

# Virtues and Challenges

The benefits and limitations of coding in C

Like every language, C works well in many situations, but it also has its limitations.

The primary virtues and challenges of using C have been described in the table below.

Virtues
Fast. (it's a compiled language and so is close to the machine hardware).
Portable. (you can compile your program to run on just about any hardware platform out there).
The language is small (unlike C++ for example).
Mature (a long history and lots of resources and experience available).
There are many tools for making programming easier. (e.g., IDEs like Xcode)
You have direct access to memory.
You have access to low-level system features if needed.

Challenges
The language is small (but there are many APIs).
It's easy to get into trouble, e.g., with direct memory access & pointers.
There is a compile — test (crash) — debug cycle for each piece of code.

You must manage memory yourself.

Sometimes code is more verbose than in high-level scripting languages like Python, R, etc.

It does not support Object-Oriented Programming.

There is no concept of runtime checking.