|  |  |
| --- | --- |
| **define:** HandleInstForCollection(*inst*, *lock\_set*, *alias\_graph*, *key\_fields*) | |
| 1:  2:  3:  4:  5:  6:  7:  8:  9:  10:  11:  12:  13:  14:  15:  16:  17:  18:  19:  20:  21:  22:  23:  24:  25: | *alias\_graph* := UpdateAliasGraph(*alias\_graph*, *inst*);  *lock\_set* := UpdateLockSet(*inst*, *lock\_set*, *alias\_graph*);  *var* := GetOperand(*inst*);  *var\_node* := GetAliasNode(*var*, *alias\_graph*);  **switch** typeof(*inst*):  **case** write:  **case** read:  **foreach** *lock\_node* in *lock\_set* **do**  <*var\_access\_path*, *lock\_access\_path*> :=  GetProtectedFieldAccess(  *var\_node*, *lock\_node*, *alias\_graph*);  **if** *var\_access\_path* is not NULL **then**  *key\_fields* := *key\_fields* {*var\_access\_path*};  **end if**  **end foreach**  **break**;  **case** call:  *called\_func* := GetCalledFunc(*inst*);  < *lock\_set*, *alias\_graph, key\_fields*> :=  HandleFuncForCollection(  *lock\_set*, *alias\_graph*, *key\_fields*, *called\_func*);  *key\_fields* := *key\_fields* *key\_fields*;  **break**;  **end switch**  **return** <*lock\_set*, *alias\_graph*, *key\_fields*>; |

|  |  |
| --- | --- |
| **define:** HandleFuncForCollection(*func*, *lock\_set*, *alias\_graph*, *key\_fields*) | |
| 26:  27:  28:  29:  30:  31:  32: | **foreach** *code\_path* in GetCodePath(*func*) **do**  **foreach** *inst* in GetInstructions(*code\_path*) **do**  <*lock\_set*, *alias\_graph*, *key\_fields*> :=  HandleInstForCollection(*inst*, *lock\_set*, *alias\_graph*);  **end foreach**  **end foreach**  **return** <*lock\_set*, *alias\_graph*, *key\_fields*>; |

|  |  |
| --- | --- |
| **define:** CollectKeyField() | |
| 33:  34:  35:  36:  37:  38:  39:  40:  41: | *lock\_set* := ;  *alias\_graph* := ;  *key\_fields* := ;  **foreach** *func* in OS code without a caller function **do**  <*lock\_set*, *alias\_graph*, *key\_fields*> :=  HandleFuncForCollection(  *func*, *lock\_set*, *alias\_graph*, *key\_fields*);  **end foreach**  **return** *key\_fields*; |