SPARQLSnap!

querying Knowledge Graphs via Snap!

What we will talk about?

Linked Open Data
and how to query them
via a block based programming environment based on Snap!

Which is the structure of the lesson?

Familiarization → Step-by-step tutorial → Hands-on

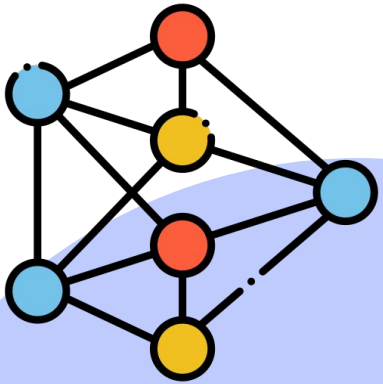
Familiarization

Step-by-step tutorial

Hands-on

How to define (Linked) Open Data?

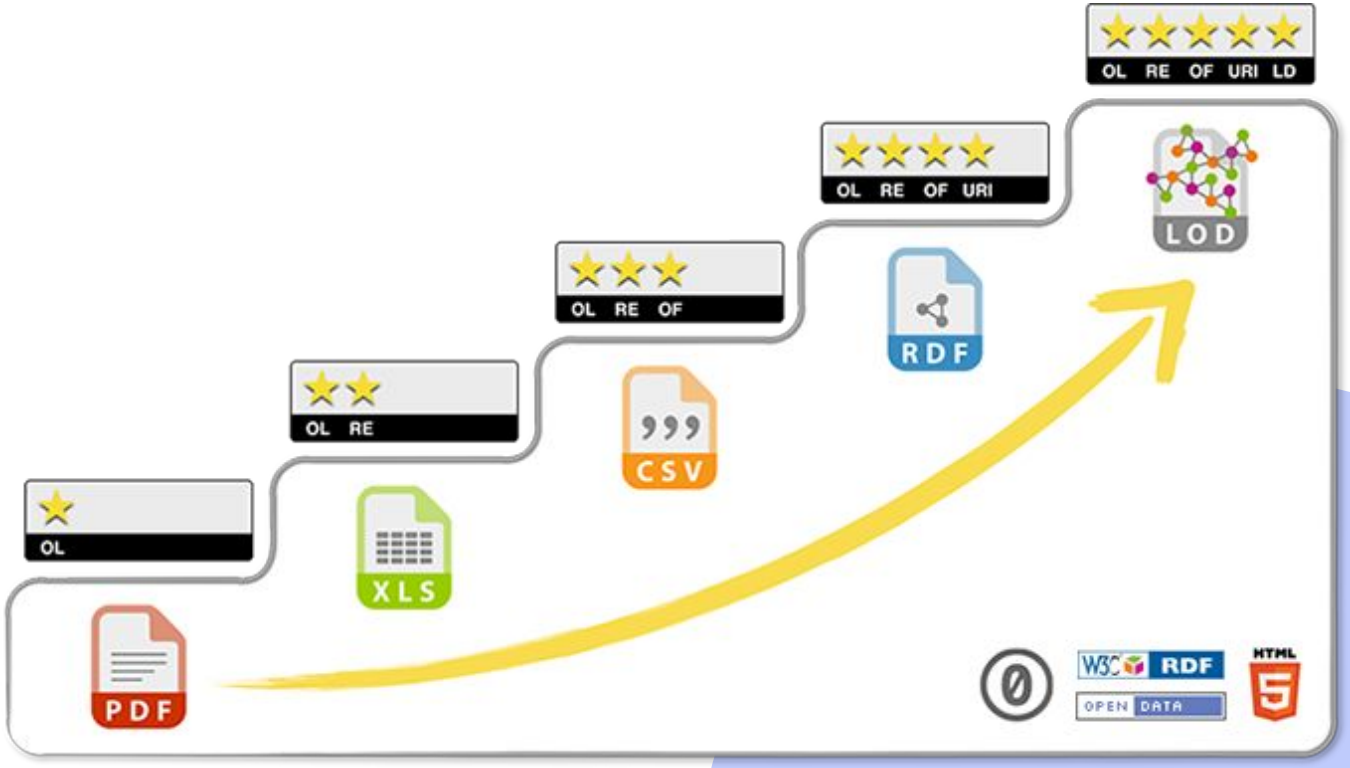
They are data...



... published with an OPEN license...

... interlinked with other available data.

