Programming languages are essential for software development..  
They are the building blocks for all software, from the simplest applications to the most sophisticated ones.  
Compilers harnessed the power of computers to make programming easier by allowing programmers to specify calculations by entering a formula using infix notation.  
  
 Computer programming or coding is the composition of sequences of instructions, called programs, that computers can follow to perform tasks.  
Normally the first step in debugging is to attempt to reproduce the problem.  
Sometimes software development is known as software engineering, especially when it employs formal methods or follows an engineering design process.  
This can be a non-trivial task, for example as with parallel processes or some unusual software bugs.  
A study found that a few simple readability transformations made code shorter and drastically reduced the time to understand it.  
Some text editors such as Emacs allow GDB to be invoked through them, to provide a visual environment.  
 Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA).  
Proficient programming usually requires expertise in several different subjects, including knowledge of the application domain, details of programming languages and generic code libraries, specialized algorithms, and formal logic.  
It involves designing and implementing algorithms, step-by-step specifications of procedures, by writing code in one or more programming languages.  
The Unified Modeling Language (UML) is a notation used for both the OOAD and MDA.  
 Debugging is often done with IDEs. Standalone debuggers like GDB are also used, and these often provide less of a visual environment, usually using a command line.  
 Different programming languages support different styles of programming (called programming paradigms).