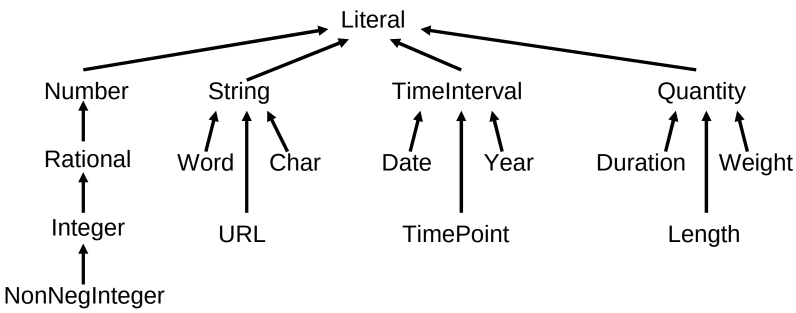

Figure 2: The YAGO literal classes

YAGO sees, e.g, *integer* as a subclass of *rational*, because each integer number is a rational number. *timeIntervals* are specific periods of time, such as the year 2007 or the 8th of January 1935.

Quantities. The class *quantity* contains values that have a physical dimension such as length or weight. These values have units, such as meter or kilogram. In RDFS, quantities are usually represented by blank nodes. This entity is connected by an *rdf:value* edge to the numerical value and by a *unit* edge to the unit of measurement, for example as follows:

_:x	*rdf:value*	*1000*
_:x	*unit*	*gram*

As a consequence, the very same quantity has to be represented as two blank nodes, if measured with two different units. The YAGO model, in contrast, can express that the very same quantity has two different values if measured in different units:

#1:	*1000g*	*hasValue*	*1000*
#2:	*#1*	*inUnit*	*"gram"*
#3:	*1000g*	*hasValue*	*1*
#4:	*#3*	*inUnit*	*"kilogram"*

In YAGO, we use the ISO units and formats both for the *hasValue* facts and as quantity identifiers.

2.2.5 Semantics

Prerequisites. This section gives a model-theoretic semantics to YAGO. We first prescribe that the set of relation names $\mathcal{R}$ for any YAGO ontology must contain at least the relation names *type*, *subClassOf*, *domain*, *range* and *subRelationOf*. The set of common entities $\mathcal{C}$ must contain at least the classes *entity*, *class*, *relation* and *atr* (for acyclic transitive relation). Furthermore, it must contain classes for all literals as given in Figure 2.

For the rest of this section, we assume a given set of common entities $\mathcal{C}$ and a given set of relations $\mathcal{R}$. The set of fact identifiers used by a YAGO ontology y is implicitly given by $\mathcal{I} = domain(y)$. To define the semantics of a YAGO ontology, we consider the set of all possible facts $\mathcal{F} = (\mathcal{I} \cup \mathcal{C} \cup \mathcal{R}) \times \mathcal{R} \times (\mathcal{I} \cup \mathcal{C} \cup \mathcal{R})$.