

# Spring Core Hands On – EngineAnalysis

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## 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



EngineAnalysis\_CodeSkeleton.zip

## 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

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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.

$$\text{horsepower} = (\text{torque} * \text{rpm}) / 5252$$

**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.

$$\text{horsepower} = (\text{torque} * \text{rpm}) / 63025$$

**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
<b>Constructor</b>	Car	String name , Engine engine	NA	This parameterized constructor takes name and Engine object which should be injected using XML file.

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**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