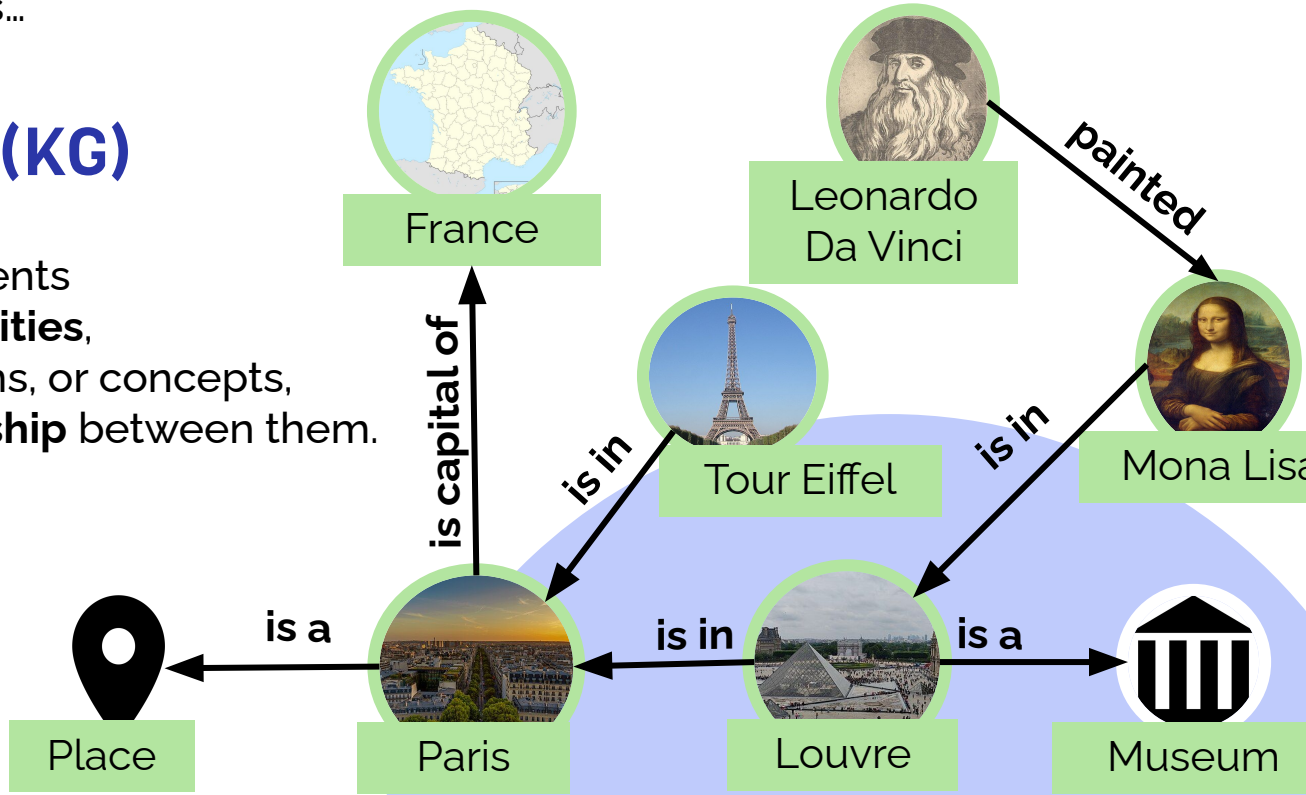
How to define (Linked) Open Data?



Data modeled according to Linked Open Data principles are referred to as…

Knowledge Graph (KG)

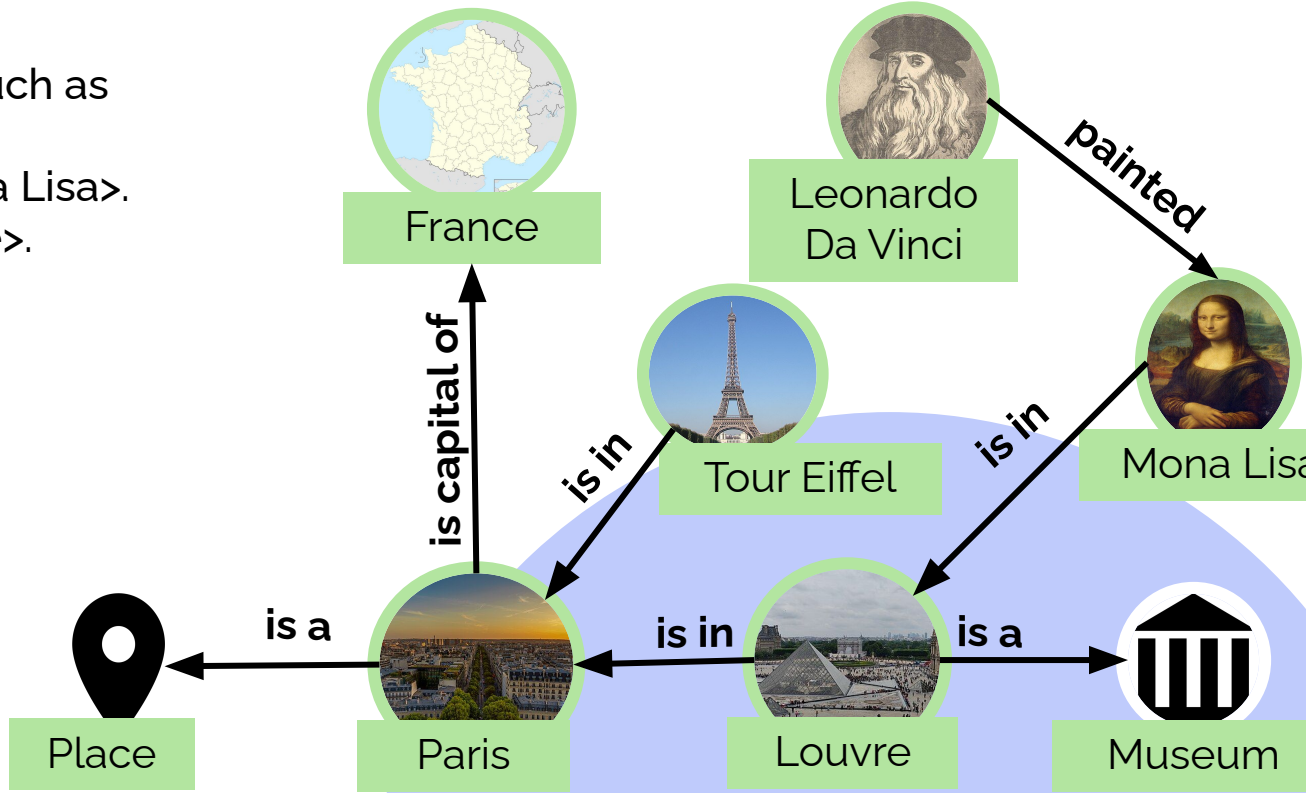
A knowledge graph represents
a network of real-world **entities**,
i.e. objects, events, situations, or concepts,
and illustrates the **relationship** between them.



