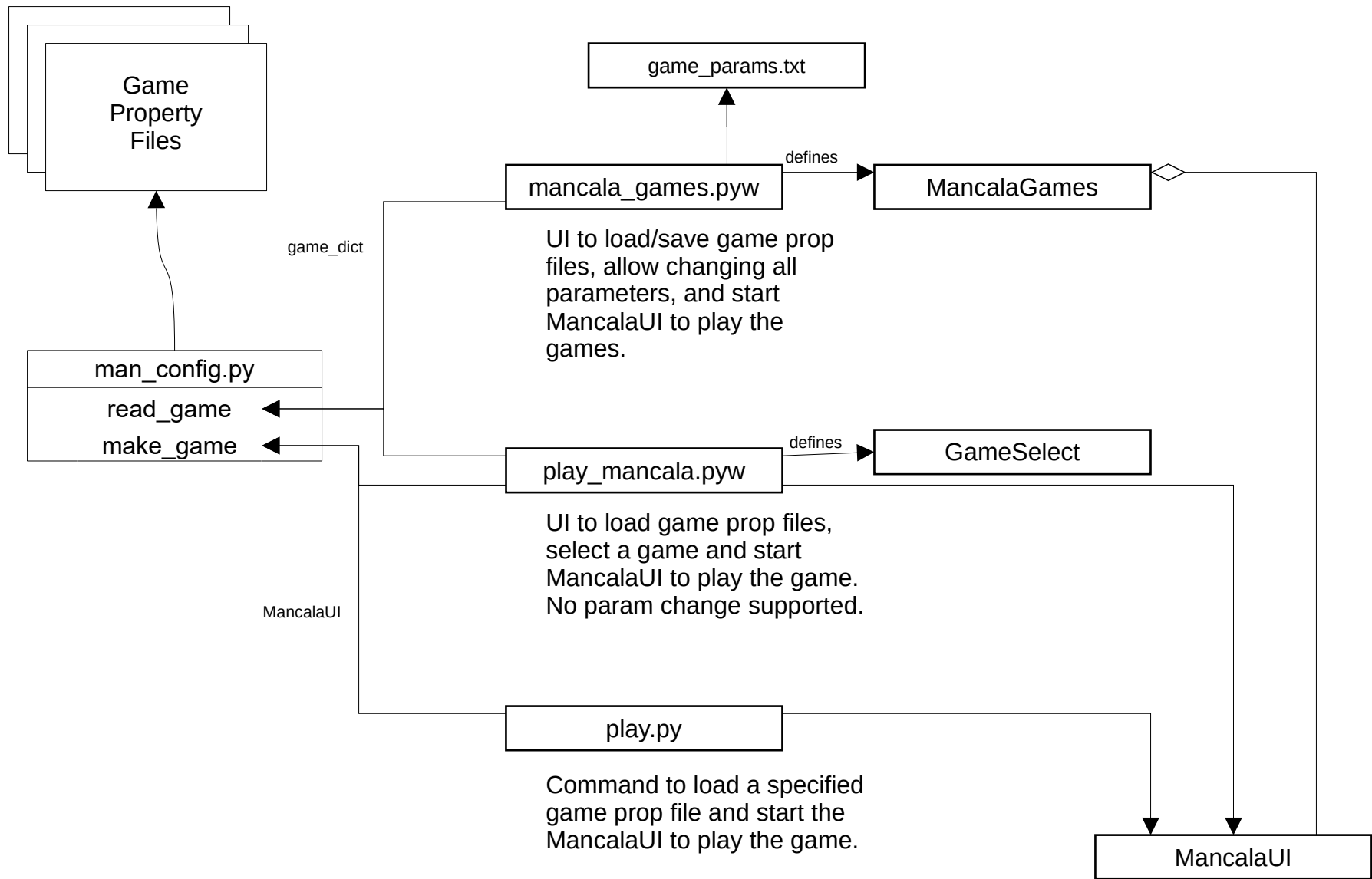
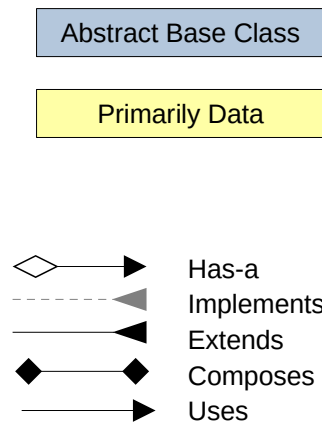


