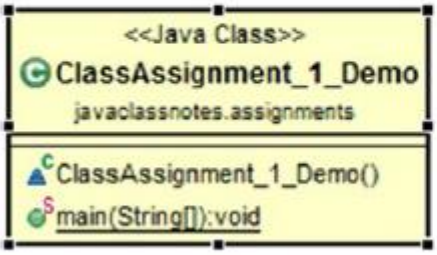
CASE STUDY

1. Class

✓ Assignment – 1

Create a class Vehicle. The class should have two fields-no_of_seats and no_of_wheels. Create two objects-Motorcycle and Car for this class. Your output should show the descriptions for Car and Motorcycle.

Uml class diagram:

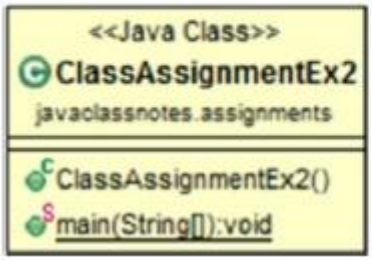


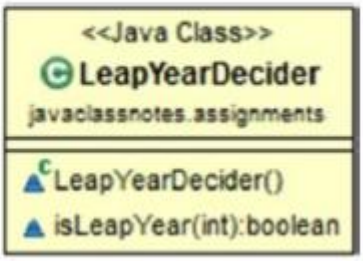
✓ Assignment 2

Create a class with a method. The method has to decide whether a given year is a leap year or not.
Note- A year is a leap year if:

- It has an extra day i.e. 366 instead of 365.
- It occurs in every 4 year e.g. 2008, 2012 are leap years.
- For every 100 years a special rule applies-1900 is not a leap year but 2000 is a leap year. In those cases, we need to check whether it is divisible by 400 or not.

UML class diagram:

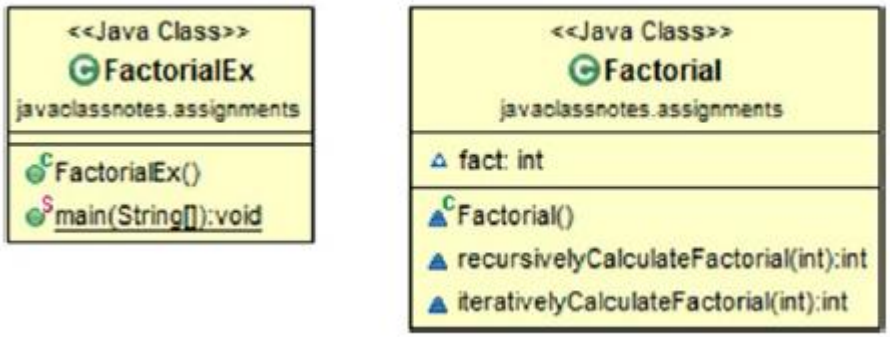




✓ Assignment 3

Create a class with two functions-one recursive and one non recursive. Either of these function should be capable of calculating the factorial of a number.

UML class diagram:

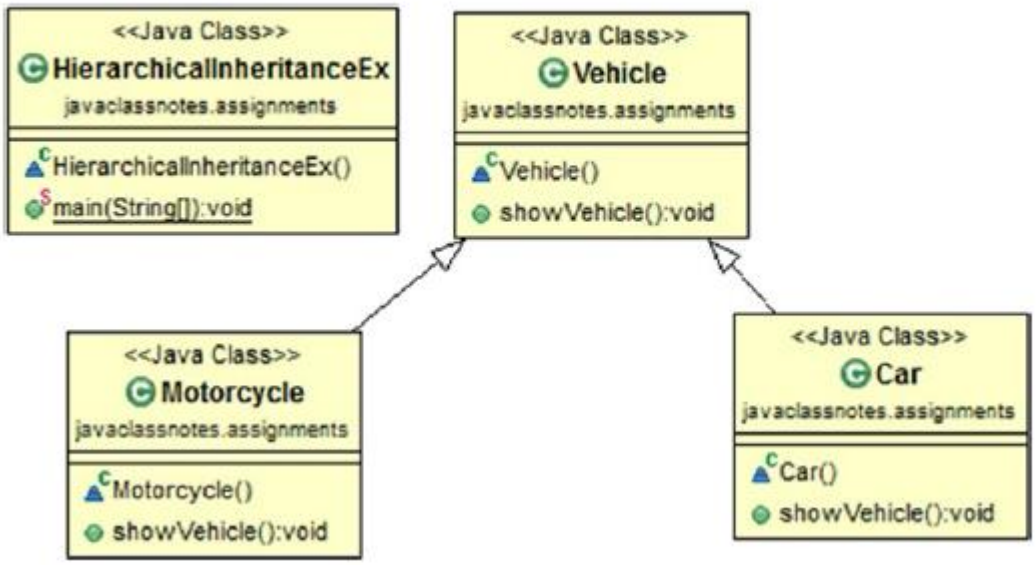


2. Inheritance

✓ Assignment 1

Write a simple program to implement hierarchical inheritance.

