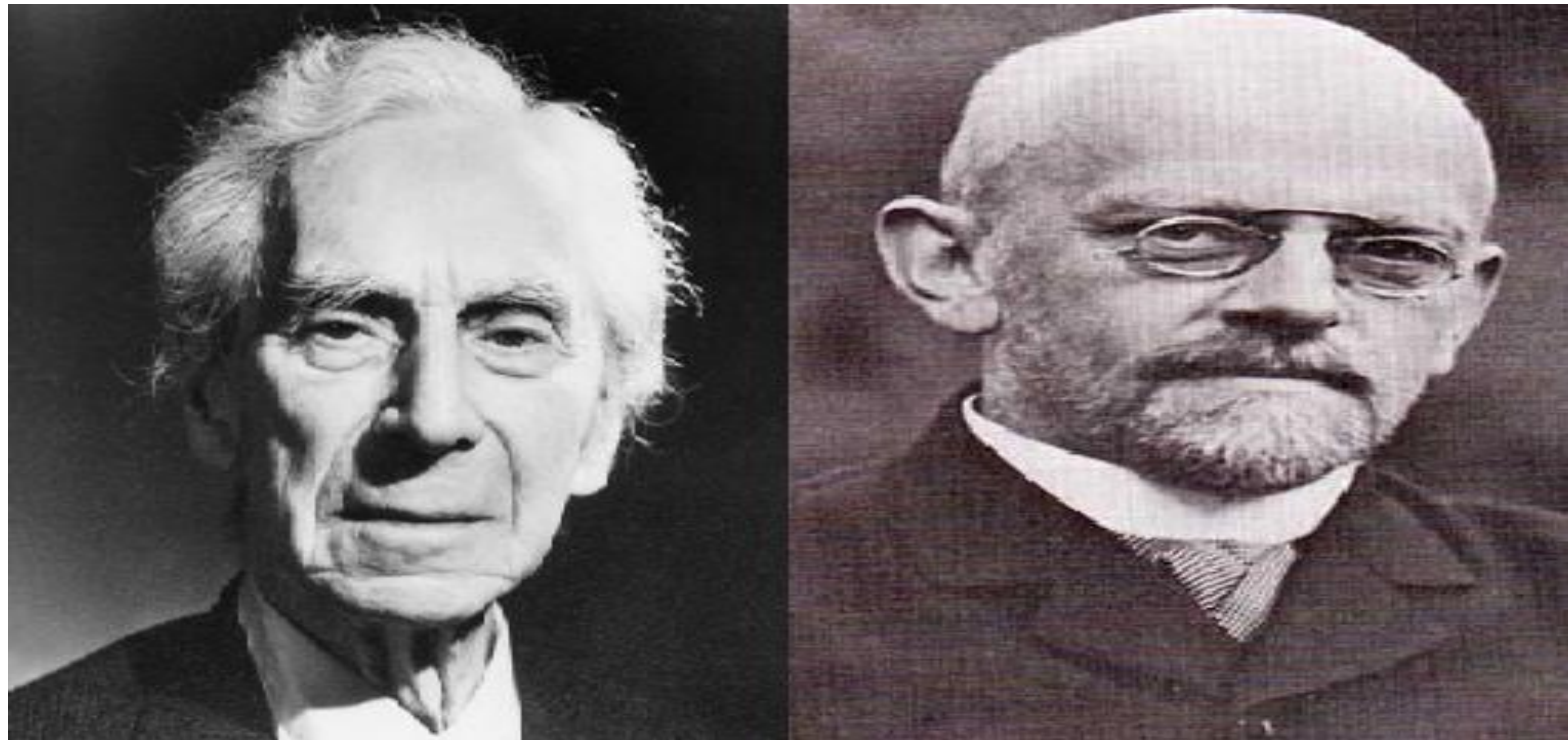


Programming Paradigms and their origins



Who are they?



A Tale of two mathematicians

Bertrand Russell and David Hilbert spear headed a plan to reduce entire mathematics to Logic.

Hilbert's 23 problems

Bertrand Russell and Alfred north Whitehead's Principia Mathematica.

Barber Paradox – The Quagmire

Entscheidungsproblem (Decision Problem)

The problem of algorithmically determining whether a First Order Logic statement is universally valid

First Order Logic – Propositional Calculus + Predicate Calculus



Who are they ?



KURT GODEL

Austrian Logician who proved the incompleteness theorem

Mathematics is not consistent ?

Demoralizing for the whole world

Return of the “GOD” ?

Hilbert's Scheme got broken



The BY-PRODUCT

Alonzo Church invented Lambda Calculus

Turing came up with the concept of Turing Machine

They were trying to solve the decision problem in the Predicate Calculus

Both Failed in finding an algorithmic procedure for the decision problem.

(Some stuff is not computable !)

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Three Programming Paradigms

- Imperative Programming using C/C++,Java,C#,Perl and Visual Basic etc.

Turing Machine is the foundation.

- Functional Programming using LISP,Scheme,ML,Haskell,Miranda etc.

Lambda Calculus is the foundation

- Logic Programming using Prolog,DataLog, SQL etc

Based on Predicate Calculus



Imperative Programming

Command Oriented Programming.

Statement Oriented

Function is what u evaluate for it's value and statement is what u execute for it's effect.

$X = X + 1$ can give shiver to any person when he encounters it for the first time.



Functional Programming

Function as the unit of computation.

Functions can be composed arbitrarily

How can I write programs without Loop ?

Recursion is a good substitute.

Referential Transparency of the functions

Controlled manipulation of state is necessary for the real world.

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Logic Programming

Declarative Model of computation

Logical Deduction is a medium for computation.

Has got good support for parallelism.

Heavy use of recursion and Depth first search.

Used in writing Heuristics based programs.

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Q&A, if any