Knowledge Graph (KG)

KGs are based on triples, such as

<Da Vinci> <painted> <Mona Lisa>.
<Mona Lisa> <is in> <Louvre>.
[...]

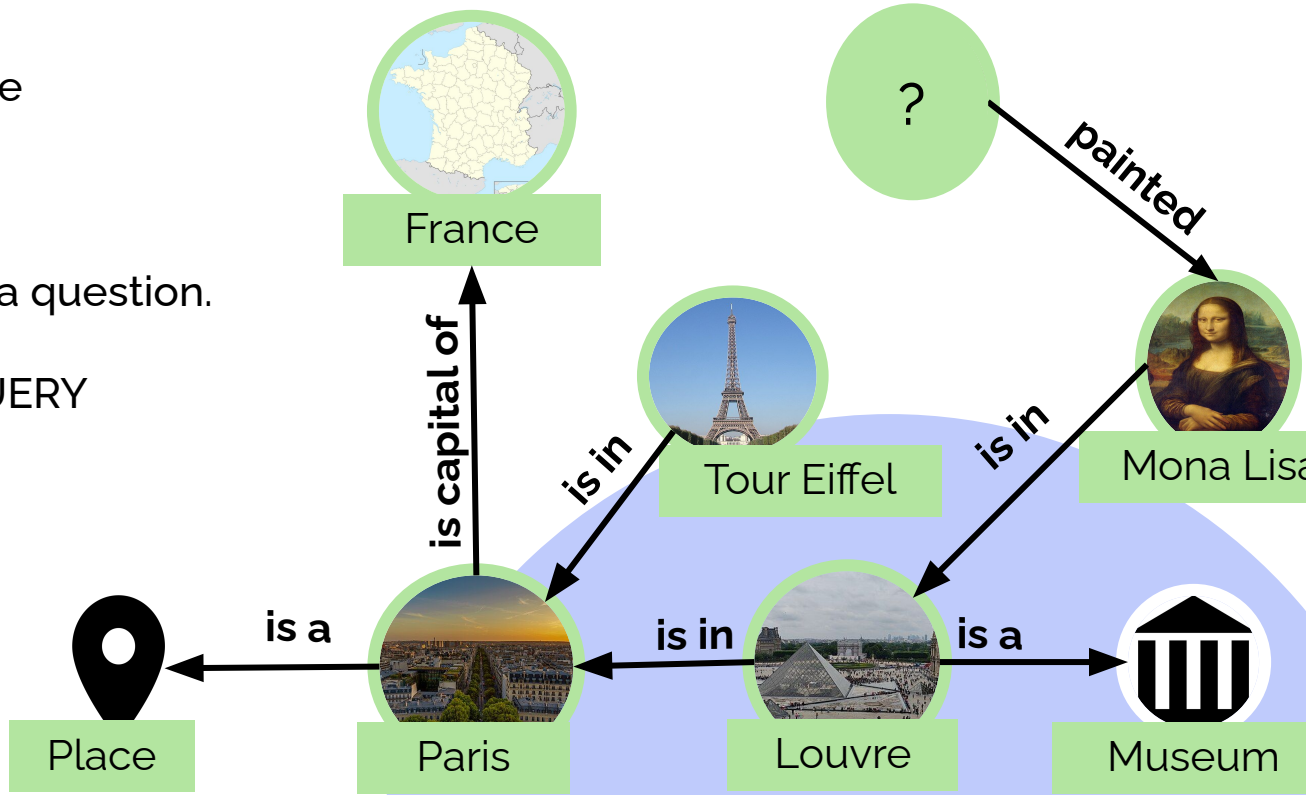


Knowledge Graph (KG)

Suppose we want to retrieve
the painter of Mona Lisa.

Objective:
Retrieve data that answers a question.

