3 ROOT Data Model

ROOT project is based on its own data model.

The success of CERNLIB software of 80's and 90's was significantly based on the succes of data model provided by ZEBRA.

- a protocol according to which different parts of the software system communicate with each other
- tools, based on this data model and integrated into it

3.1 Run-time representation

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- Mother of all the ROOT classes: **TObject**
- ROOT collections - TSeqCollection, Tlist, TObjArray, TClonesArrays ... are arrays of pointers to TObjects;

3.2 ROOT I/O model (persistency mechanism)

- PHOBOS: primary option for data handling (after benchmarking vs Obj/DB)
- CDF : one of the options under consideration for Run II data handling (CDF-4412, CDF-4497, CDF-4498)
- ROOT I/O model is based on a concept of **tree** ;
- **Tree** is made of **branches**. Each **branch** contains **leaves** in it. The **leaves** can be simple variables, structures, arrays or objects. An array may be of variable length, with the length being a variable stored in the same **branch** or another **branch**.
- **tree** extends the concept of ntuple into OO-world. ROOT file is **always** a column-wise ntuple with elements of ntuple being objects.