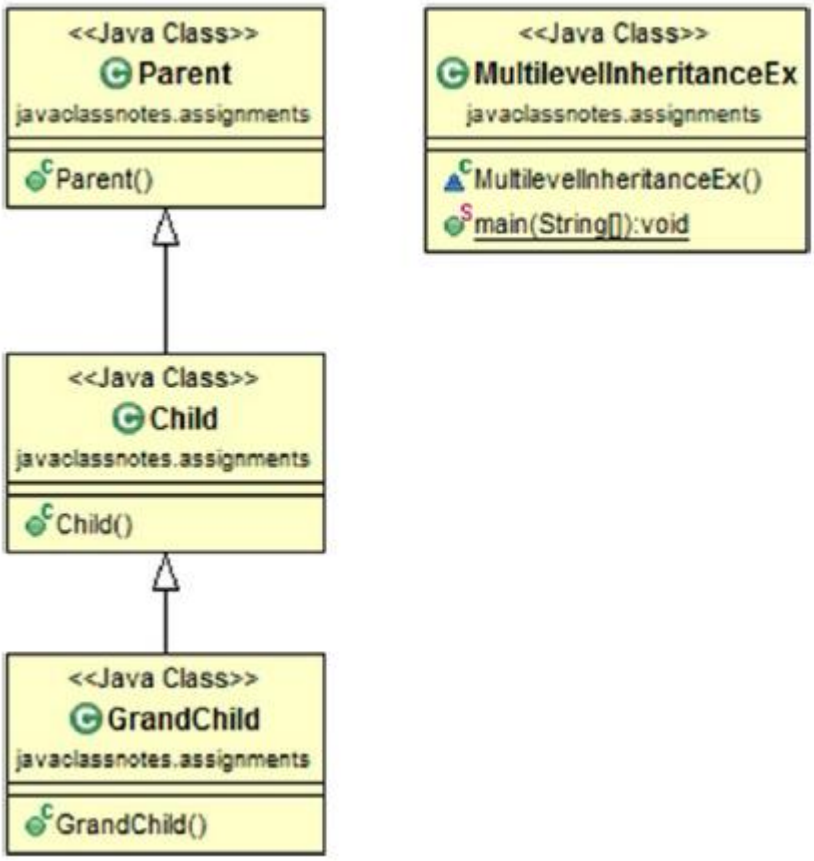
UML class diagram:



✓ Assignment 2

Write a simple program to implement multilevel inheritance.

UML class diagram:

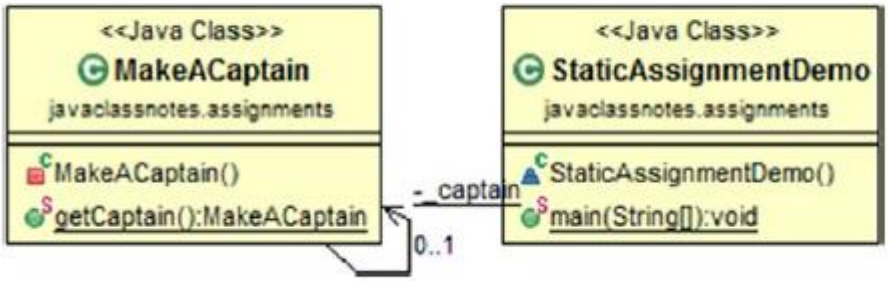


3. Use of static keyword

✓ Assignment 1

Suppose you have formed a cricket team. Now your team is going to play against an opponent team. You must be aware of the fact that which team will bat (or bowl) first will be decided through the toss and you need to send your captain for that. So, at first, you must elect a captain. At the same time, you must be aware that you can select one and only one captain. So, if you do not have any such captain, you will select one and send him for toss. Otherwise, you simply send the already nominated captain for the toss. Can you design this?

UML class diagram:



4. Exceptions

✓ Assignment

Create a custom Exception class. You need to consider two integer inputs which must be supplied by the user. You will display the sum of the integers if and only if the sum is less than 100. If it is not less than 100,throw your custom exception.

UML class diagram:

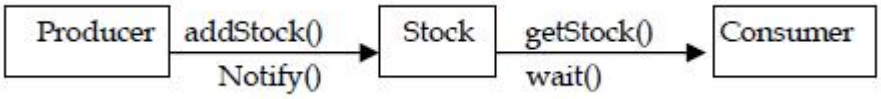
5. THREADS

✓ Assignment – 1

Write a program for inventory problem in this to illustrates the usage of synchronized keyword.

✓ Assignment – 2

Write a program for interthread communication process. In this they have three classes consumer, producer and stock.



✓ Assignment – 3

Write a program to show how synchronized methods and objects monitors are used to coordinate access to a common object by multiple threads. Clue use first program of this section for use will synchronized methods.

✓ Assignment – 4

Write a complex program to illustrate how the thread priorities? Imagine that the first thread has just begun to run, even before it has a chance to do anything. Now comes the higher priority thread that wants to run as

well. Now the higher priority thread has to do its work before the first thread starts.