INTERROGATE = make a QUERY



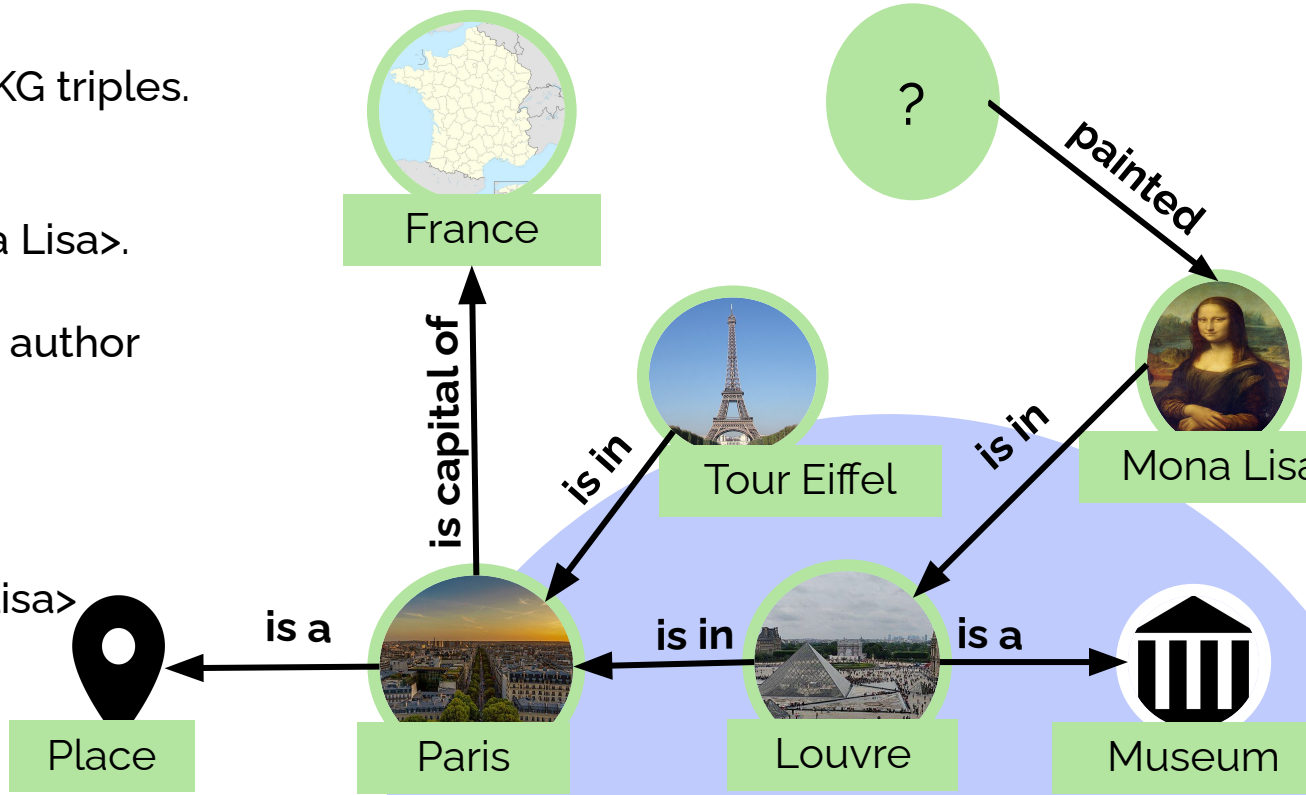
Knowledge Graph (KG)

SPARQL queries resemble KG triples.

If in the KG we have that
<Da Vinci> <painted> <Mona Lisa>.

If we wanted to retrieve the author of the Mona Lisa, we must perform the query:

```
SELECT ?painter WHERE{
?painter <painted> <Mona Lisa>
}
```



Using SPARQL is challenging!

Use a block based programming environment to create queries to pose questions over Knowledge Graphs.

NOTE - Credits: Icons created by Freepik - Flaticon

Knowledge Graph (KG) - Warning!

Pay attention to **QUESTION MARKS** to name variable the query has to retrieve.

```
SELECT ?painter WHERE{
?painter <painted> <Mona Lisa>
}
```

Knowledge Graph (KG) - Warning!

URIs not words.

The entities (i.e. the nodes)
and predicates (i.e. relations)
are referred to via URIs.

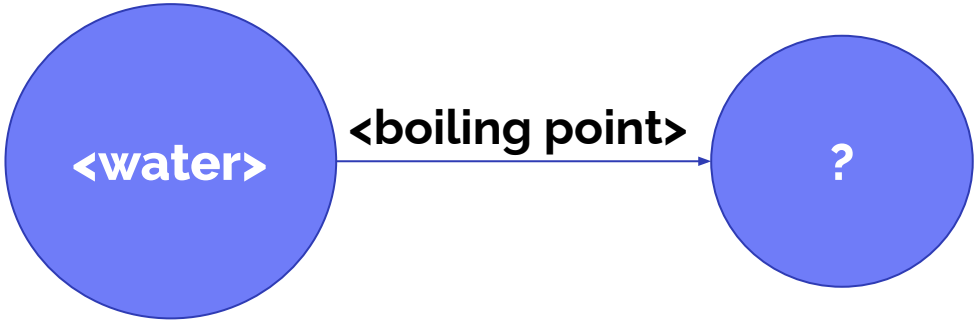
So, before making a query, we need to retrieve via SPARQLSnap! the URI of the entities e predicates we are interested in.

