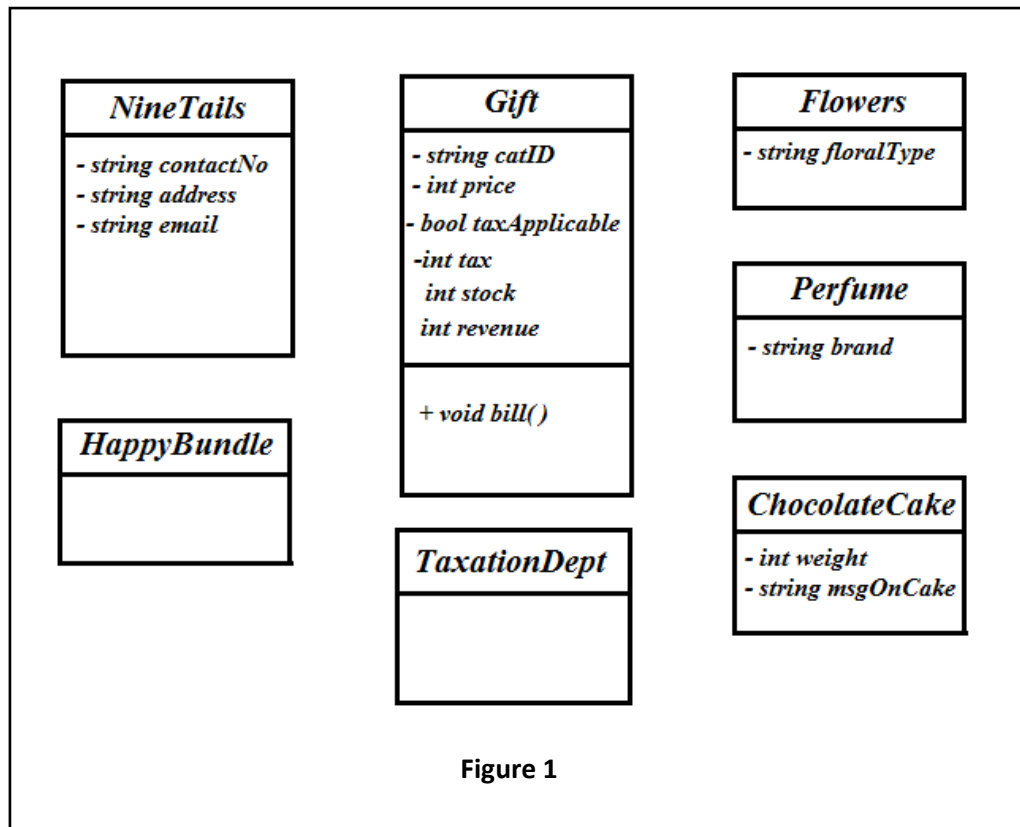
Each gift type has a unique category ID i.e. CK1 for cakes, FL1 for flowers, PF1 for perfumes and HB1 for happy bundles.

There is another entity involved, the Taxation Department. The Taxation Department must have access to the revenue and payable tax of Nine-Tails Delivery Service (but the Taxation Department does not need to be able to access any other attributes). Keep in mind that tax is not applicable on flowers."

The classes for this scenario are presented in Figure 1. Read the assumptions below and then perform the tasks.

Assumptions:

1. You may create or modify any variables and override any functions if needed to satisfy the requirements of the question. But their role in the program have to be justifiable.
2. The floral type can either be *Rose*, *Tulip* or *Daisy*. The unit price for each of these types is Rs. 50.
3. Perfumes and chocolate cakes are taxable gift items, but flowers are not.
4. The perfumes available are either from GUCCI, VERSACE or CHANEL. The unit price for perfume is Rs. 1200 for GUCCI, Rs. 1100 for VERSACE and Rs. 950 for CHANEL
5. The value given to weight variable for chocolate cake should be assumed as given in pounds
6. The price for chocolate cake is Rs. 700 per pound
7. The tax rate for perfume is 7% of the price and for chocolate cake it is 4% of the price.



Tasks to be performed:

- Declare all the classes provided in Figure 1.
- Declare variables and also provide suitable implementation for constructor(s) of each class. Overload the constructors wherever necessary. Also implement setter & getter functions for every private variable as (per your need).
- Override the functions wherever necessary and show their implementations (in both the parent and child classes).
- Write the code [in main()] for calling any function of the *Perfume* class using pointer variable of its parent class.
- Overload the ">" operator such that it displays if one *HappyBundle* instance gives more profit than the other.
- For keeping track of the inventory, there must be a mechanism to find how much of each individual gift item is remaining in stock. Also provide mechanism to see the current revenue (overall profit). Keep in mind that each type of gift has a different price.
- Provide a copy constructor for copying objects of *Flowers* class.
- Provide mechanism for *TaxationDept* class to access the revenue and payable tax amount of Nine-Tails Delivery Service.