Mancala Games



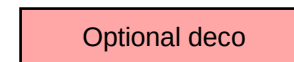
Notation Conventions

Class Diagram Conventions

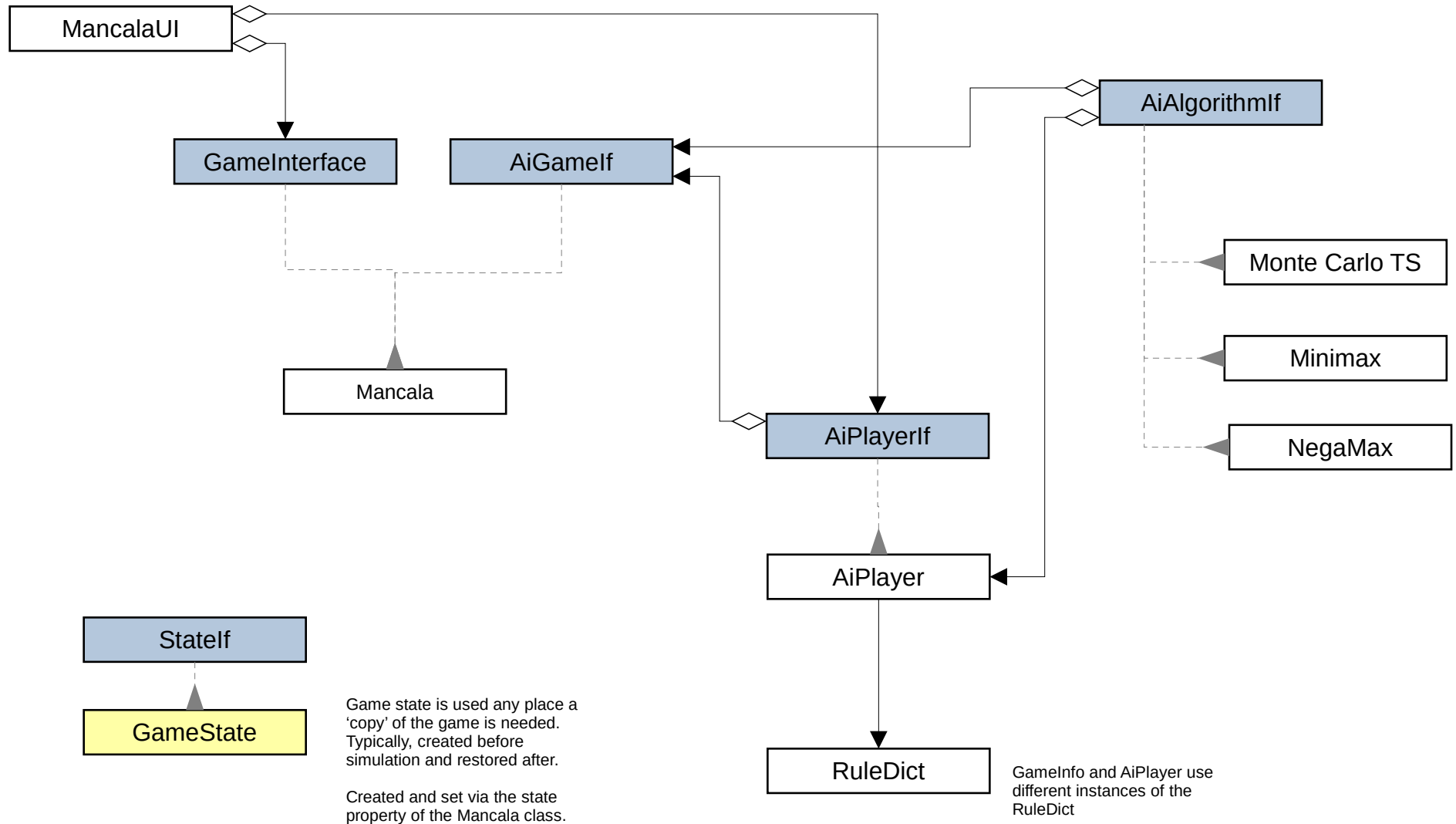


Deco Chain Conventions

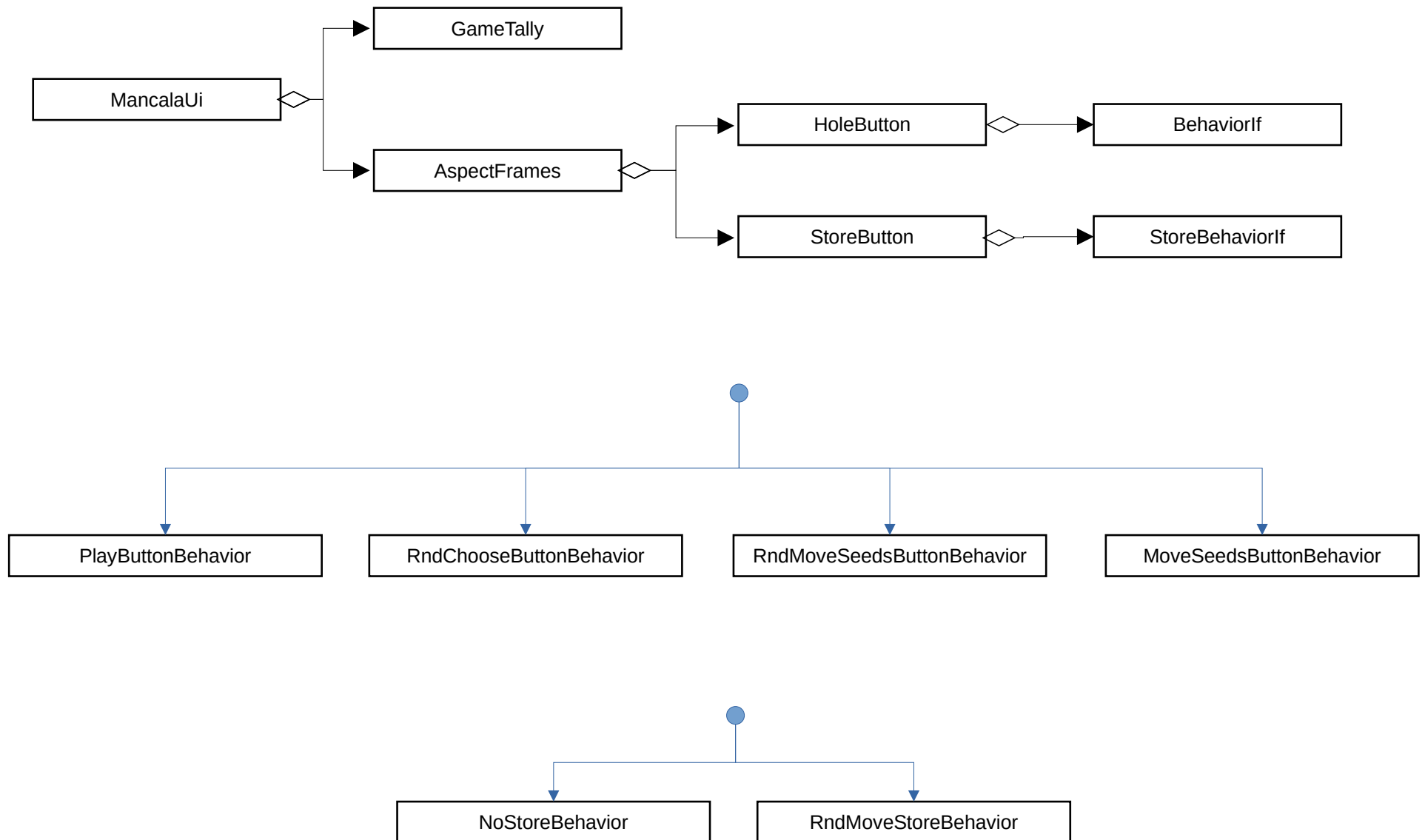
- One path down the deco chain is used.
- Intersecting arrows are decision points.
- Shown in **call order** from start dot (constructed in reverse order). Calls down the deco chain maybe at any point in a deco's processing.
- All paths shown might not be possible (see ginfo_rules).