SPARQLSnap!

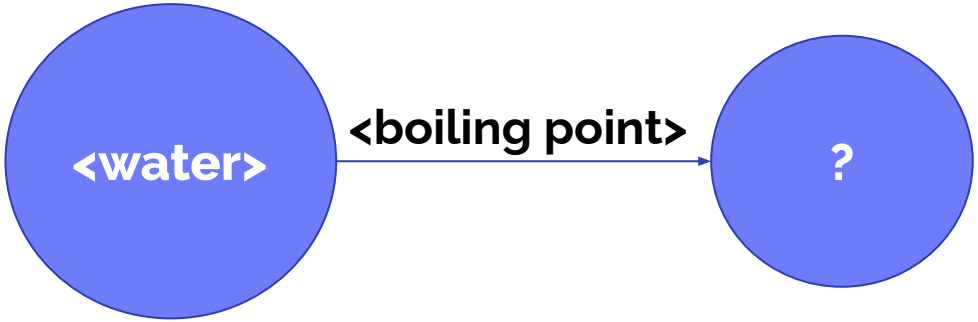
https://anonymous.4open.science/w/Snap-10CA/snap.html

Which is the boiling point of water?

Which is the **boiling point** of **water**?

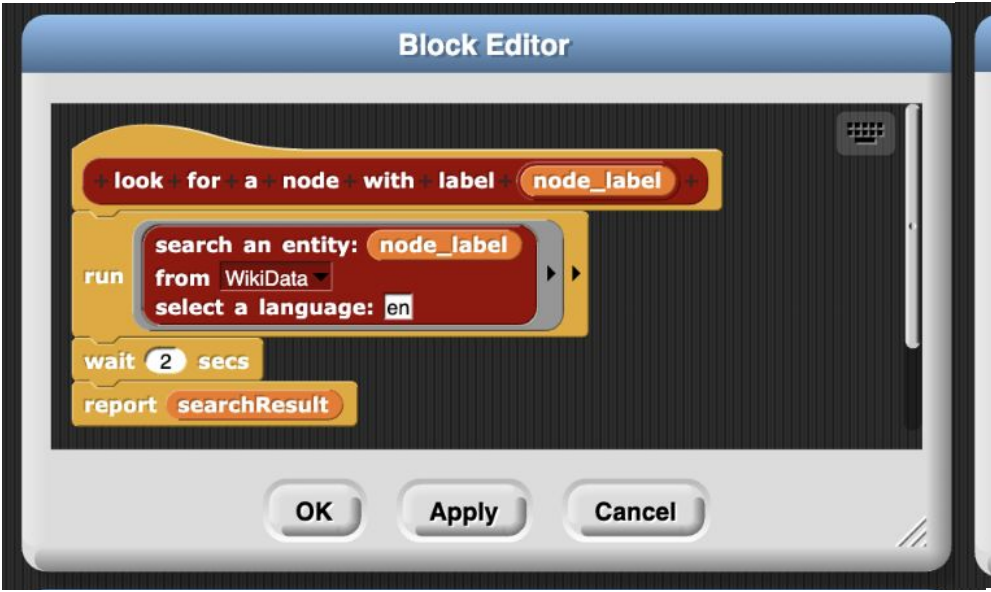


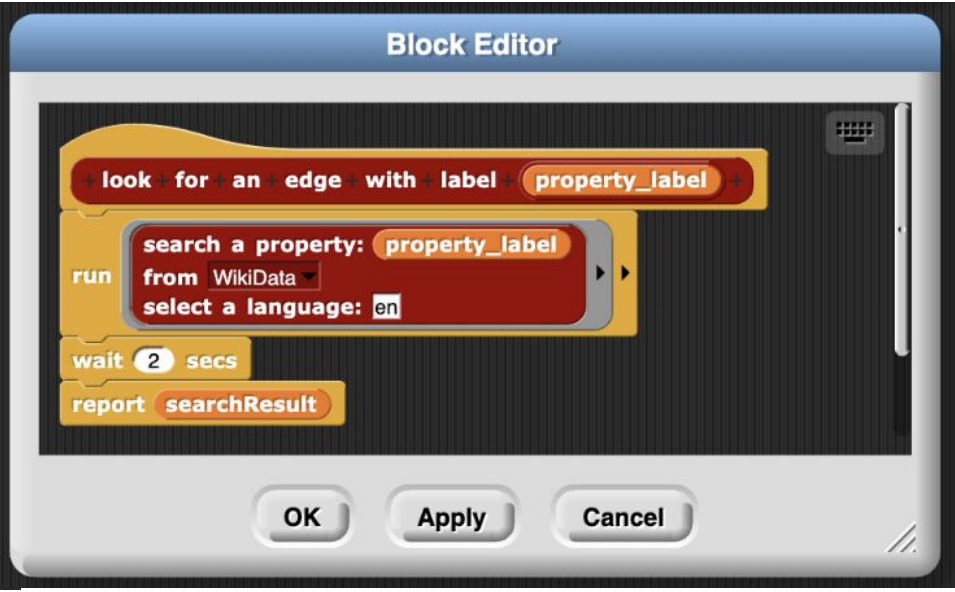
Which is the **boiling point** of **water**?



