


Functional Programming for Databases



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- ABC.PPT
- DBfoundations.ppt
- FunLambda.ppt
- Hugs1Basic.ppt
- Hugs2Lists.ppt
- Hugs3FunFun.ppt
- Hugs4TypClas.ppt
- Hugs5Xtras.ppt
- XCaseStudy.ppt
- XtendFDM.ppt

October 2005 Functional Programming for DB

OBJECTIVES

Presentation of the functional programming paradigm, its attributes and structures to achieve deeper insight into the database architecture and thus better design

October 2005 Functional Programming for DB Introduction 2

PREREQUISITE KNOWLEDGE

- **Familiarity with database concepts and reasonable programming skills**
- **Certain mathematical ability (logic, discrete mathematics) beneficial**
- **No prior knowledge of functional programming or its theoretical basis**

CONTENT

Database foundations - concepts, structures, operations, behaviour.

Relational, binary and extended functional data models for databases.

Model of computation based on λ -calculus.

Imperative versus declarative programming. Functional programming paradigm.

Programming elements and components in a strongly typed FP language:

functions, primitive and defined types, overloading, guards, currying, recursion, list comprehension pattern matching, lambda expressions, higher order functions, type classes, algebraic types, infinite lists, sets, relations.

Data structures and abstract data types.

Examples of classical algorithms expressed in a functional style.

Examples of common database processes coded in Haskell.

Functional database programming systems (e.g. Daplex).

Relational DB structures and operations expressed in a functional style.

REFERENCES

S Thompson, *Haskell - The Craft of Functional Programming*, 2nd ed., Addison-Wesley, 1999

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