



The 7 Basics of Computer Programming

These 7 concepts can be combined in infinitely many ways. Once mastered, you can implement any program that's ever been written, in any programming language!

The 7 Basics

1. **Variables:** storing information (like numbers, text)
2. **Math & Logic:** writing & evaluating expressions (like $2 + 4$, x or y)
3. **Input/Output:** getting information from the user (or a file or DB) and displaying information to the screen graphically or with the console/terminal.
4. **Conditions:** changing what code is executed under different scenarios (for example, if the day is Sunday, sleep in; otherwise, get up at 6 am)
5. **Loops:** repeat code statements (for example, while the sink is dirty, keep scrubbing)
6. **Functions:** using & writing a grouped set of statements to accomplish a task based on parameters (for instance, given $f(x) = x + 5$, $f(2)$ would be 7)
7. **Data Structures:** store multiple pieces of information, including lists & strings (for instance, an array that stores the numbers 1-5 or a string containing the letters of the alphabet)

Put the 7 Basics into Practice!

- **Looking to learn how to code?** Pick a programming language (I recommend python for starters) and familiarize yourself with: variables, ifs, input & output functions, for & while loops, strings, lists, & writing your own functions.
- **Then,** pick a project idea you're passionate about & get started building your portfolio.

What's Next?

These 7 basics can be used in theory to create any program that's ever been written – but there's a lot more to creating professional code! Next to learn would be design & frameworks – how do you organize code in programs with many files or where you need to collaborate with others? How do you reuse code & frameworks that others have written to create awesome software & web sites quickly & easily?