## Common Engineering Paradigms

# Coding

The coding is the process of transforming the design of a system into a computer language format. This coding phase of software development is concerned with software translating design specification into the source code. It is necessary to write source code & internal documentation so that conformance of the code to its specification can be easily verified.

Coding is done by the coder or programmers who are independent people than the designer. The goal is not to reduce the effort and cost of the coding phase, but to cut to the cost of a later stage. The cost of testing and maintenance can be significantly reduced with efficient coding.

### What is a build?

In a programming context, a build is a version of a [program](https://searchsoftwarequality.techtarget.com/definition/program) that, as a rule, is a pre-release version and is identified by a build number rather than by a release number.

Simply put, a software build is a set of [executable](https://www.techtarget.com/searchsecurity/definition/executable) code that is ready for use by customers. The DevOps team compiles the source [code](https://www.techtarget.com/whatis/definition/code), such as code in [Java](https://www.theserverside.com/definition/Java) or [C++](https://searchsqlserver.techtarget.com/definition/C), into binaries to make sure it's functional and test code quality before committing it.

Software is updated regularly until the maker decides to discontinue supporting it. This may entail a series of builds and many software releases to the public.

Iterative (repeated) builds, otherwise known as [continuous integration](https://searchsoftwarequality.techtarget.com/definition/continuous-integration), are an essential part of an optimal development process where application components are collected and repeatedly compiled for testing purposes to ensure a reliable final product.

Additionally, build tools enable developers to automate some programming tasks to further streamline the process.

### Types of builds

There are two types of software builds to be aware of:

* **A full build.**This build process is performed from scratch, whereby the source code files are compiled and checked for the first time.
* **An incremental build.**As the name suggests, this build process stacks on the previous build. The [source codes](https://www.techtarget.com/searchapparchitecture/definition/source-code) and dependencies are checked based on the changes to the build.

## Release

A release is called **code complete when the development team agrees that no entirely new source code will be added to this release**. There could still be source code changes to fix defects, changes to documentation and data files, and peripheral code for test cases or utilities