Knowledge Management and Analysis
Project 01: Bad smells

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Section 1 - Ontology Creation

Structure of the created ontology

Report Pictures of the created ontology.
Comment on the pictures and the resulting class hierarchy.

Figure 1: View of Class Hierarchy

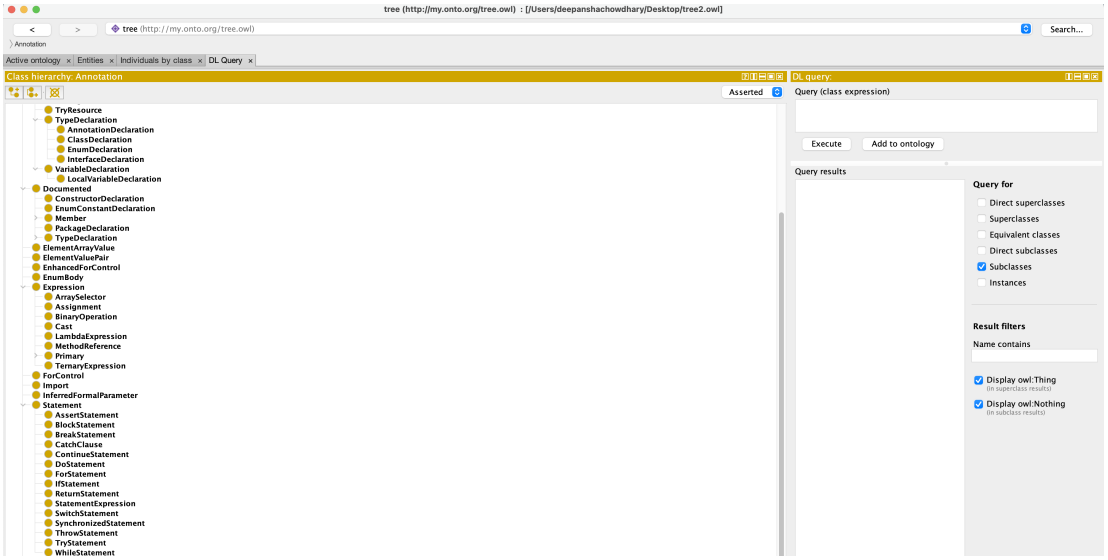

Figure 2: Nested levels within hierarchy

The creation of top level classes can be seen in Figures 1 and 2 respectively. During the creation of the ontology, we check whether the class definition inherits from class `Node`, which is done by the `node.bases` attribute in the code. If inheritance is found, it means that it should be subclass of Thing, however if such is not the case, the class name is looked up by `node.bases[0].id`, and the respective class is set as superclass, such as can be found for If statement, block statement, while statement etc being under class Statement, formal parameter being under class Declaration and so on.

Number of created classes and properties.

Report the count of created classes, and properties.

Type	Number
Class count	78
Object property count	2
Data property count	65

Table 1: Count of created classes and properties.

Section 2: Creation of ontology instances

Number of created instances.

Report the statistics (number of instances) for the individuals created for the considered project directory

Class	Number of created individuals
Class Declaration	16
Method Declaration	158
Constructor Declaration	7
Field Declaration	203
Formal Parameter	166
Constructor Declaration	7
Block Statement	175
Break Statement	23
Catch Clause	14
Continue Statement	4
Do Statement	2
For Statement	8
If Statement	147
Return Statement Expression	529
Switch Statement	8
Synchronized Statement	1
Throw Statement	15
Try Statement	14
While Statement	15

Table 2: Number of created instances per class.

Section 3: Bad smell detection

Report the number of occurrences of each bad smell found in the code, as well as the list of code entities containing each smell for the considered project directory.

Bad Smell	Count
Long methods	12
Long constructors	Empty
Large classes	3
Methods with switch statements	8
Constructors with switch statements	Empty
Methods with long parameter list	4
Constructors with long parameter list	Empty
Data Classes	1

Table 3: Bad smells (total).

For each of the bad smells report a table with details of this type (if any instances exist):

Class Name	Method Name	Counter
PGNProvider	insert	31
ChessPuzzleProvider	query	25
ChessPuzzleProvider	insert	20
GameControl	loadPGNHead	26
GameControl	loadPGNMoves	97
GameControl	requestMove	76
GameControl	getDate	26
JNI	newGame	35
JNI	initFEN	88
JNI	initRandomFisher	87
SearchAlgorithmRunner	run	51
UCIWrapper	init	63

Table 4: Long Methods.

Class Name	Counter
GameControl	63
JNI	44
Move	21

Table 5: Large Class.

Class Name	Method Name	Counter
PGNProvider	query	5
ChessPuzzleProvider	query	5
GameControl	addPGNEntry	5
JNI	setCastlingsEPAnd50	6

Table 6: Long Parameter Lists in Methods.

Class Name	Counter
Valuation	1

Table 7: Data Class.

Class Name	Method Name	Counter
PGNProvider	query	1
PGNProvider	getType	1
PGNProvider	delete	1
PGNProvider	update	1
ChessPuzzleProvider	query	1
ChessPuzzleProvider	getType	1
ChessPuzzleProvider	delete	1
ChessPuzzleProvider	update	1

Table 8: Methods with Switch.