**Important Instructions:**

* Please read the document thoroughly before you code.
* Import the given skeleton code into your Eclipse.
* Do not change the Skeleton code or the package structure, method names, variable names, return types, exception clauses, access specifiers etc.
* You can create any number of private methods inside the given class.
* You can test your code from main() method of the program
* Using Spring Core develop the application using **XML Configuration**.

**Time: 1 hour**

**Assessment Coverage:**

* **Classes, Objects and Constructor Injection**

Application created should be a demo of how to test petrol engine and diesel engine in a car. Car is totally independent of its engine , performance of the car is totally dependent on the engine fixed or injected . So the application will analyse the engine by injecting petrol or diesel engine in a runtime basis .

**Skeleton File for Development:**

Import the below attached skeleton code into your eclipse project and implement the required functionalities



**Technical Requirements:**

You are required to develop an App following below conditions.

**Step 1:** Create an abstract class **Engine** with below mentioned public methods :

**Variables:**

torque of type int , rpm of type int ,fuel of type String

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Access Specifier/ Modifier** | **Method Name** | **Input Parameters** | **Output Parameters** | **Logic** |
| Public abstract | getPerformance | nil | int | This method should be implemented by subclass  And calculate the performance |

**Engine** class should be registered as a **bean** as ‘**abstract= true**’ with the spring container via **XML file**.

**Step 2:** Create class **PetrolEngine** which extends **Engine** and give implementation for **getPerformance** method by using the below formula and return horsepower.

**horsepower = ( torque \* rpm )/5252**

**PetrolEngine** class should be registered as a **bean**  with the spring container via **XML file** with **bean id** as **petrolEngine**. The values for the attributes should be **torque=300** , **rpm=4000** and **fuel=petrol**.

**Step 3**: Create class **DieselEngine** which extends Engine and give implementation for getPerformance method by using the below formula and return horsepower.

**horsepower = ( torque \* rpm )/63025**

**DieselEngine** class should be registered as a **bean**  with the spring container via **XML file** with **bean id** as **dieselEngine**. The values for the attributes should be **torque=500** , **rpm=3000** and **fuel=diesel**.

**Step 4:** Create class **Car** which has following methods and variables.

**Variables:**

name of type String , engine of type Engine

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Method Name** | **Input Parameters** | **Output Parameters** | **Logic** |
|  | getReport | nil | nil | This method should display the name of the car , fuel used and performance |
| **Constructor** | Car | String name , Engine engine | NA | This parameterized constructor takes name and Engine object which should be injected using XML file. |

**Car** class should be registered as a **bean**  with the spring container via **XML file** with **bean id** as **petrolCar**. The values for the attributes should be constructor injected with **name=Honda** and **engine referred to petrolEngine** bean**.**

**Car** class should be registered as a **bean**  with the spring container via **XML file** with **bean id** as **dieselCar**. The values for the attributes should be constructor injected with **name=Suzuki** and **engine referred to dieselEngine** bean**.**

**General Design Constraints:**

* Ensure that all the Java Coding Standards are followed.
* Assume that the method inputs are valid always, hence exceptional blocks are not needed to be included in the development.

**Sample Input Output 1:**

Select option

1.Petrol Engine

2.Diesel Engine

1

Honda car with petrol engine gives 228 horsepower

**Sample Input Output 2:**

Select option

1.Petrol Engine

2.Diesel Engine

2

Suzuki car with diesel engine gives 23 horsepower