

## Lab 8 – Reusing resources

Today we are going to complete elements of the ontology we created last time (on cameras) and to populate it by reusing resources available, especially ontologies and RDF knowledge graphs.

**T1:** Go to <https://mdaquin.github.io/o/sw-lab7-camera> to obtain the version of the camera ontology discussed at the beginning of the lecture. Look at the OWL/turtle code and save it on your computer. Open it in Protégé and inspect it to check that you understand how things are represented.

**T2:** The ontology includes a class `Organisation` to represent the manufacturer of cameras. “The Organisation Ontology” is a simple ontology developed by the W3C to represent organisations. You can find its documentation at <https://www.w3.org/TR/vocab-org/> and the ontology itself at <http://www.w3.org/ns/org>. Import it into the camera ontology in Protégé and declare the class `Organisation` in our camera ontology to be a subclass of `org:Organisation`

**T3:** Schema.org is a very high level vocabulary/ontology to describe information about things on the web. It mostly contains a lot of properties that apply to general classes. You can find an OWL version of it at <https://schema.org/docs/schemaorg.owl>. Load it into Protégé and copy the axioms related to the property `manufacturer` into the camera ontology. Declare `manufacturer` in the camera ontology to be an equivalent property to `manufacturerOf` from schema.org.

**T4:** In DBpedia, the class with IRI <http://dbpedia.org/class/yago/Camera102942699> corresponds, in its meaning, to our class `CameraModel`. Align those two classes in Protégé by declaring them equivalent.

**T5:** The manufacturer of a camera can be found in DBpedia using the <http://dbpedia.org/property/maker>. Write a construct query that builds a graph using our camera ontology to obtain the list of camera manufacturers (as instances of the class `Organisation`) and the cameras they build (as instances of the class `CameraModel` connected to their manufacturer by the property `manufacturer`). Also include the labels (`rdfs:label`) of each manufacturer and camera.

**T6:** Check from the cameras obtained if there are other properties you could include in the individuals of our camera ontology from DBpedia.

**T7:** Looking at the R2RML specification <https://www.w3.org/TR/r2rml/>, what kind of rules could you write to transform data in the table next page into RDF according to your ontology? (write down approximate rules, we won’t test them).

name	price	brand	dslr	lens_interchang.	sensor_type	viewfinder_type	release_date
Kodak PIXPRO Friendly Zoom FZ43-BK 16MP Digital...	99.99	Kodak	0	0	CCD	None	2015-12-10
Panasonic LUMIX FZ80 4K Digital Camera, 18.1 Me...	297.99	Panasonic	0	0	CMOS	Electronic	2017-01-04
Canon EOS Rebel T7 DSLR Camera with 18-55mm Len...	479.00	Canon	1	1	CMOS	Optical	2018-02-26
Canon EOS M50 Mark II + EF-M 15-45mm is STM Kit...	699.00	Canon	0	1	CMOS	Electronic	2020-10-14
KODAK Printomatic Digital Instant Print Camera ...	49.99	Kodak	0	0	NaN	Optical	2017-09-11
Canon EOS RP Full-frame Mirrorless Interchangea...	1299.00	Canon	0	1	CMOS	Electronic	2020-02-12
Panasonic LUMIX FZ300 Long Zoom Digital Camera ...	447.99	Panasonic	0	0	CMOS	Electronic	2015-07-15
OLYMPUS Tough TG-6 Waterproof Camera, Red	449.00	NaN	0	0	CMOS	None	2019-05-22
Canon EOS Rebel T8i EF-S 18-55mm is STM Lens Ki...	899.00	Canon	1	1	CMOS	Optical	2020-02-12
KODAK 16 Friendly Zoom Fz152 with 3" LCD, Black...	129.99	Kodak	0	0	CCD	None	2015-12-10
DJI Pocket 2 Creator Combo - 3 Axis Gimbal Stab...	497.00	DJI	0	0	CMOS	None	2020-10-20
Panasonic LUMIX S5 Full Frame Mirrorless Camera...	1797.99	Panasonic	0	1	CMOS	Electronic	2020-09-02
Canon PowerShot Digital Camera [G7 X Mark II] w...	629.00	Canon	0	0	CMOS	None	2016-02-17
Canon EOS REBEL SL3 Digital SLR Camera with EF-...	749.00	Canon	1	1	CMOS	Optical	2019-04-10
Canon EOS R RF24-105mm F4-7.1 IS STM Lens Kit, ...	1899.00	Canon	0	1	CMOS	Electronic	2018-09-05
Kodak Step Touch — 13MP Digital Camera & Instan...	129.99	Kodak	0	0	NaN	None	2020-08
Panasonic LUMIX G85 4K Digital Camera, 12-60mm ...	697.99	Panasonic	0	1	CMOS	Electronic	2016-09-19
D5600 DX-Format Digital SLR w/AF-P DX NIKKOR 18...	796.95	Nikon	1	1	CMOS	Optical	2016-11-10
Panasonic LUMIX LX10 4K Digital Camera, 20.1 Me...	497.99	Panasonic	0	0	CMOS	None	2016-09-19
Panasonic LUMIX G95 20.3 Megapixel Mirrorless C...	697.99	Panasonic	0	1	CMOS	Electronic	2019-04-05