AMRITA VISHWA VIDYAPEETHAM

19CSE100 – Problem Solving AND Algorithmic Thinking PROGRAMMING LANGUAGE Survey Assignment

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HASKELL

An advanced, purely functional programming language

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Agenda

- Why Haskell?
- Where is it used?
- Applications of Haskell
- Hello world program

Introduction:

- Haskell is a completely utilitarian programming language that upholds lazy assessment and type classes.
- Haskell powers the engineer to compose exceptionally right code, which is the quintessential idea of the language.
- Intended for instructing, research and modern applications, Haskell has spearheaded various programming language highlights, for example, type classes , which empower type-safe administrator over-burdening, and monadic IO.
- It is named after scholar Haskell Curry.
- The first form of Haskell was characterized in 1990.

The Origin:

- The first milestone in the History of Haskell is dedicated to the FPCA '87 conference, which was held in **Portland, Oregon**. A committee was organized there, with the goal to create a language that would take into account all the problems of other disparate functional languages.
- It is designed and developed by Lennart Augustsson, Dave Barton, Brian Boutel, Warren Burton, Joseph Fasel, Kevin Hammond, Ralf Hinze, Paul Hudak, John Hughes, Thomas Johnsson, Imprint Jones, Simon Peyton Jones, John Launchbury, Erik Meijer, John Peterson, Alastair Reid, Colin Runciman and Philip Wadler.

WHY HASKELL?

- Despite the fact that it's not so well known as Python/Java/C++, Haskell has many advantages contrasted with them : Compact, undeniable level, reasonable and furthermore extremely quick.
- A high level framework, which gives a great deal of additional security and adaptability. Simultaneousness is simple contrasted with numerous different dialects.
- Besides Haskell doesn't permit secondary effects, which prompts less bugs. Hence Haskell programs are simpler to compose, more powerful, and more straightforward.

HELLO WORLD Program

```haskell
module Main (main) where          -- not needed in interpreter, is the default in a module file

main :: IO ()                     -- the compiler can infer this type definition
main = putStrLn "Hello, World!"
```

Real life applications of HASKELL

1. Hasura: Hasura is an open-source GraphQL motor that gives you moment admittance to a GraphQL Programming interface for your information. In the GitHub storehouse of Hasura, Haskell is the most utilized language, trailed by dialects like TypeScript, JavaScript, Python, and Go. Toward the beginning of 2022, Hasura raised $100 million.

2. IOHK: IOHK utilized Haskell to carry out the Cardano blockchain stage and its shrewd agreement language - Plutus. They picked it on the grounds that Haskell is an ideal fit for high-confirmation code in fields like money and blockchain.

3. Standard Chartered : Standard Chartered is a global banking and administrations company. They use Haskell and Mu, a severe vernacular of Haskell, to give in-house advances to dealers and quantitative examiners.

They preferred Haskell on the grounds that it's unadulterated, dodges stowed away state, empowers monstrous parallelism, and is statically composed. Simultaneously, they required something that would work well with the all around existing biological system at Standard Chartered.

Thus, they fostered their own in-house tongue of Haskell, Mu, in 2009.

4. GitHub: GitHub used Haskell for implementing Semantic, a command-line tool for parsing, analyzing, and comparing source code.

According to GitHub, Haskell is a good choice for this purpose because of Haskell's strength in working with source code. As some of its most valuable features, they mention strong typing, lazy evaluation, purity, and the rich possibilities for users to define their own control flow.

There are many other companies using Haskell.

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