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Attachment A: DSL language

This attachment specifies the DSL language using the EBNF syntax. Let the expressions “do end” and “{ }” be equivalents.

#Starting point

```
start = "initialSetId." expr;
expr = expr "." expr | operation;
```

#Refine Language

```
operation = refine | pivot | group | map | rank | correlate | intersect | unite | diff;
refine = "refine do" {andFilter | orFilter | simpleFilterSpec} "end";
simpleFilterSpec = filter " do" {[relationSpec] entitiesSpec | valuesSpec} " end";
relationSpec = "relation" {"relationId," } | expr;
valuesSpec = ("literal " "value" ) | ("literals " {"value,"} );
entitiesSpec = ("entity " "entityId") | ("entity " {"entityId, "});
andFilter = "And do" {simpleFilterSpec} "end";
orFilter = "Or do" {simpleFilterSpec} "end";
filter = "equals" | "containsOne" | "containsAll" | "greaterThan" | "userDefined";
```

#Pivot Language

```
pivot = "pivot do " relationSpec " end";
```

#Group Language

```
group = "group do " groupRelation " end";
groupRelation = relationSpec | user_defined_function;
```

```
user_defined_function = "function_name do " {param_definition} " end";
param_definition = "param_name param_values";
```

#Map Language

```
map= ("map" | "verticalMap") "do " mapFunction "end";
mapFunction = "count" | "average" | "sum" | user_defined_function;
```


#Rank Language

```
rank="rank do " scoreFunction" end";
```

```
scoreFunction = ("by_image do" relationSpec "end") | user_defined_function;
```

#Correlate Language

```
correlate = "correlate do " "target " expr {param_definition} " end ";
```

#Set Operations

```
intersect = "intersect " expr;
```

```
unite = "unite " expr;
```

```
diff = "diff" expr;
```