

Component 1: Software development

Key terms

Term	Definition
Editor	Allows a programmer to enter, format and edit code.
Automatic formatting	Correctly indents code.
Automatic colour coding	Changes key words, literals and annotation to different colours.
Compiler	Translates source code into executable machine code. Once compiled, a program can be run at any time.
Interpreter	Translates each line/a single line of source code and executes it
Linker	A program which allows previously compiled code, from software libraries, to be linked together.
Loader	A program which loads previously compiled code into memory.
Debugger	A program which helps locate, identify and rectify errors in a program.
Trace	A facility which displays the order in which the lines of a program are executed, and possibly the values of variables as the program is being run.
Break point	Interrupts a program on a specific line of code.
Variable watch	Displays the current value of any variable.
Memory inspector	A facility which will display the contents of a section of memory.
Error diagnostics	Used when a program fails to compile or to run. Error messages are displayed to help the programmer debug.
Syntax error detection	Highlights syntax errors before code is translated.
Routines / subroutines	A sequence of program instructions that performs a specific task.
Library	A collection of commonly used private functions and subprograms, such as square root / saving data to disk.
Statement completion	Auto-completes a statement such as adding an 'end if' to an 'if' statement

Example of an integrated development environment (IDE)

The screenshot shows the Visual Studio IDE with several callout boxes pointing to specific features:

- Automatic line numbering**: Points to the line numbers on the left side of the code editor.
- Automatic colour coding**: Points to the syntax-highlighted code in the editor.
- Editor**: Points to the main code editing area.
- Automatic formatting**: Points to the indentation of the code.
- Break point**: Points to a red dot on the left margin of the code editor.
- Statement completion**: Points to a yellow squiggly line at the end of a line of code.
- Error diagnostics**: Points to the 'Error List' window showing a warning.
- Variable watch**: Points to the 'Watch' window showing the value of a variable.
- Threading**: Points to the 'Threads' window showing the execution of multiple threads.
- Output window**: Points to the 'Output' window showing the program's execution output.

Advantages of using Libraries

- Related private functions and subprograms are stored in the same location
- Time is saved as the programmer can simply use the private functions and programs stored in a library
- Subroutines contained in a library have already been tested, so they should work reliably and not need further testing
- Programs will contain less code and will therefore be easier to maintain.