2024-05-03 / Reading Comprehension / English for Software Development

Chapter 8. The Prism of Language

[Preface; first two paragraphs]

We use language _____ every day, unaware of the complicated mechanisms involved when language does it works. It is similar to walking. Once it is learned, we can easily wade through water, plow through sand, climb up stairs, and step over obstacles. The complexity of the task becomes apparent when we try to build a robot that _____ the behavior. The same is true of languages. Once you try to _____ machines how to use language effectively, you realize how difficult this actually is. Did you ever get frustrated using Siri or _____ to find what you were looking for on Google? The Turning test for machine intelligence reflects this _____ perfectly. _____, a machine is _____ intelligent if a user cannot _____ a human being in a conversation. In other words, language competence is used as a benchmark for artificial intelligence.

The phenomenon of language has been studied in several disciplines, including philosophy, linguistics, and sociology, so there is no single agreed-upon definition of _____. From a computer science point of view, a language is a precise and effective means to communicate meaning. Chapter 3 showed how signs form the basis for representation and thus can give meaning to computations by linking symbols to the concepts they stand for. While signs can represent merely individual concepts, a language defines the meaningful combination of signs into sentences and represents relationships between such concepts. Signs and languages are both representations, but while signs are sufficient to represent objects of interest for a particular disclosure, it takes a language to represent computation through algorithms.

[Structure Grows on Trees; first two paragraphs]

Having more than one language for a particular domain (such as staff notation and tablature for music) may seem peculiar, and one may _____ whether there are good reasons for this. Perhaps it would be better to have only one language that could serve as a standard notation? We appreciate variety in food, clothing, vacation destinations, and so on, but having to work with different languages is often an annoying and costly business. It may require translation and clarification, and it can lead to misunderstandings and mistakes. In the story about the towel of Babel the _____ of many languages is considered a punishment. Efforts to create universal languages such as Esperanto were an _____ to eliminate the problems caused by having too many languages. And language standardization committees find themselves in a constant struggle to keep the diversification of technical languages under control.

Why do we have so many different languages, _____ all the costs? Often a new language is adopted because it serves a particular purpose. For example, languages such as HTML or JavaScript can help represent information on the internet, an extremely useful thing to do for many businesses and organizations. In the domain of music, the tablature notation works well for many guitar players, in particular, for those who do not know the staff notation. With the _____ of programmable music machines (such as sequencers and drum machines), the language MIDI (Musical Instrument Digital Interface) was developed to _____ control messages to tell synthesizers to produce sounds.

Sentences to memorize (previously, key sentences)

1. In contrast to concrete syntax, which defines textual appearance of a sentence, abstract syntax reveals the structure of a sentence in a hierarchical form.
2. This is a crucial observation that deserves repeating.
3. A music performer can reproduce music only if the music notation is clear and unambiguous.