EDAA45 Programmering, grundkurs

Läsvecka 4: Datastrukturer

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Lp1-2, HT 2016

4 Datastrukturer

Denna vecka: Fatta datastrukturer

- Läs teori
- Gör övning `data`
- Gör lab ???

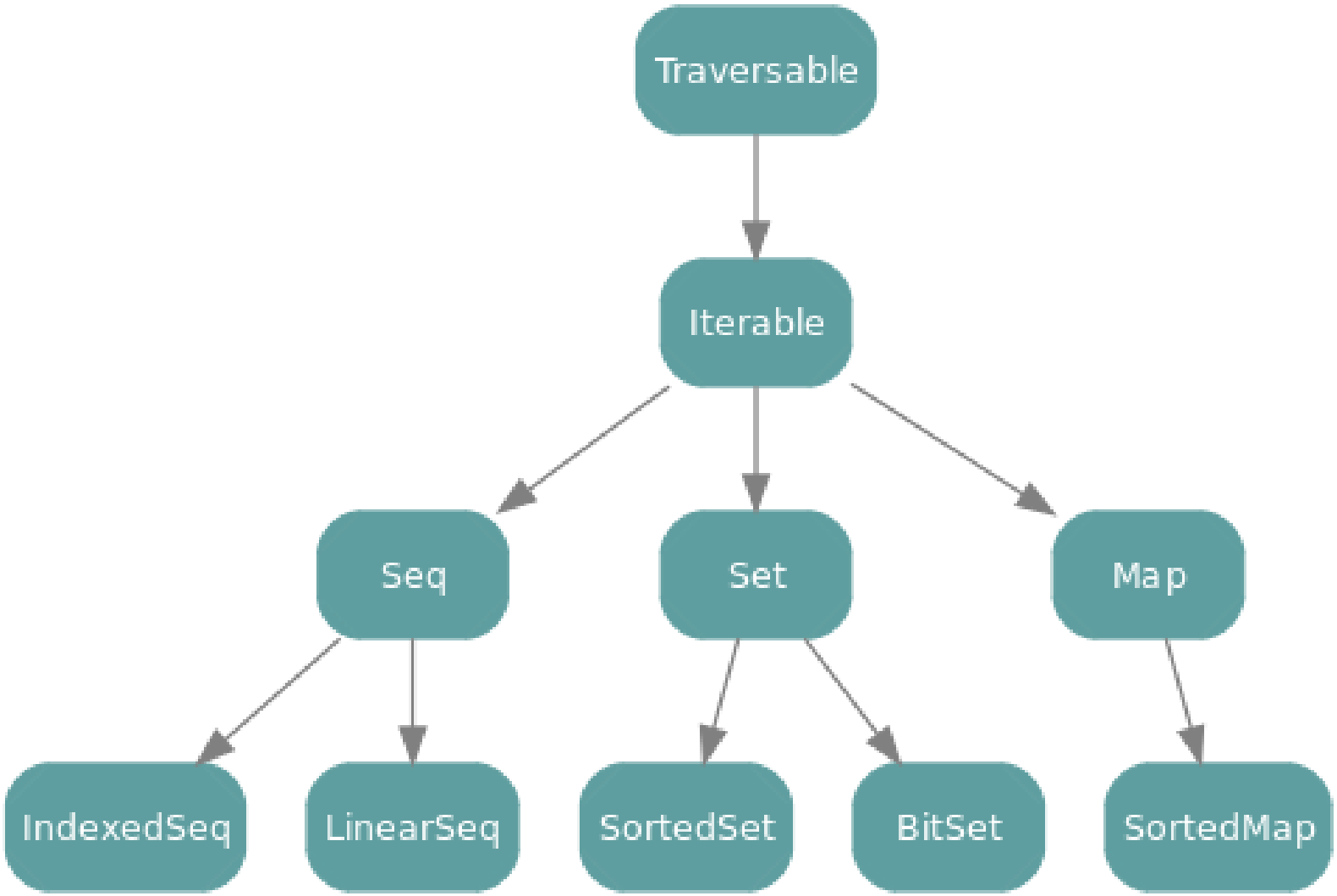
Olika sätt att skapa datastrukturer

- Tupler
  - samla *n* st datavärden i element **_1**, **_2**, ... _*n*
  - elementen kan vara av **olika** typ
- Klasser
  - samlar data i **attribut** med (väl valda!) namn
  - attributen kan vara av **olika** typ
  - definierar även metoder som använder attributen (operationer på data)
- Samlingar
  - speciella klasser som samlar data i element av **samma** typ
  - finns ofta *många* färdiga **bra-att-ha-metoder**

