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| **Root Cause** | **Description** |
| Memory | Bugs caused by memory, including memory leaks,memory uninitialization, pointer null hangs,null pointer dereference, buffer overflows, and multiple releases. |
| Concurrency | Synchronization problems among the concurrent tasks in concurrent programs,including data races and deadlocks. |
| Semantic | Inconsistencies with the requirements or the programmers'intention that do not belong to the categories above. |
| Semantic:Wrong Control Flow | The control flow is incorrectly implemented. |
| Semantic:Exception Handling | Does not have proper exception handling. |
| Semantic:Processing | Incorrect assignment statement，numeric processing, expression evaluation. |
| Semantic: Data Type | Basic data type conversion error or function needs to support other data types. |
| Semantic:External Function Call | A bug caused by calling an external module or external library incorrectly. |
| Semantic:Missing Features | A feature is supposed to be but is not implemented. |
| Semantic: Missing Cases | A case in a functionality is not implemented. |
| Semantic: Corner Cases | Some boundary cases are considered incorrectly or ignored. |
| Performance | Bugs that make a system perform abnormally in terms of responsiveness and stability under a normal workload. |
| Platform | Cannot run on specific CPU architectures,operating systems， Web browsers,etc. |
| Environment and Configuration | Operating system configuration errors and other non-code errors that affect software functions. |
| Build | Link and compilation errors. |
| Version | Bugs caused by version changes include forward or backward compatibility between versions and incompatibility. |