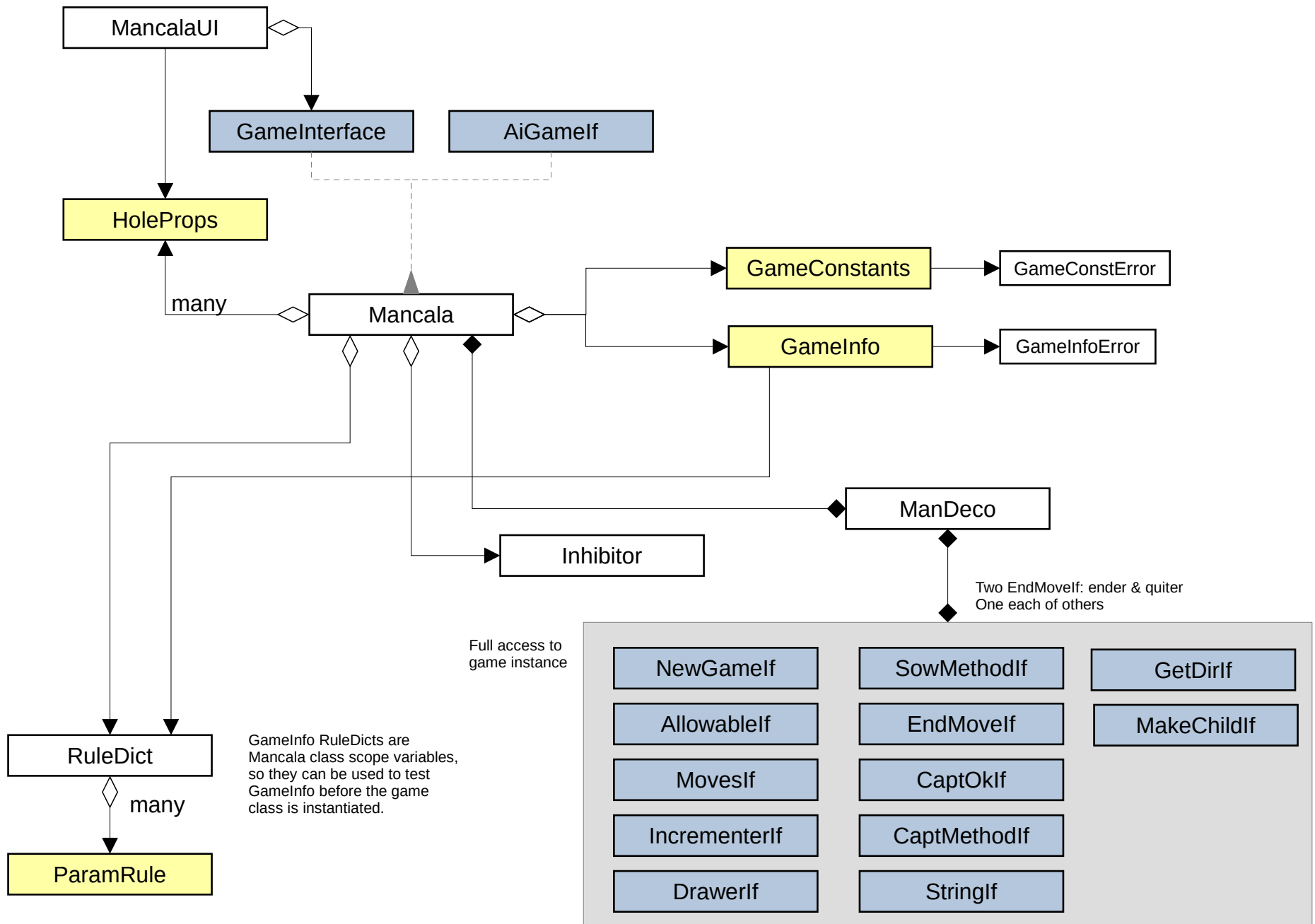
Mancala, GameState, AIPlayer and AIAlgorithm



