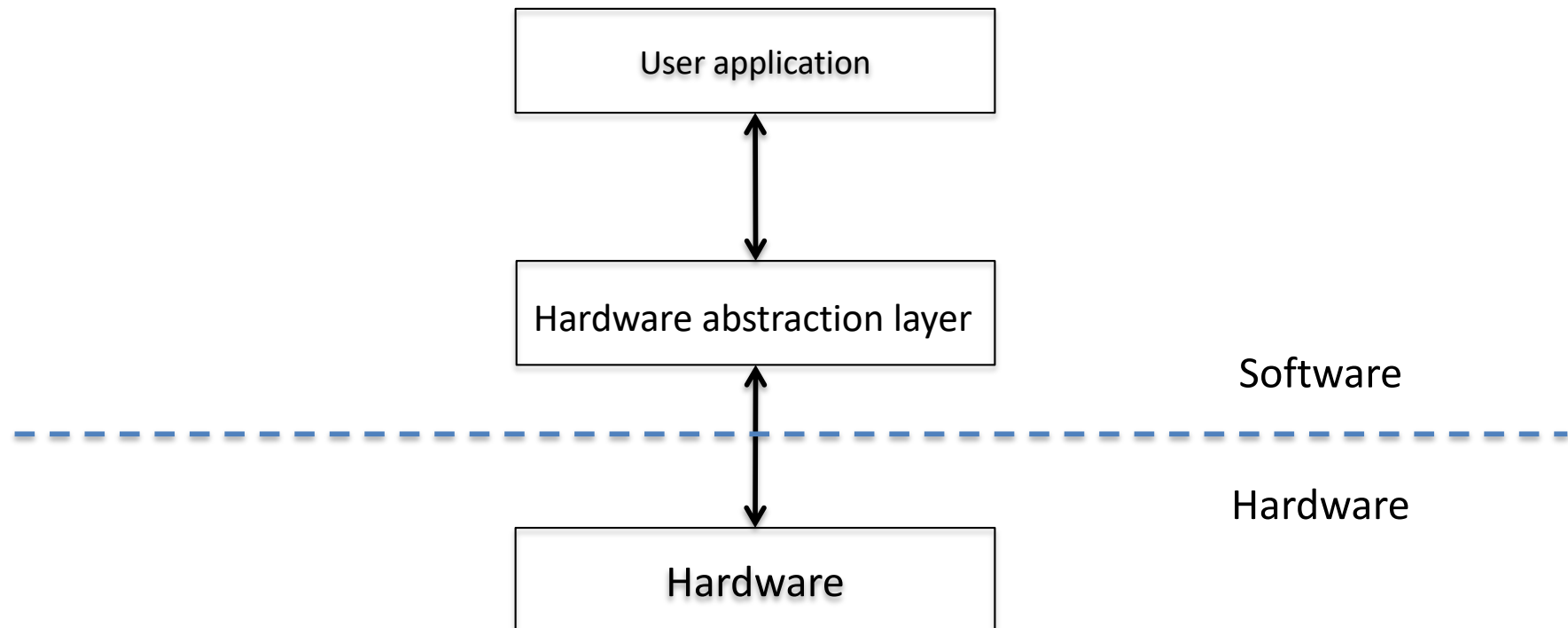


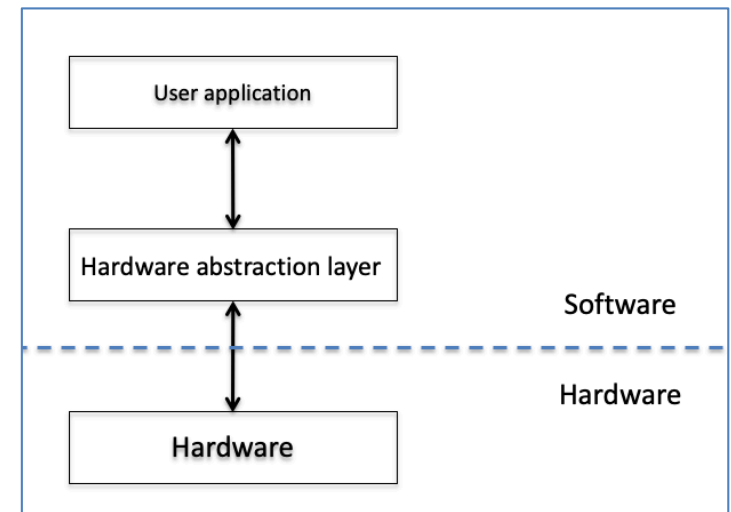
Embedded systems:
Hardware Abstraction Layer

An abstraction layer implemented in software, between the physical hardware of a computer and the software, that runs on that computer



HAL features

- Allows the user application to interact with a hardware device at a general or abstract level rather than at a detailed hardware level.
- Allows for device-independent programming by providing standard calls to hardware
- Glue between the low-level devices and the standard libraries found on most systems that provide C compilers
- Abstraction is often done from the perspective of the CPU.
 - Each CPU has a specific instruction set architecture which represents the primitive operations of the machine that are available for use by compilers
 - Compiler allows a programmer to write an algorithm in a high-level language without having to care about CPU-specific instructions.
- Early computer systems did not have any form of HAL, knowledge of HW details was essential.
- HW abstraction hides details like e.g. register formats
 - No need to understand the physical interface.



Abstraction levels

