Embedded Software Platform Vendors:

- An Embedded software development company, build embedded apps, firmware, middleware, device drivers, Human- Machine Interfaces (HMI), Complex embedded software solutions for IOT systems.
- Embedded software help in test, validate, and debug hardware prototype as well as prepare embedded product.
- Embedded Engineers act as transition between Software Engineers and manufacturing.
- Embedded software development team create testing toolchains to collect and analyse validation data and diagnose hardware faults.
- Embedded apps will help in test our electronic system, program it to perform various operations and get it work with any peripherals.
- Embedded OS enables hardware components to communicate with Software.

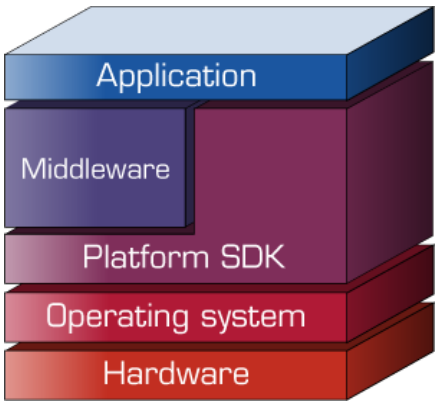
Ex:- Linux, Android Open Source Project(AOSP), RTOS, QNX etc…

- The examples of Embedded Software Vendors are
  Intel, NXP Semiconductors, Qualcomm, Analog Devices etc…

Architecture of Embedded Software:

- The Architecture of Embedded Software consists of three layers:

1. OS (Operating System)
2. Middleware
3. SDK portfolio



OS (Operating System):

- The Embedded system operating software is the Real Time Operating System (RTOS)
- RTOS performs the following task in an Embedded system:
- RTOS supervises the Application Software of Embedded System.
- RTOS schedules the task or rules for the execution of Application Software in the Embedded system.
- An Embedded Operating system is a combination of Hardware and Software.
- Embedded operating systems are developed with programming code which helps to control hardware components using the software languages such as C, C++.
- The Embedded operating system improves overall efficiency by controlling all the hardware resources and minimizing response times for specific task.

Middleware Layer:-

➢ Middleware layer is mostly written in C++, C with no GUI support.

➢ Middleware layer acts like an interface between Application and Firmware layer and establishes the communication.

➢ Middleware exposes the set of API functions in order to use the services offered by the middleware.

➢ It is responsible to handle requests from upper and lower layer.

SDK (Software Development Kit) portfolio:

- SDK is a collection of software development tools, which can be used to create and develop applications for a specific device or operating system.

- SDKs are specific to a hardware platform and operating systems combination. For example, the Windows 7 SDK, the Mac OS X SDK, and the iPhone SDK.
- An SDK typically comprises one or more application programming interfaces (APIs)
- It generally contains an integrated development environment (IDE), which acts as the central programming interface.
- The IDE may be provided with a programming window for writing source code, a debugger for fixing program errors, and a visual editor to create and edit the program's graphical user interface (GUI).
- IDE also has a compiler, which is used to develop applications from source code files
- It provides developers with robust functionalities such as code reuse, error handling, and consistent performance.
- It ensures that the API provided is implemented correctly.

It also allows easier upgrade paths and the ability to handle deprecations for specific lower-level.