Modern Database Concepts
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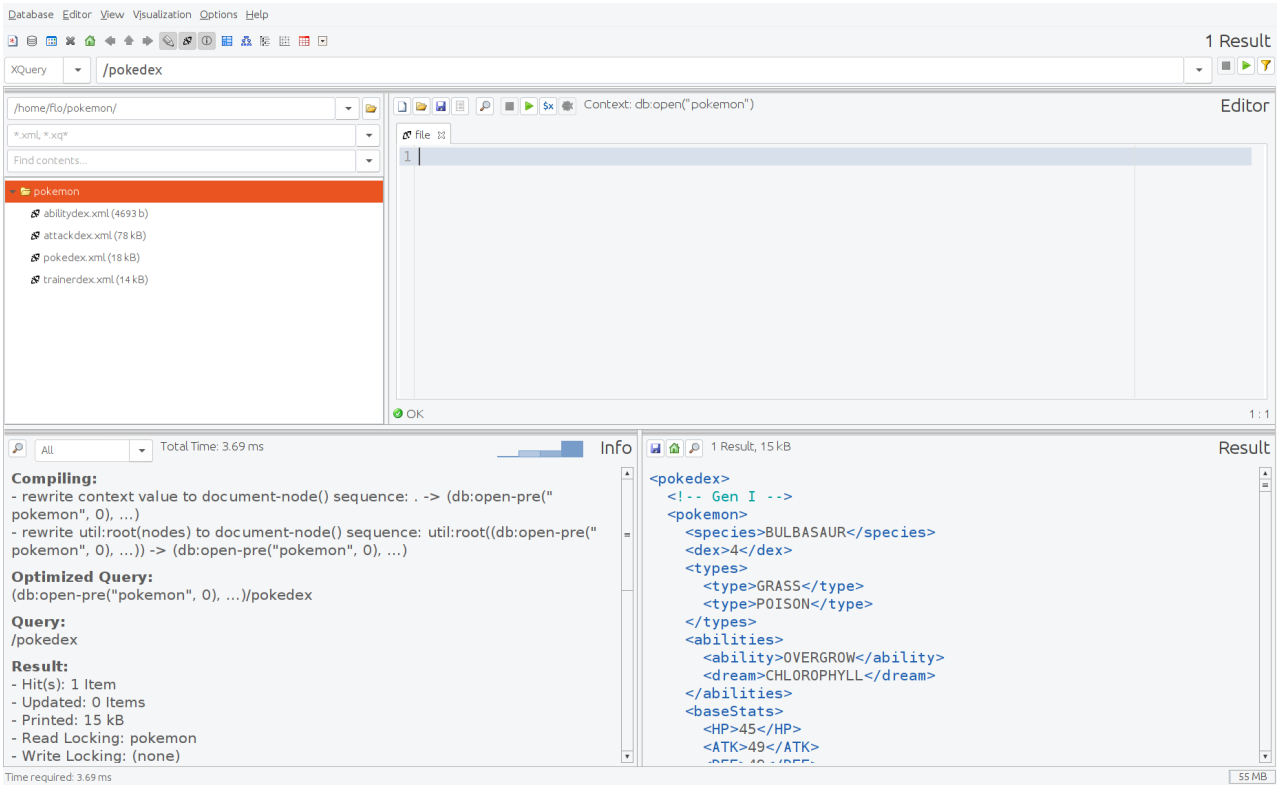
Exercise Sheet 3

OSTBAYERISCHE TECHNISCHE HOCHSCHULE REGENSBURG

Exercise 1: Prepare BaseX and the Pokemon XML Database

- Download and unzip the Pokemon XML files from GRIPS.
- Download and start BaseX.
- Create a new database and use the pokemon directory as input directoy
- Try to query the four root-paths /pokedex, /attacks, /abilities and /trainers to check, if everything worked.



Exercise 2: XML validation

There is an error in pokedex.xml. Write an appropriate DTD or XSD and validate the file with it to find it.

Hint: Use validate:dtd("/path/to/pokedex.xml", "/path/to/pokedex.dtd") (analogously for xsd)

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Exercise 3: XPath

Find out the species of the tenth pokemon in the pokedex

Determine the species of all pokemon with an experience greater than 300

Determine the species of all pokemon whose sum of ATK and DEF is greater than 250

Find out the dex number of the pokemon whose name starts with S and experience is greater than 250. Hint: Use the predicate **starts-with(element, string)**

From the attackdex.xml, determine the sum of hit and power below all "contact" attacks (separately for each attack!), that are of type "ELECTRIC". Hint: There should be two results in total with values between 150 and 250.

Extract the species and rateType for all pokemon, whose sum of baseStats is greater than 500.

Exercise 4: XQuery

Create a new file **pokabilities.xq** for your XQuery-Script

For each pokemon in the pokedex.xml, fetch the type of each "ability" and "dream" from the abilitydex.xml, but only for pokemon with more than 50 HP and ordered by the species name. Then generate a YAML-file consisting of a list of dictionaries. Each dictionary should have the elements "species, ability, type".

Please note, that a species can occur multiple times in the yaml if it has multiple abilities/dreams

Hint: Use two nested for-loops and concat("str1", "str2", ...) to build the result. The string "
" prints a newline. There should be 11 results. Test the yaml for well-formedness with yamllint.com

Another task: For each pokemon in the pokedex.xml, print the species name and a number of stars corresponding to the HP value in the basestats. One star should equal 10 HP. Order the output ascending by HP. Example output:

```
SQUIRTLE 44: ****
BULBASAUR 45: *****
```

Hint: Have a look at fn:substring() for producing the stars and mind that "/" is not the division operator in XQuery, but "div"