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Abstract
With this rapid progressing era, information science and technology are making great strides. The structure and scale of software systems are getting much huge and complicate. Therefore, the mechanisms of fault-tolerance become important in many applications, especially in significant systems, such as industrial devices, military equipments, avionics systems etc. We have developed the Hot-swap system HS2 to experiment and model the fault-tolerant systems. HS2 is a completely independent software modularized system, including kernel modules and application modules. The administrator can remotely operate HS-Console to create, delete, replace, migrate and monitor modules in HS2 systems. We build the fault-tolerant mechanism in the HS2. The fault-tolerant mechanism monitors the modules on the system, tests modules' functionalities in a preset period of time, and transmits the statuses to HS-Console. Checkpointings are periodically activated for purposes of whole module replication and system rollback. With the mechanisms HS2 providing, embedded systems can not only gain benefits such as dynamic maintenance, software reuse, but also insure faults which may happen by both software and hardware can recover efficiently and right in time as well.
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