Sadip

Final Paper

At first, I congratulate myself for making through seven languages in seven weeks. And I am grateful to Justin for offering the interesting course.

After completing those languages, the first thing that comes to my mind is “discovering new ideas”. Here, I intend to say is that I could not state which one is the best language among those languages but I could unquestionably answer that I discovered new ideas/techniques in programming paradigm while learning languages one-by-one.

Previously, my exposure to programming languages was extremely limited but now I have seen so many new concepts within this class. That is, now my reasoning of programming languages is changing especially about program organization and construction. In the same way, I studied advanced topics of new (to me) programming paradigms - functional and logical programming. For instance, talking about a higher-level programming language, concurrency and reliability have started to nudge me.

Having said that, now I am exposed to several programming paradigms such as object orientation (through Ruby, Scala), prototype programming (through Io), constraint-logic

programming (through Prolog), and functional programming (through Scala, Erlang, Clojure, Haskell).

I received a good sense of orientation programming paradigm where I found out that it contains mostly three major ideas: encapsulation, inheritance, and polymorphism. Here, Ruby and Scala are two nice examples of OOP languages. In Ruby, I encountered dynamic duck typing. In Scala, I experienced static typing which offered features such as type inference to simplify the syntax. In addition to this, I noticed that Scala was less verbose compared to that of Java. Moreover, Scala went beyond Ruby to introduce functional concepts. Therefore, Scala is one of my favorite OOP language among the given seven languages.

Although prototype programming language is supposed to be a subset of OOP language, I think it's a different approach to programming. Whenever I think of prototype programming language, JavaScript reaches to my brain. Now, I have added one more that is Io. I believe Io allows powerful combination through simple programming model with a small, consistent syntax. Though I studied Io from scripting concurrent programs together to coding my own DSL, I actively favor JavaScript over Io. Since JavaScript was my first OOP (or prototype programming) language that I studied.

Besides that, I learned completely new constraint - logic programming language i.e Prolog. Here, I saw that after defining logical constraints Prolog was able to solve the

problem for us. However, Prologs' hard to eyes syntax and advanced techniques to solve easy problems had put me in a dilemma whether I wanna use this language in future or not.

As I am essentially focused in problem-solving through mathematics and CS (Computer Science) so it's straightforward that I loved widely anticipated programming paradigm called functional programming. IN this class, I read four functional programming languages like Scala, Erlang, Clojure, and Haskell. Among other programming paradigms, I figure out that functional programming is the most expressive one. Here, I stated "most expressive" because I was able to program in shorter and simpler way than comparing to that of OOP languages. In addition to that, I was capable of acquiring complex concepts like higher-order functions and currying which we could not usually do in OOP. I was even exposed to the level of purity in programming models. In the same way, I noticed that concurrent programming was easier.

Honestly speaking, I loved Scala as I am able to use both OOP as well as functional programming approaches in it. Furthermore, I think, as a programmer, I can construct an object-oriented program using strong functional tendencies in Scala. For instance, when I first learned Scala it reminded me of Swift that I believe is the most powerful language I have ever perceived in my life. In addition to that, with Scala, I found first-class programming paradigms. Therefore, I strongly believe that I could use Scala

as my one of the most favorite language among other given seven programming languages.