Mancala UI Classes



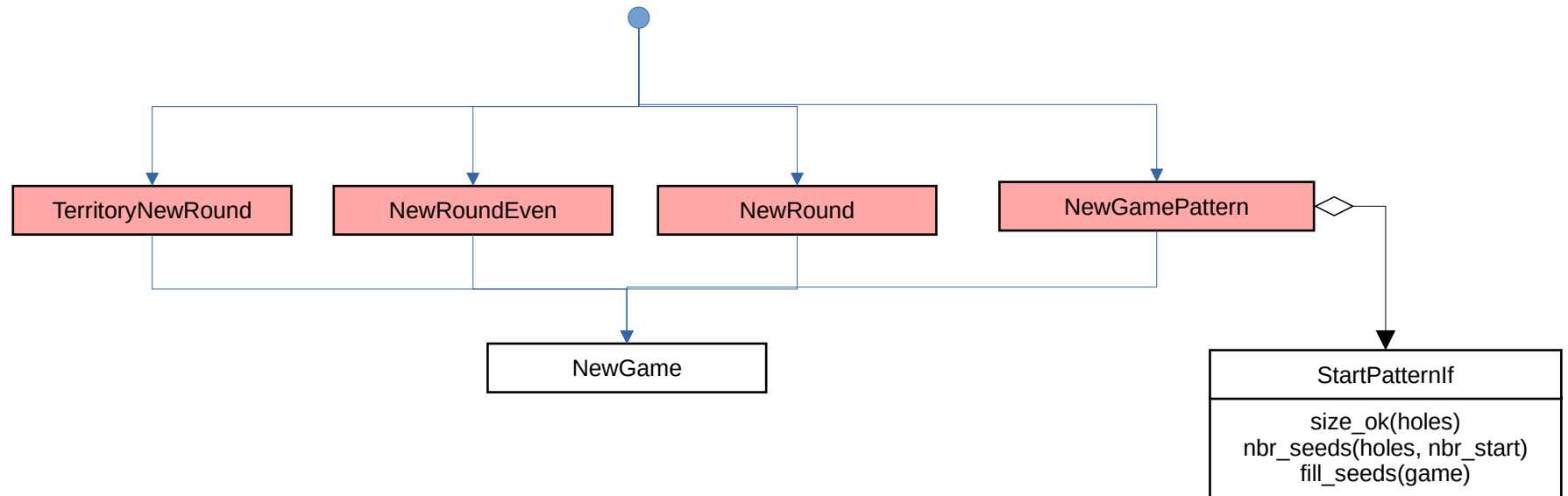
Mancala Classes



Decorator Usage

Game Op/Step	Primary Decorator	Other Classes & Decorators Used	Description
New Game	new_game	StartPattern, inhibitor	Setups the game for initial play. Applies any prescribed moves.
Determine Drawable Holes	allow		Return a list of holes that are playable.
Collect Moves	get_moves		Return a list of possible moves.
Draw seeds to start a move	drawer		Parse the move, determine number of seeds to sow, possibly leave one seed
Determine sow direction	get_direction		Convert the move & location into an actual sowable direction: clockwise or counter-clockwise.
Sow	sower	incr, make_child, inhibitor	Drop the seeds into the board holes.
Capture seeds	capturer & capt_ok	incr, make_child, inhibitor	Perform any captures.
Evaluate end of game	ender		At the end of each move determine if the game is over: game has been won, no more moves, game outcome can't change, etc.
Logging	get_string		Creates an ASCII string for the game.
Force end of game	quitter		The game needs to end either because of endless sow or user selection. Something fair will be done.

New Game Decorators and Chain

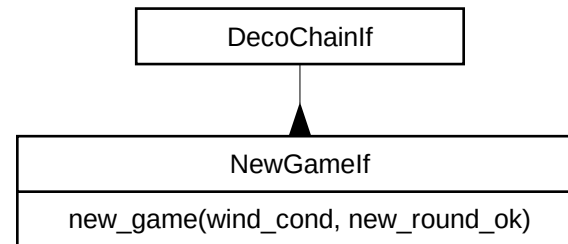


State variables changed:

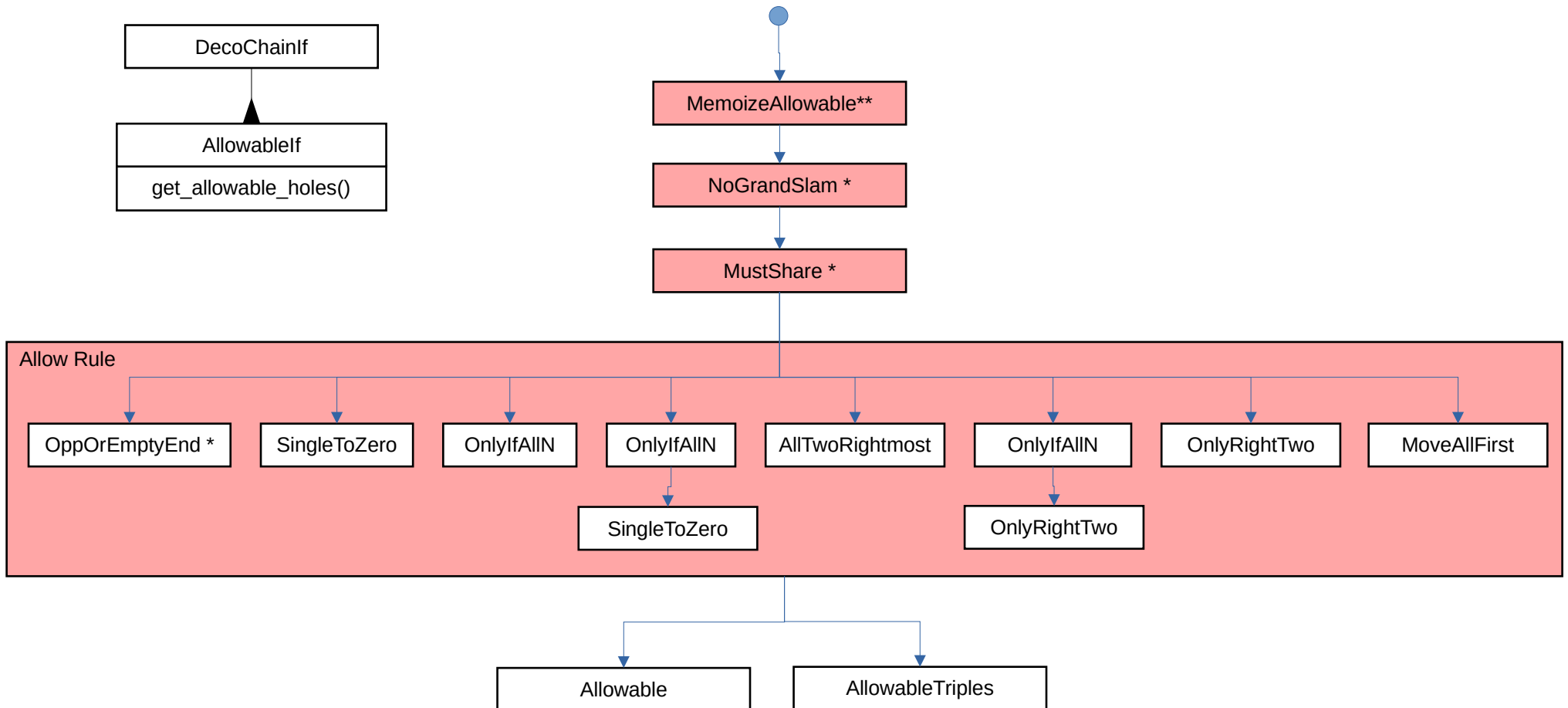
blocked
board
owner
starter
store
turn

Parameters:

blocks
goal
min_move
round_starter
round_fill
rounds
start_pattern



Allowables Decorators and Chain



State variables read:

turn
board
store
blocked
owner
child
mcount

Parameters:

