20CYS312 - Principles of Programming Languages
Exploring Programming Paradigms

Assignment-01

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Outline

Declarative

"Declarative" will refer to a style of programming where we express the logic of a computation without specifying the control flow. Instead of describing the steps that the computer must take to perform a task, we want to declare what we want to achieve, and the language or system figures out how to achieve it. R is a programming language and environment designed for statistical computing and graphics. R it supports both declarative and imperative programming styles, but it is often considered to be more declarative, especially when we are working with statistical analysis and data manipulation. Here are some aspects of R that can be considered declarative: 1. Functional Programming 2. Vectorized Operations 3. Data Manipulation with dplyr and tidyr 4. ggplot2 for Declarative Graphics

Declarative in R

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1. Functional Programming
2. Vectorized Operations
3. Data Manipulation with `dplyr` and `tidyr`
4. `ggplot2` for Declarative Graphics

Scripting - Perl

Perl is a programming language developed by Larry Wall, especially designed for text processing. It stands for Practical Extraction and Report Language. It runs on a variety of platforms, such as Windows, Mac OS, and the various versions of UNIX.

Scripting in Perl

Perl is a versatile scripting language known for its text processing capabilities, regular expression support, and flexibility. It is often used for tasks such as system administration, web development, and data manipulation.

```
Declare variables my name; myage;
Get user input print "Enter your name: "; name =< STDIN >; chomp(name);
print "Enter your age: "; age =< STDIN >; chomp(age);
Simple conditional statement if (age >= 18)print"Hello,name! You are an
adult."; else print "Hello, name!Youareaminor.";
```

Comparison and Discussion

- Declarative programming in R emphasizes expressing the logic without specifying control flow, making it suitable for statistical analysis.
- Perl scripting is known for its versatility and text processing capabilities, often used for system administration and data manipulation tasks.
- R leverages functional programming and specialized packages like `dplyr` and `ggplot2` for expressive data manipulation and visualization.
- Perl's strength lies in its regular expression support and flexibility for handling various tasks efficiently.

References

I use chatgpt for Scripting code for reference
https://www.tutorialspoint.com/perl/index.htm
https://www.reddit.com/r/reactjs/comments/pjq5ij/what$_d$oes$_i$t$_m$ean$_t$hat$_r$eact$_i$s$_d$eclarative/
60882
https://neo4j.com/blog/imperative-vs-declarative-query-languages/