**Sample Job Interview Questions for Embedded Engineers**

**General and "Soft-Skills" Questions for Embedded Engineers**

* Think about a time when you felt the solution you found for a problem in an embedded system was the right one. A colleague, also working on the issue, disagreed and suggested what you thought was an inferior solution? How did you resolve the dispute?
* Tell us about a difficult project that gives you pride. Tell us about the project and its challenges and discuss the problems you encountered and how you resolved them.
* What are two character traits you try to show in your personal life and at work?
* If you were the interviewer, why would you choose yourself as the right candidate?
* For principal embedded engineer: Where is our industry (or component that the principal engineer works within) heading? Where will it be in five years?

**Thought Puzzle Questions for Embedded Engineers**

* How might you weigh an airplane with no scales?
* If there are 70 legs in total and there are 26 animals involving chickens and horses, can you figure out how many are horses and how many are chickens—without using an equation?
* There are two light bulbs in a room and three switches outside the room. How do you determine which switches operate which bulbs?
* Why are sewer caps round?

**Technical Interview Questions for Embedded Engineers**

* **General Questions:**
  + How would you equalize a high-speed interface?
  + Explain how the I2C interface works?
  + How does a finite state machine work in an embedded system?
  + Name one sorting algorithm.
  + What is an atomic operation?
  + How do you avoid memory fragmentation when targeting embedded devices?
  + What are ways to reduce power consumption in an embedded system?
  + What are the purpose and benefits of object-oriented programming?
  + What are the four pillars of object-oriented programming?
  + Tell me the difference between a process and a thread.
  + What are common issues in handling interrupts?
  + What is a semaphore? What are the different types?
  + Can semaphores be used for interrupt context in Linux Kernel?
  + How do you use the keyword "Volatile"?
  + What does the keyword "const" mean?
  + What is a watchdog timer?
  + What is the difference between using an inline function and a macro?
  + What are the properties of an object-oriented programming language?
  + What is a memory leak?
  + When and why would you use the keyword "static"?
* **Questions around C/C++:**
  + Why are C and C++ still popular and widely used in embedded systems?
  + What are the benefits of using C/C++ vs. higher-level languages?
  + How does one code an infinite loop in C?
* **Microcontroller Inquiries:**
  + When might someone choose a microcontroller instead of a microprocessor when building an embedded system?
  + How can you use a micro-controller to determine the frequency of a high-voltage level on a bus?
  + Are the firmware and data embedded in microcontrollers safe from hacking, tampering, or downloading?
* **Real-Time Operating Systems Questions:**
  + What are the important metrics of real-time software?
  + Describe the advantages and disadvantages of using a real-time operating system on a mid-range microcontroller.
* **Quality Assurance Discussion:**
  + Why is it more difficult to test graphical user interfaces than container classes?
  + What is the difference between static and dynamic analysis testing?
* **Specific Coding Exercises:**
  + Code a program that tells us whether an integer is even or odd.
  + Write a function that will consider an array and return the number of odd numbers.