min_move
allow_rule
mlength
mustshare
grandslam

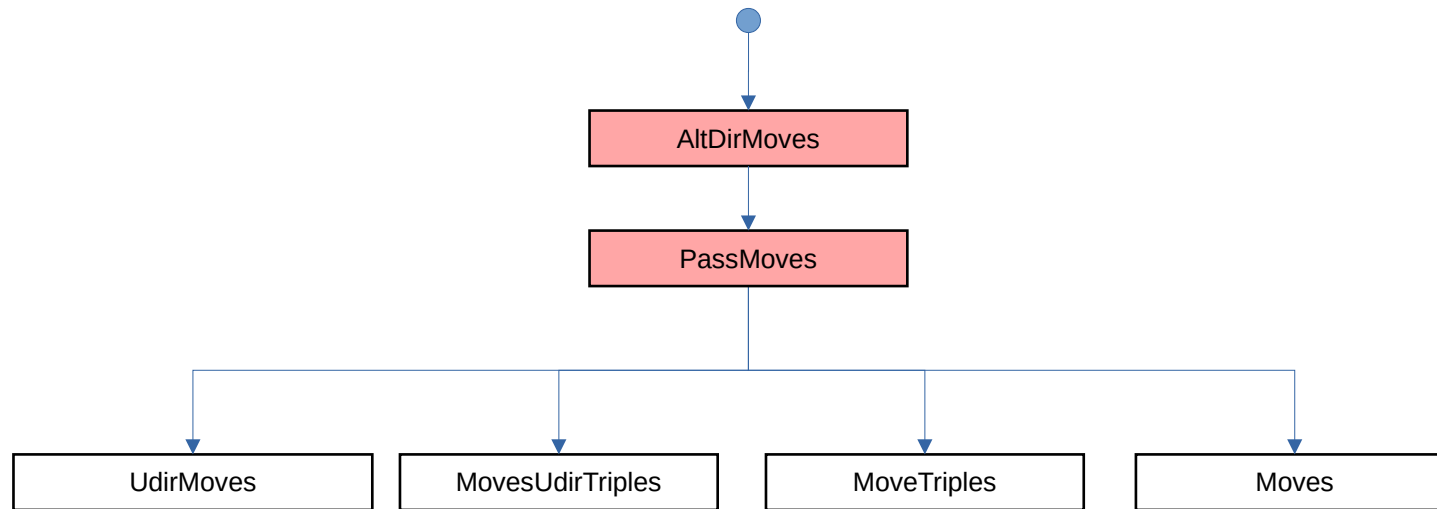
Notes:

Some allow rule decos are shown more than once for clarity.

* Simulates some portion of moves to determine allowables

** MemoizeAllowable is used for deco's that simulate moves

Get Moves Decorators and Chain

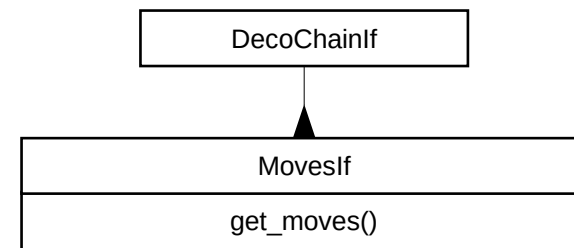


State variables read:

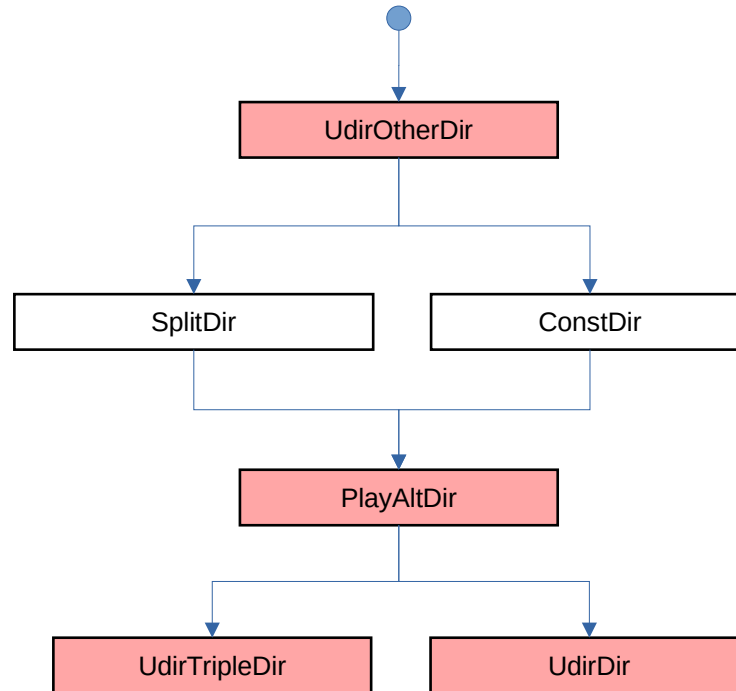
blocked
board
owner
starter
store
turn

Parameters:

mlength
mustpass
sow_direct
udir_holes
udirect

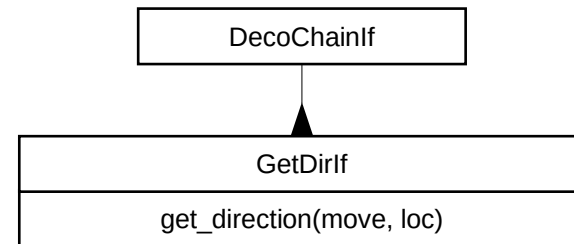


Get Direction Decorators and Chain

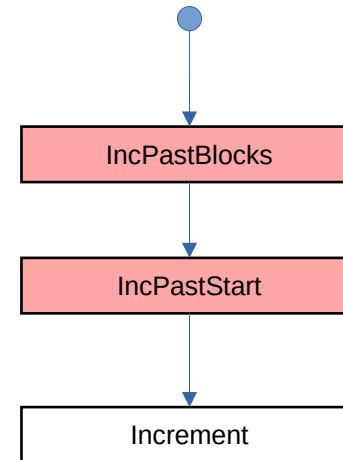
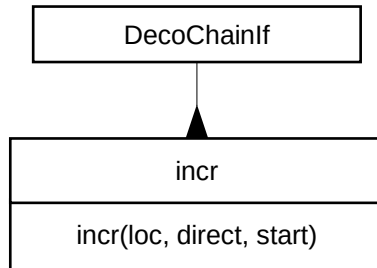


