

Exercise 8: Software Product Lines



In this exercise you are feature model for your favorite car model. You should use the Clafer online configurator to validate the syntax of your model.

Task 1 Clafer

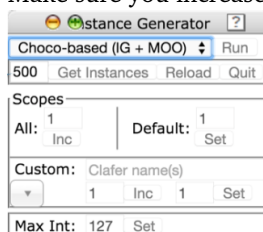
Look at clafer.org and familiarize yourself with the syntax and available tools. You do not need to understand the more advanced features (e.g., quality attributes, multi-objective optimization etc.)

Task 2 Feature Model

- Select your favorite car model
- Check out the configurator on the manufacturer's website and select at least 10 features that describe the car
- Create a feature model in clafer using those features
- Your model should make use of the following:
 - optional and mandatory features
 - or and xor groups
- You can write your model directly in the online Clafer configurator (<http://t3-necsis.cs.uwaterloo.ca:8093/>) and then click the compile button to make sure the syntax is correct

Task 3 Generate Instances

- Using the same clafer online configurator, generate all possible instances of your model
- Report how many valid products (i.e. instances) does your car have
- Make sure you increase this number to make sure you have covered all valid instances:



Task 4 Cross-Tree constraints

- Add at least one cross-tree constraint to your model
- It can be based on real constraints from the car manufacturer or hypothetical constraints you come up with
- Report how many valid products (i.e., instances) does your car have now

Extras: Using the Online Configurator

You can use the online configurator (feature and quality matrix) to explore the valid products in your product line.

Model \ Variants	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
myStore ▾																					
Storefront ▾																					
BuyPath ▾																					
ShoppingCart																					
Checkout ▾																					
Registered ? = yes ▾	<input checked="" type="checkbox"/>																				
QuickCheckoutProfile ?	<input type="checkbox"/>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Guest ?	<input type="checkbox"/>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗
Catalog ▾																					
CatalogStructure ▾																					
Categories ? = yes ▾	<input checked="" type="checkbox"/>																				
Multilevel ?	<input type="checkbox"/>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MultipleClassification ? = yes	<input checked="" type="checkbox"/>																				
ProductInformation ▾																					
BasicInformation																					
DetailedDescription ?	<input type="checkbox"/>	✓	✓	✗	✗	✓	✓	✗	✗	✓	✓	✗	✗	✓	✓	✗	✗	✓	✓	✗	✗
WarrantyInformation ?	<input type="checkbox"/>	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓	✓
CustomerReviews ? = no	<input checked="" type="checkbox"/>																				
AssociatedAssets ?	<input type="checkbox"/>	✓	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓	✗	✓	✗
ProductType ▾																					
ElectronicGoods ? = yes	<input checked="" type="checkbox"/>																				
Services ? = no	<input checked="" type="checkbox"/>																				

Solve it on your own!

Although this exercise is not graded, it is highly recommended to do it by yourself. Just looking at a solution is much easier in comparison to actually coming up with it.

Requirements if you want to submit your solution

You can, once in the semester, submit your solution to get it corrected. Send your solution to weiel@st.informatik.tu-darmstadt.de. Make sure you send in the `clافر.cfr` file. Make sure to mark the extra cross-tree constraints you added (using code comments).