

Language as a Tool

Programming languages are tools for a rather recent kind of problem solving known as programming.

A main use of this tool is for communication, not just between humans and computers, but between humans, at different places and times.

Humans have been making and using tools for many years.

Tools, in general, are extensions of us. We extend our hands with hammers and knives; we extend our eyes with microscopes and telescopes; we extend our ears with telephones and hearing aids, we extend our legs with cars and planes. We extend our brain with books and computers.

Tools are usually secondary; they are a means to some end goal. Knives are used for cutting, in preparation to eat, to heal, even sometimes to kill.

Tools come in many sizes, shapes, speeds, effectivenesses. For example, knives, such as swords can be large and beautiful, or scalpels can be small and sharp, whereas Swiss army knives are bulky but flexible.

No one kind of knife serves all purposes well. It is possible to perform a medical operation with a Swiss army knife, if necessary, but it is not the instrument of choice for this goal.

Teaching about tools can be done in many ways. Some tools are easy to learn, others are difficult to master. Still others take time to become proficient in their use. Just learning to use a knife to whittle does not ensure that the whittled product will be well done. Learning is a first step to mastering the use.

Learning can be done in many ways. One style to learn swimming is to drop the learner into water and see if s/he "sinks or swims". Another style to learn to ride a bicycle is to use training wheels. Other "Zen" styles are also possible. But few would teach anyone to drive a vehicle using a tank or a race car!

Programming languages are tools. They are not as simple as knives, but many concepts are similar. There are many programming languages, but few are general purpose. Most of these are huge and intended for professionals; others are simple and intended only for beginners.

Jr is a language which is intended for beginners, and serves as a "step-stone" to the more professional language of Java (or others). It is essentially a pseudoCode to teach the fundamental principles of programming. It eliminates various details and distractions of professional languages, until students have grasped the basic ideas. Then it converts quickly and easily into Java. Following this introductory phase the additional details of Java can be learned and put into perspective.