State variables read:
mcount
turn

Parameters:
no_sides
sow_direct
udir_holes
udirect



Incrementer Decorators and Chains



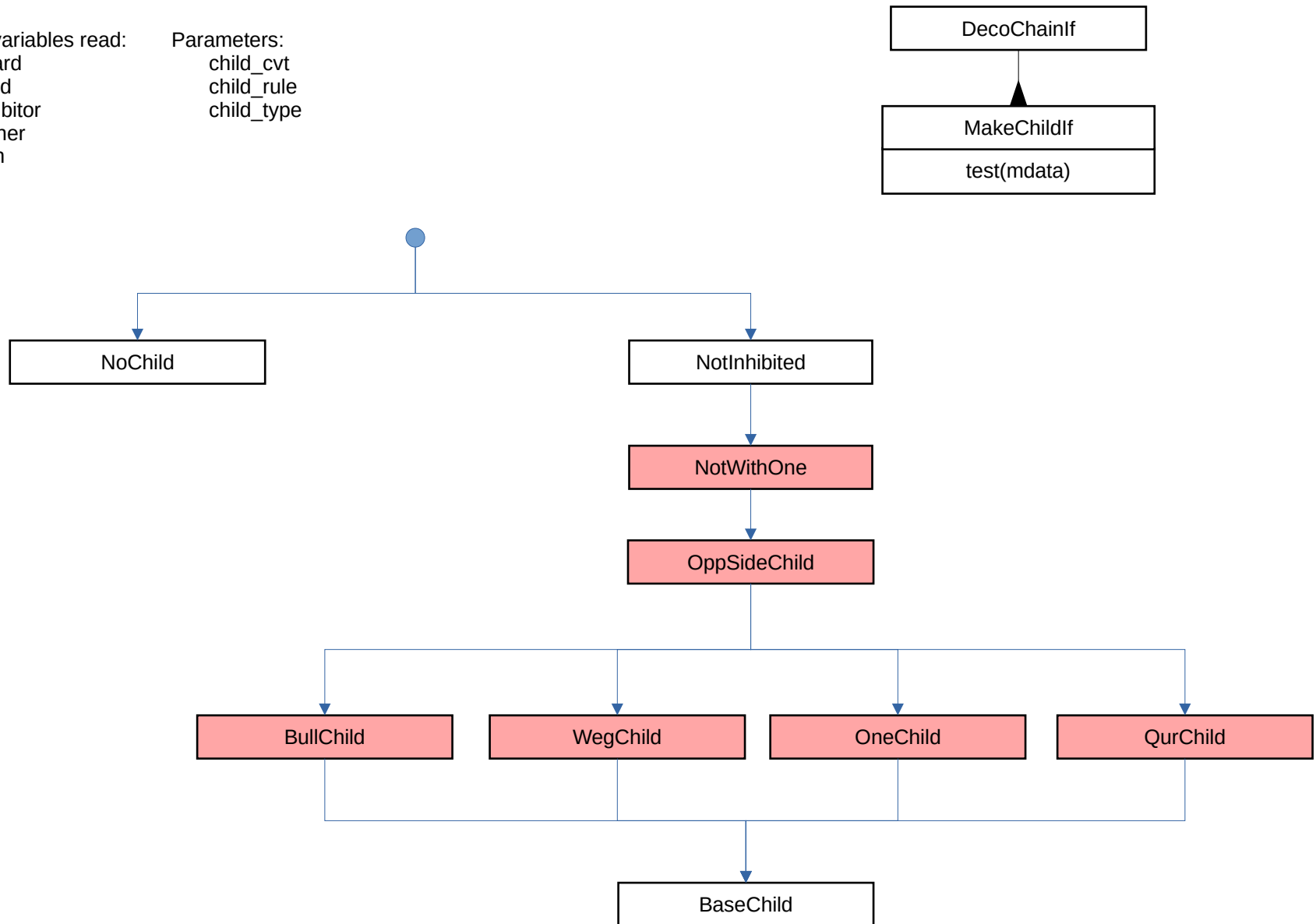
State variables read:
blocked

Parameters:
blocks
skip_start

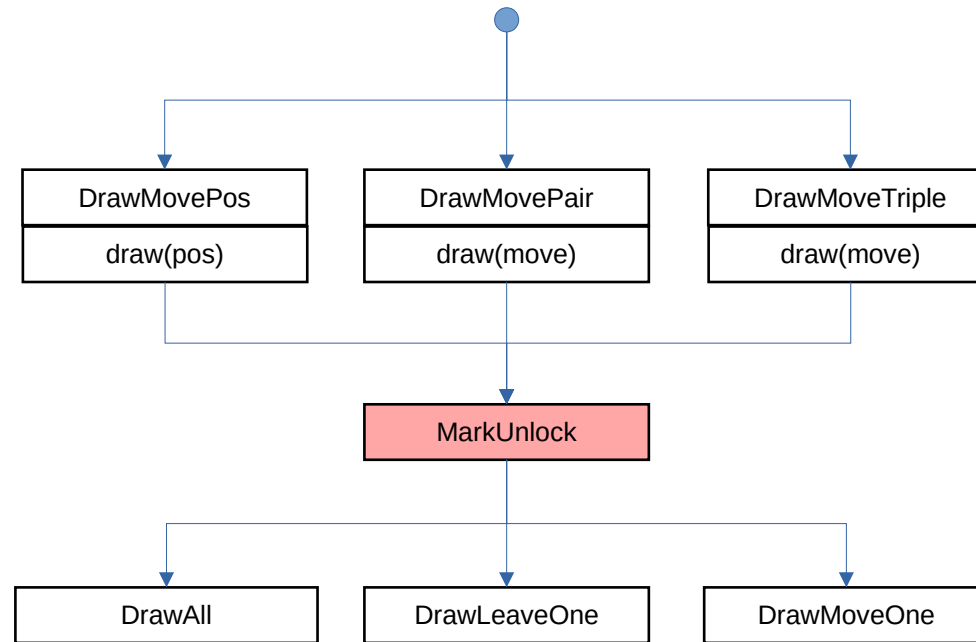
MakeChild Decorator and Chain

State variables read:
board
child
inhibitor
owner
turn

Parameters:
child_cvt