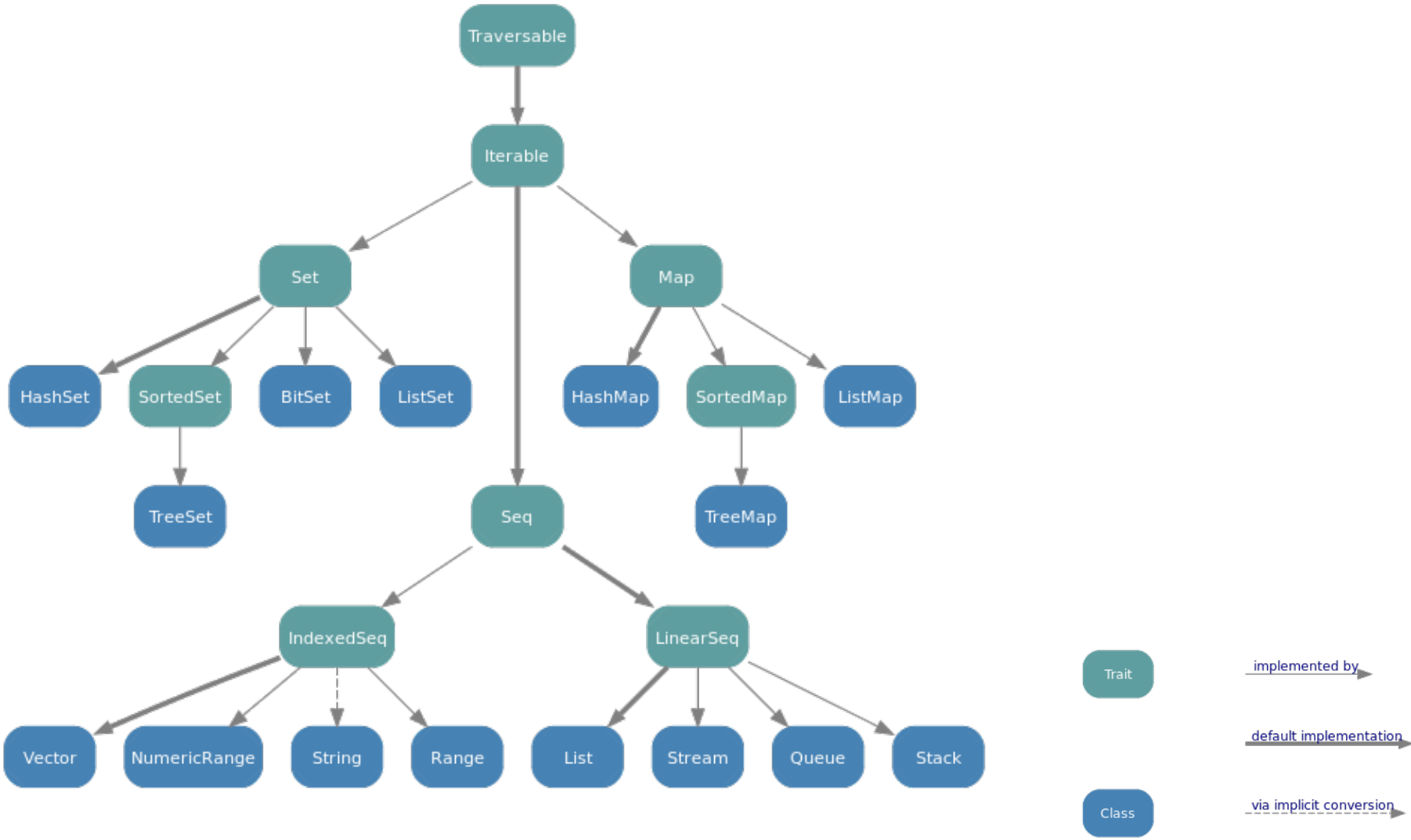
Vad är en tupel?

