**CHAPTER 2**

**FRONT END DESIGN**

**MICROSOFT VISUAL STUDIO**

**Microsoft Visual Studio** is an [integrated development environment](https://en.wikipedia.org/wiki/Integrated_development_environment) (IDE) from [Microsoft](https://en.wikipedia.org/wiki/Microsoft). It is used to develop [computer programs](https://en.wikipedia.org/wiki/Computer_program) for [Microsoft Windows](https://en.wikipedia.org/wiki/Microsoft_Windows), as well as [web sites](https://en.wikipedia.org/wiki/Web_site), [web apps](https://en.wikipedia.org/wiki/Web_app), [web services](https://en.wikipedia.org/wiki/Web_service) and [mobile apps](https://en.wikipedia.org/wiki/Mobile_app). Visual Studio uses Microsoft software development platforms such as [Windows API](https://en.wikipedia.org/wiki/Windows_API), [Windows Forms](https://en.wikipedia.org/wiki/Windows_Forms), [Windows Presentation Foundation](https://en.wikipedia.org/wiki/Windows_Presentation_Foundation), [Windows Store](https://en.wikipedia.org/wiki/Windows_Store) and [Microsoft Silver light](https://en.wikipedia.org/wiki/Microsoft_Silverlight). It can produce both [native code](https://en.wikipedia.org/wiki/Native_code) and [managed code](https://en.wikipedia.org/wiki/Managed_code).

Visual Studio includes a [code editor](https://en.wikipedia.org/wiki/Code_editor) supporting [IntelliSense](https://en.wikipedia.org/wiki/IntelliSense) (the [code completion](https://en.wikipedia.org/wiki/Code_completion) component) as well as [code refactoring](https://en.wikipedia.org/wiki/Code_refactoring). [The integrated debugger](https://en.wikipedia.org/wiki/Microsoft_Visual_Studio_Debugger) works both as a source-level debugger and a machine-level debugger. Other built-in tools include a [code profiler](https://en.wikipedia.org/wiki/Profiling_(computer_programming)), forms designer for building [GUI](https://en.wikipedia.org/wiki/GUI) applications, [web designer](https://en.wikipedia.org/wiki/Web_designer), [class](https://en.wikipedia.org/wiki/Class_(computing)) designer, and [database schema](https://en.wikipedia.org/wiki/Database_schema) designer. It accepts plug-ins that enhance the functionality at almost every level—including adding support for [source control](https://en.wikipedia.org/wiki/Source_control) systems (like [Subversion](https://en.wikipedia.org/wiki/Subversion_(software))) and adding new toolsets like editors and visual designers for [domain-specific languages](https://en.wikipedia.org/wiki/Domain-specific_language) or toolsets for other aspects of the [software development lifecycle](https://en.wikipedia.org/wiki/Software_development_lifecycle) (like the [Team Foundation Server](https://en.wikipedia.org/wiki/Team_Foundation_Server) client: Team Explorer).

Visual Studio supports 36 different [programming languages](https://en.wikipedia.org/wiki/Programming_language) and allows the code editor and debugger to support (to varying degrees) nearly any programming language, provided a language-specific service exists. Built-in languages include [C](https://en.wikipedia.org/wiki/C_(programming_language)), [C++](https://en.wikipedia.org/wiki/C%2B%2B) and [C++/CLI](https://en.wikipedia.org/wiki/C%2B%2B/CLI) (via [Visual C++](https://en.wikipedia.org/wiki/Visual_C%2B%2B)), [VB.NET](https://en.wikipedia.org/wiki/VB.NET) (via [Visual Basic .NET](https://en.wikipedia.org/wiki/Visual_Basic_.NET)), [C#](https://en.wikipedia.org/wiki/C_Sharp_(programming_language)) (via [Visual C#](https://en.wikipedia.org/wiki/Visual_C_Sharp)), [F#](https://en.wikipedia.org/wiki/F_Sharp_(programming_language)) (as of Visual Studio 2010]) and [TypeScript](https://en.wikipedia.org/wiki/TypeScript) (as of Visual Studio 2013 Update 2). Support for other languages such as [Python](https://en.wikipedia.org/wiki/Python_(programming_language)),[[8]](https://en.wikipedia.org/wiki/Microsoft_Visual_Studio#cite_note-8) [Ruby](https://en.wikipedia.org/wiki/Ruby_(programming_language)), [Node.js](https://en.wikipedia.org/wiki/Node.js), and [M](https://en.wikipedia.org/wiki/MUMPS) among others is available via language services installed separately. It also supports [XML](https://en.wikipedia.org/wiki/XML)/[XSLT](https://en.wikipedia.org/wiki/XSLT), [HTML](https://en.wikipedia.org/wiki/HTML)/[XHTML](https://en.wikipedia.org/wiki/XHTML), [JavaScript](https://en.wikipedia.org/wiki/JavaScript) and [CSS](https://en.wikipedia.org/wiki/Cascading_Style_Sheets). [Java](https://en.wikipedia.org/wiki/Java_(programming_language)) (and [J#](https://en.wikipedia.org/wiki/J_Sharp)) were supported in the past.