child_rule
child_type



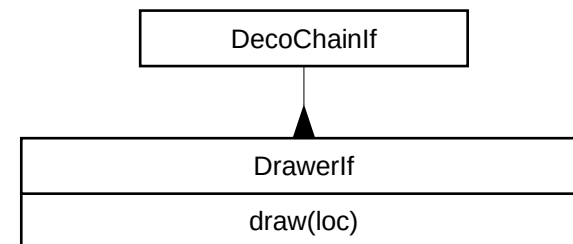
Draw Decorators and Chain



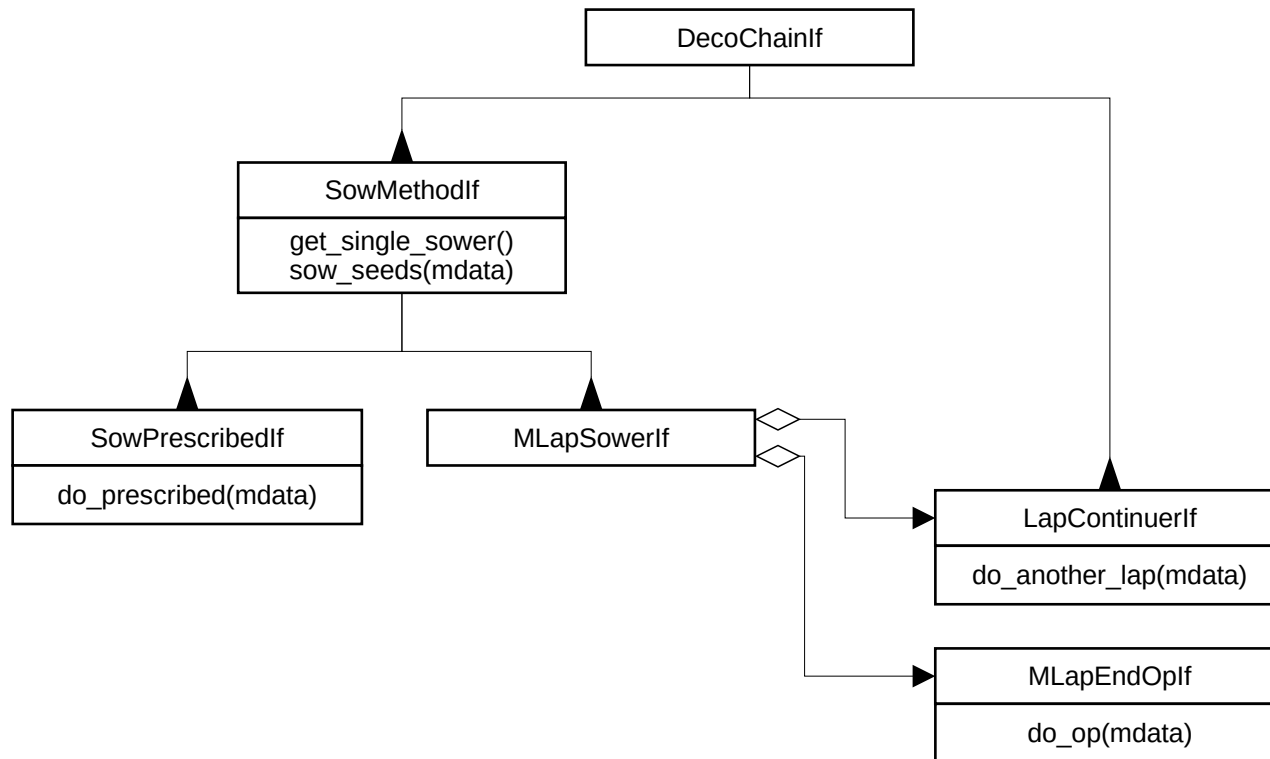
The first drawer converts the move into board location.

State variables:
Read:
 turn
Changed:
 board
 unlocked

Parameters:
 mlength
 move_one
 moveunlock
 sow_start



Sower Decorators



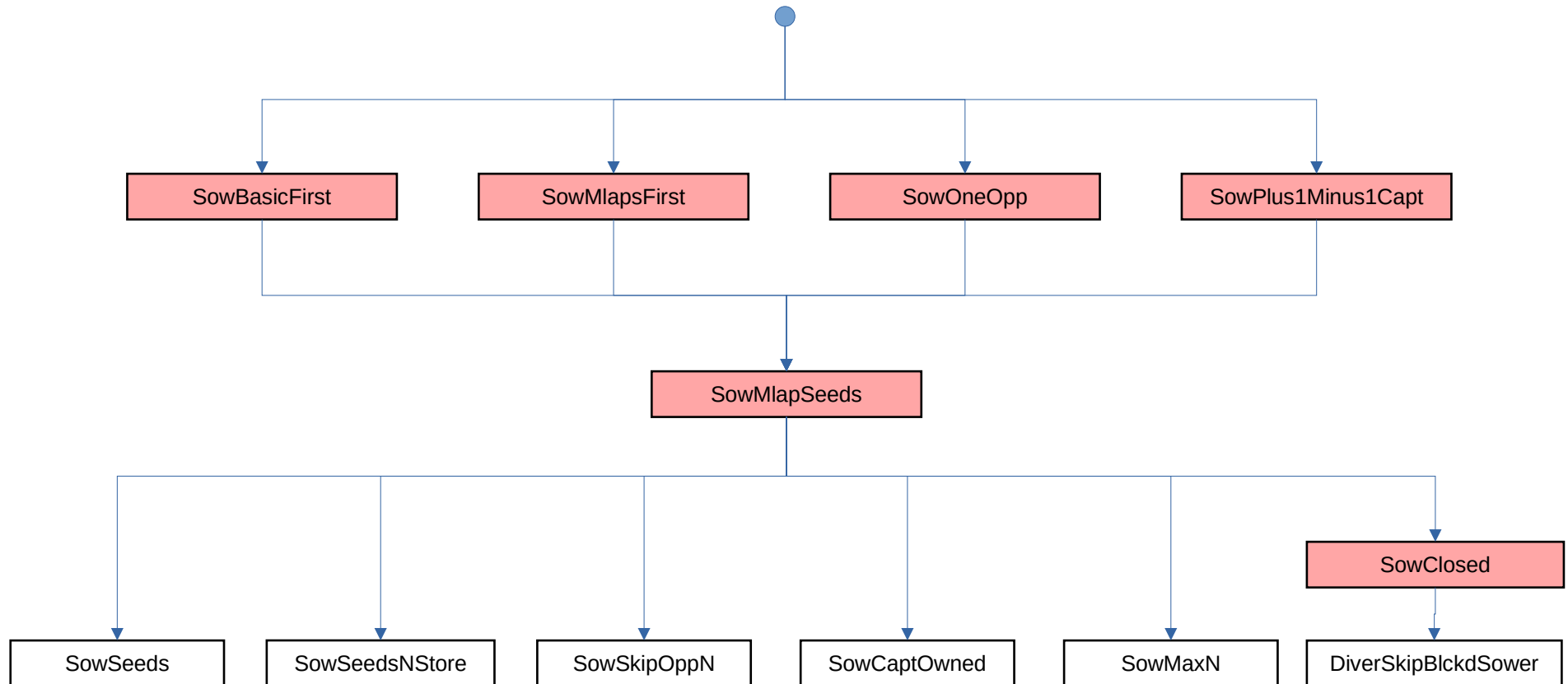
State variables:

