Paper Critique

Title: Extensibility, Safety and Performance in the SPIN Operating System
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Summary
The paper proposes the idea of SPIN. This operating system architecture claims to be extensible, safe, and provide good performance while maintaining all the features and functionalities of the current state-of-the-art operating systems. The architecture works on the principle that there should be as few kernel-application switches as possible. The OS achieves low switches by providing applications with an interface to move the code inside the kernel. The interfaces can be extended using the Modula-3 programming language, which allows the implementation of pointers safely and securely (cannot cast a pointer to any data type in Modula only to the same data type declared beforehand), which is an issue with the C language. This allows the code for one application not to interfere with another application's code.

Strength:
- SPIN OS follows micro-kernel architecture, which means it is a small OS that can be extensible.
- SPIN OS is extensible with the implementation of interfaces.
- SPIN OS is faster as there is low border crossing (application-kernel switches).
- SPIN OS is safer with the implementation of logical protection domains.

Weaknesses:
- For the implementation of safety, the authors used Modula 3. This also means that for interfaces, the developers would also have to implement them in Modula 3. This could lead to some unnecessary language-based overheads.
- SPIN being a Research Project, has not been tested on various real-world scenarios.

Comments:
- SPIN is a research-based project and has still not been implemented.