

CS392F: Automatic Software Design

P3: BMW (Series 2) Feature Model

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Constraint Description

1. A BMW (Series 2) has all of the following features: Body, DriveTrain, Fuel, MSRP, HorsePower, FuelEfficiency.
2. Drive Train can be one of the following options: xDrive, RearWheel.
3. Body can be one of the following features: Sedan, Coupe, Gran Coupe, Convertible, Sports Activity Vehicle, Roadster, Sports Activity Coupe, Sports Wagon, Gran Turismo.
4. Fuel can be one of the following options: Hybrid, Gasoline, Electric, Diesel.
5. MSRP can be one of the following options: \$32100, \$33900, \$43100, \$44900.
6. HorsePower can be one of the following options: HP240, HP320.
7. FuelEfficiency can be one of the following options: MPG30, MPG32, MPG35, MPG36.

Feature Diagram

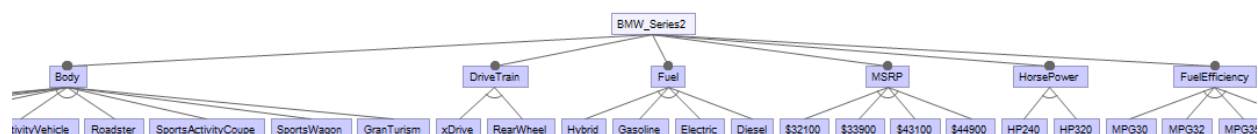


Figure 1 Feature Diagram for BMW (Series 2)

Due to size restriction, we cannot include the whole model diagram in this document. Please check our FeatureIDE project for details.

The feature model is designed in *model.xml*. In reality we discover that only one feature in a parent feature can be selected (choose one constraint). We do not discover any cross-tree constraints.

FM Configurator

Here are all the features of BMW 2 Series:

The screenshot displays a web-based feature model configurator for the BMW 2 Series. It consists of several panels, each representing a different feature category. Each panel contains a list of options, each preceded by a radio button. The 'Body' panel on the left is the largest and contains nine options. The other panels are smaller and arranged in a grid-like fashion to the right of the 'Body' panel. The 'DriveTrain' panel has two options. The 'Fuel' panel has four options. The 'MSRP' panel has four options. The 'HorsePower' panel has two options. The 'FuelEfficiency' panel has four options.

Body	DriveTrain	Fuel	MSRP	HorsePower	FuelEfficiency
<input type="radio"/> Sedan	<input type="radio"/> xDrive	<input type="radio"/> Hybrid	<input type="radio"/> \$32100	<input type="radio"/> HP240	<input type="radio"/> MPG30
<input type="radio"/> Coupe	<input type="radio"/> RearWheel	<input type="radio"/> Gasoline	<input type="radio"/> \$33900	<input type="radio"/> HP320	<input type="radio"/> MPG32
<input type="radio"/> GranCoupe		<input type="radio"/> Electric	<input type="radio"/> \$43100		<input type="radio"/> MPG35
<input type="radio"/> Convertible		<input type="radio"/> Diesel	<input type="radio"/> \$44900		<input type="radio"/> MPG36
<input type="radio"/> SportsActivityVehicle					
<input type="radio"/> Roadster					
<input type="radio"/> SportsActivityCoupe					
<input type="radio"/> SportsWagon					
<input type="radio"/> GranTurism					

Figure 2 FM Configurator for BMW (Series)

In addition to the feature model, we also created the four BMW 2 series products in the configuration files. Each configuration corresponds to one product. As a matter of fact, all the 4 products can be fully described by the feature model.