Process: Retrieve the URI of **water**, the URI of **boiling point** and then make the query to retrieve the boiling point value.

KGQueries tab > create a block > Monitor > SEARCH FOR A NODE/ARC RELATIVE TO > + variable > add blocks for entity/property search. WARNING: Be careful to surround the query with a ring (right click on the "search [...]" block and click on "insert into a ring")





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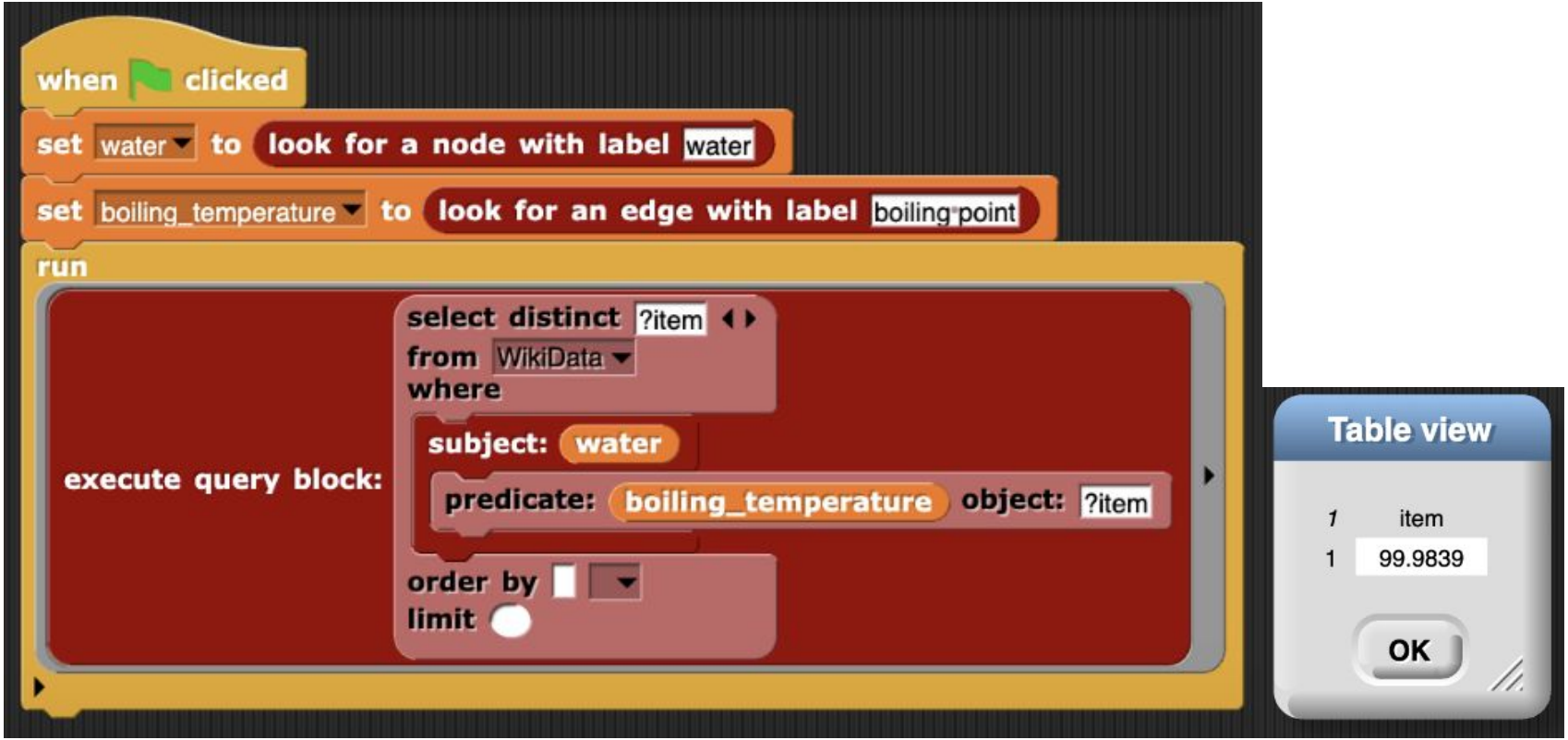

What is the population of the capital of Italy?

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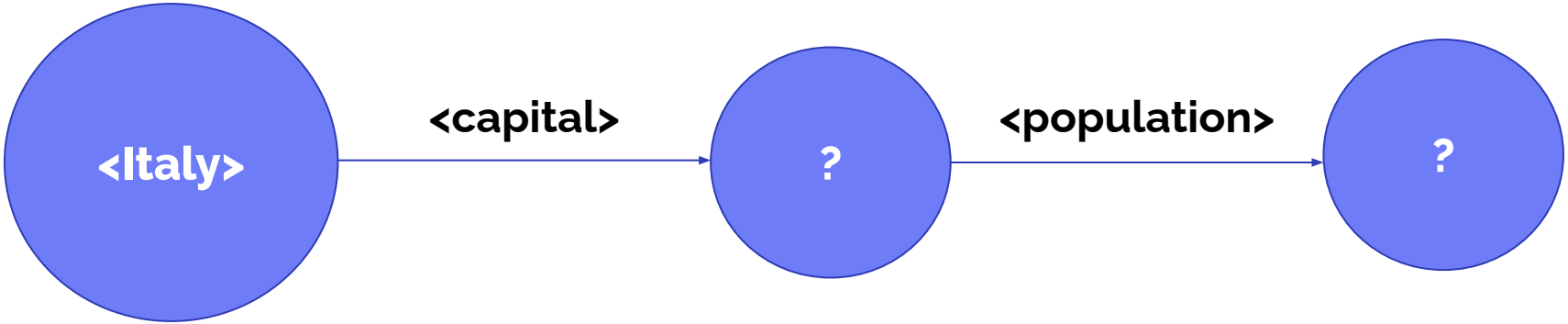