`("hej", 42, math.Pi)` är en 3-tupel med typ:
`(String, Int, Double)`

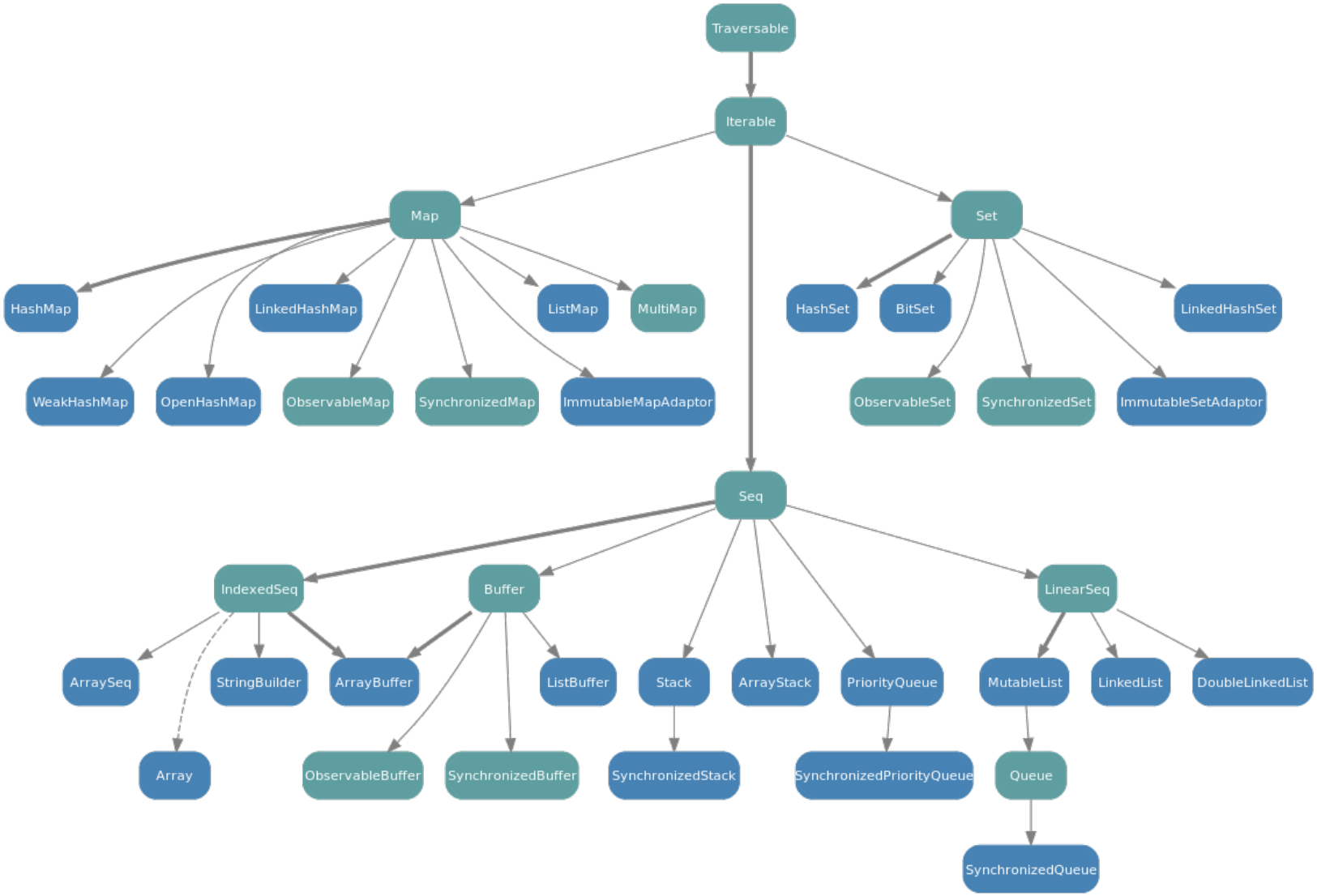
Hierarki av samlingar i scala.collection



scala.collection.immutable



scala.collection.mutable



Vector eller List???

`http://stackoverflow.com/questions/6928327/when-should-i-choose-vector-in-scala`
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- We only need to transform sequences by operations like map, filter, fold etc: basically it does not matter, we should program our algorithm generically and might even benefit from accepting parallel sequences. For sequential operations List is probably a bit faster. But you should benchmark it if you have to optimize.
- We need a lot of random access and different updates, so we should use vector, list will be prohibitively slow.
- We operate on lists in a classical functional way, building them by prepending and iterating by recursive decomposition: use list, vector will be slower by a factor 10-100 or more.
- We have an performance critical algorithm that is basically imperative and does a lot of random access on a list, something like in place quick-sort: use an imperative data structure, e.g. ArrayBuffer, locally and copy your data from and to it.