

## The Primitive Code-Level Design Patterns for Distributed Programming

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**Abstract :** The primitive code-level design patterns (PDP) are the rudimentary programming elements to develop any distributed systems in the generic distributed programming environment, GreatFree. The PDP works with the primitive distributed application programming interfaces (PDA), the distributed modeling, and the distributed concurrency for scaling-up. They not only hide developers from underlying technical details but also support sufficient adaptability to a variety of distributed computing environments. Programming with them, the simplest distributed system, the lightweight messaging two-node client/server (TNCS) system, is constructed rapidly with straightforward and repeatable behaviors, copy-paste-replace (CPR). As any distributed systems are made up of the simplest ones, those PDAs, as well as the PDP, are generic for distributed programming.

**Keywords :** primitive APIs, primitive code-level design patterns, generic distributed programming, distributed systems, highly patterned development environment, messaging

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