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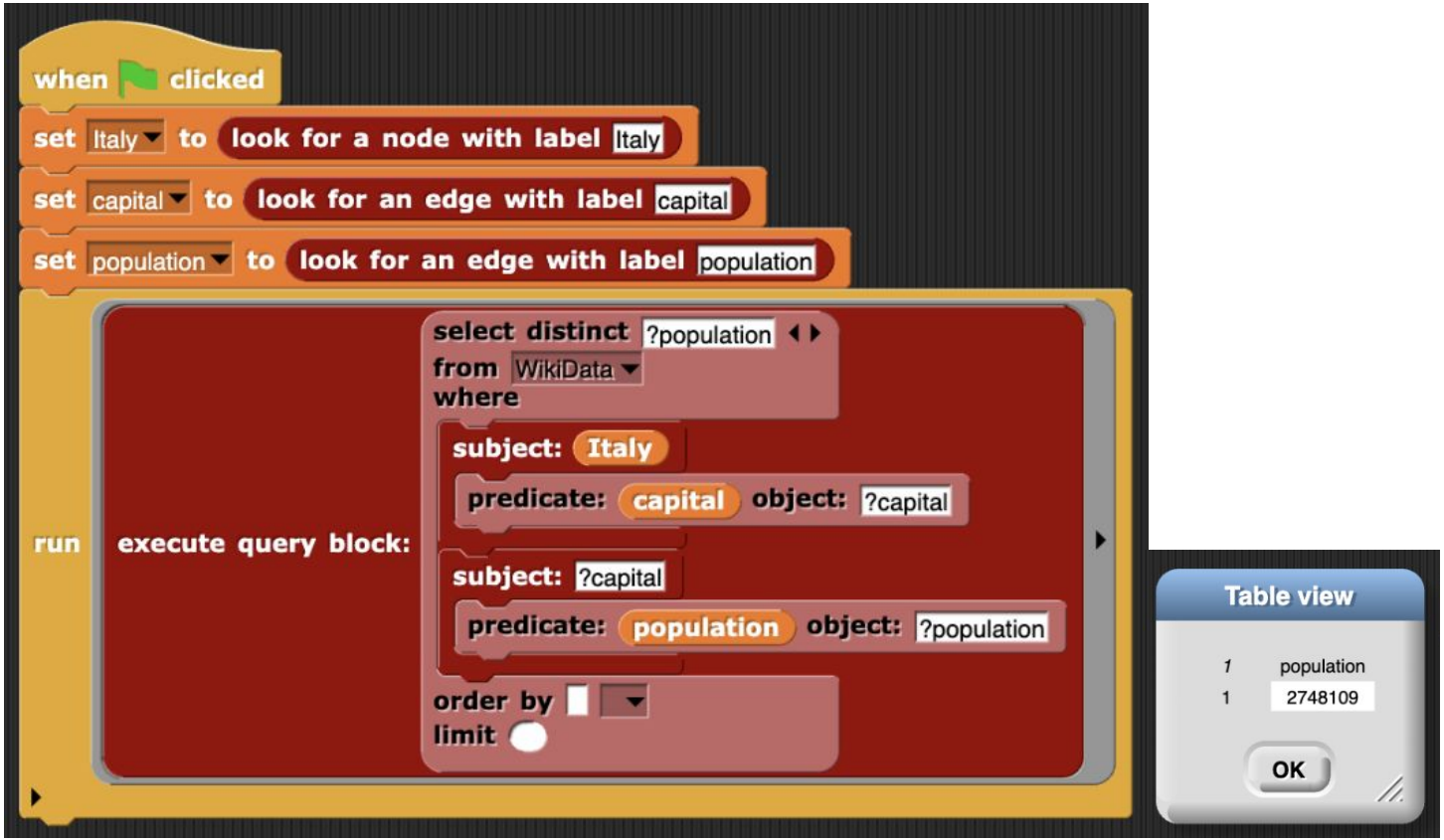

Which are the postal codes of the capital of the Campania region?

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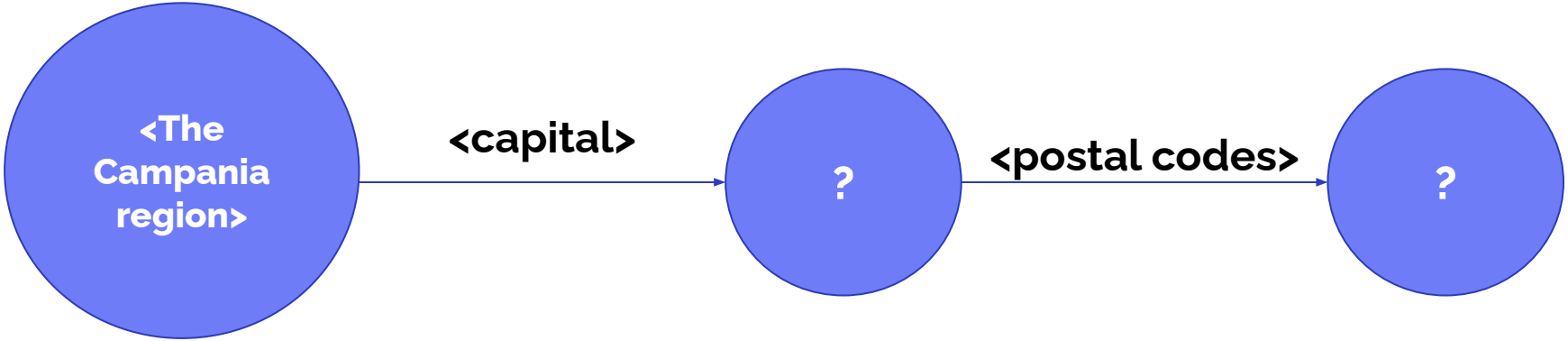

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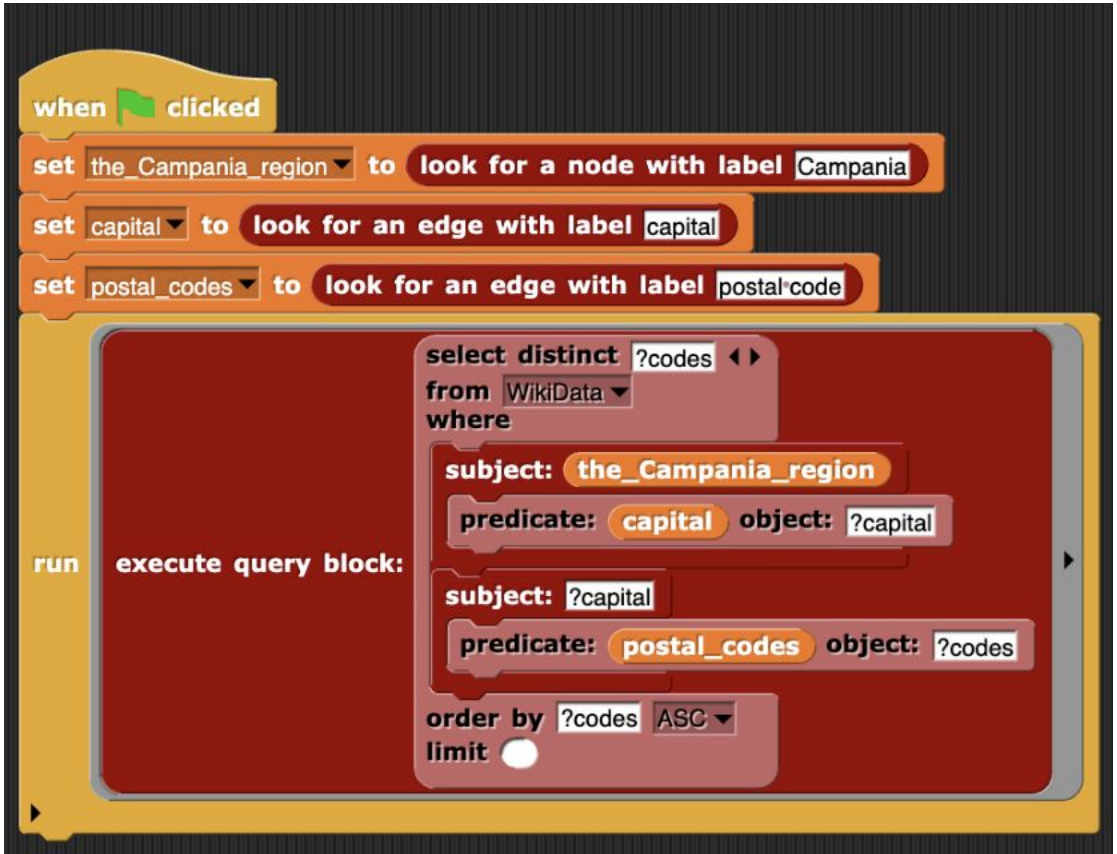

Table view

25	codes
1	80121
2	80122
3	80123
4	80124
5	80125
6	80126
7	80127
8	80128
9	80129
10	80131
11	80132
12	80133
13	80134
14	80135
15	80136
16	80137
17	80138
18	80139
19	80141
20	80142
21	80143
22	80144
23	80145
24	80146
25	80147

OK

It's your turn!

https://anonymous.4open.science/w/Snap-10CA/snap.html

Suggested tasks:

1- Which is the construction date of the Royal Palace of Caserta?

2- What is the date of birth of the mayor of Naples?

3- How many brothers does the mayor of Naples have?

Thank you!

- *Autore:*
  - *Details are omitted due to anonymity requirement.*
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