Reads
inhibitor
turn
child
mcount
Changes
board
store
blocked

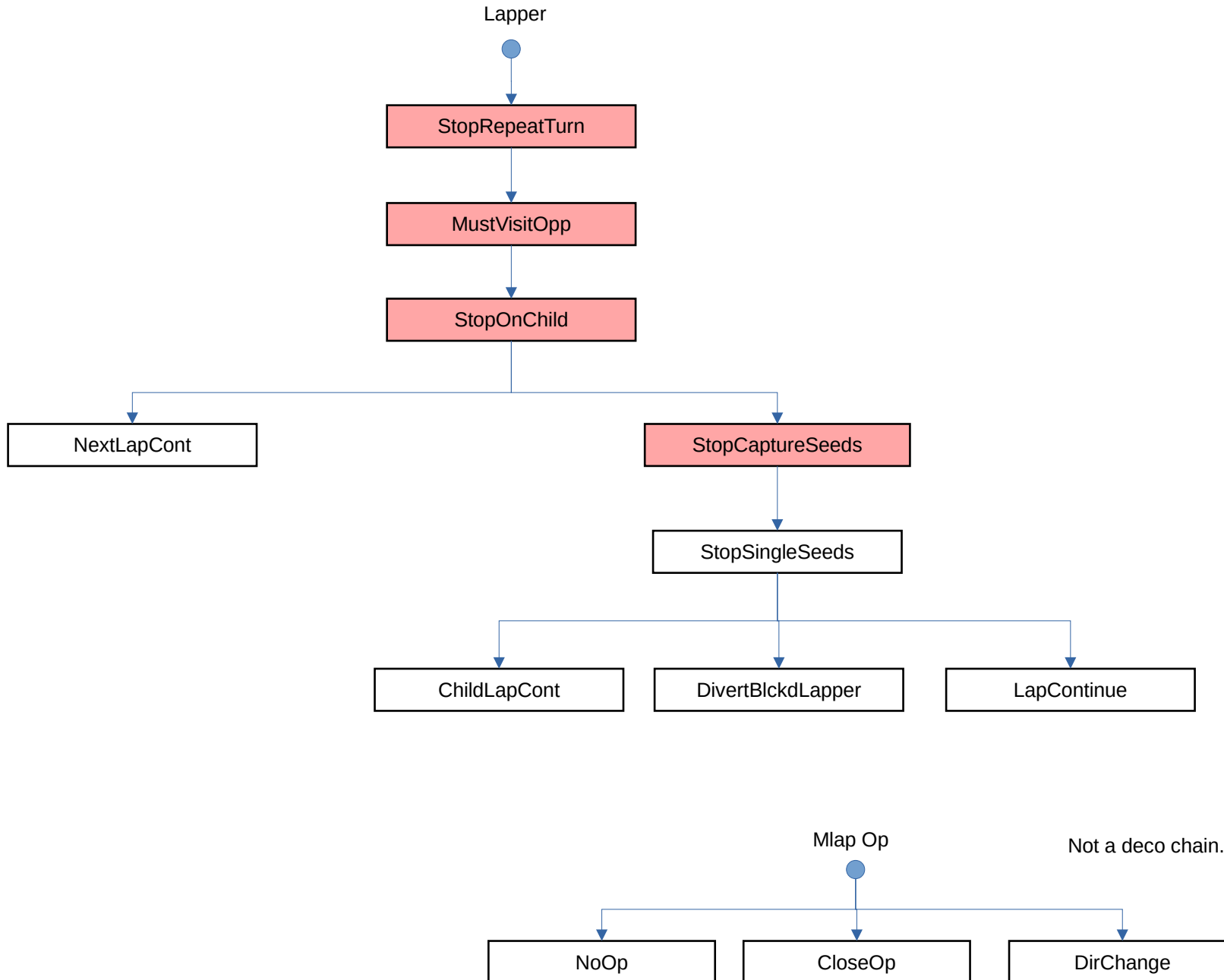
Parameters:

capt_max
capt_min
capt_on
child_type
crosscapt
evens
goal
gparam_one
mlaps
prescribed
sow_direct
sow_own_store
sow_rule
visit_opp

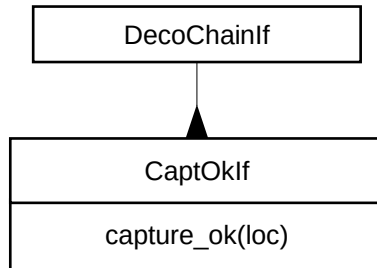
Sower Deco Chain



Lap Continuer Deco Chain and Mlap Operation

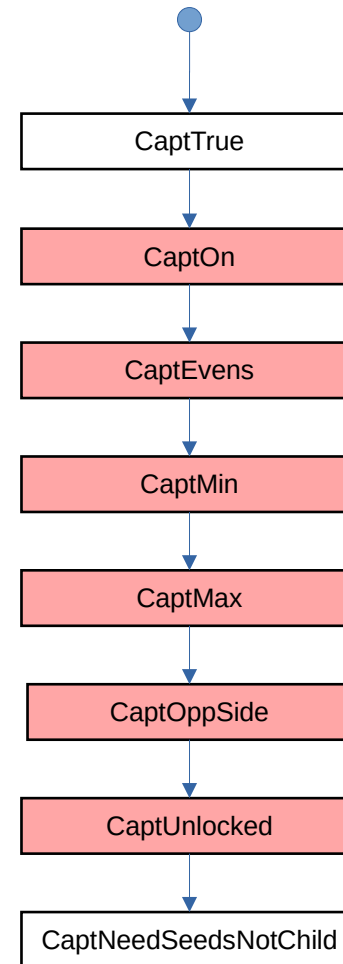


Capt Ok Decorators and Chains



State variables read:
board
child
turn
unlocked

Parameters:
capt_max
capt_min
capt_on
moveunlock
oppsidecapt



Capturer Decorators

State variables

Reads

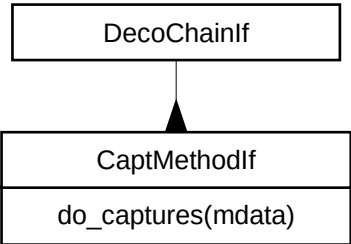
inhibitor
starter
turn

Changes

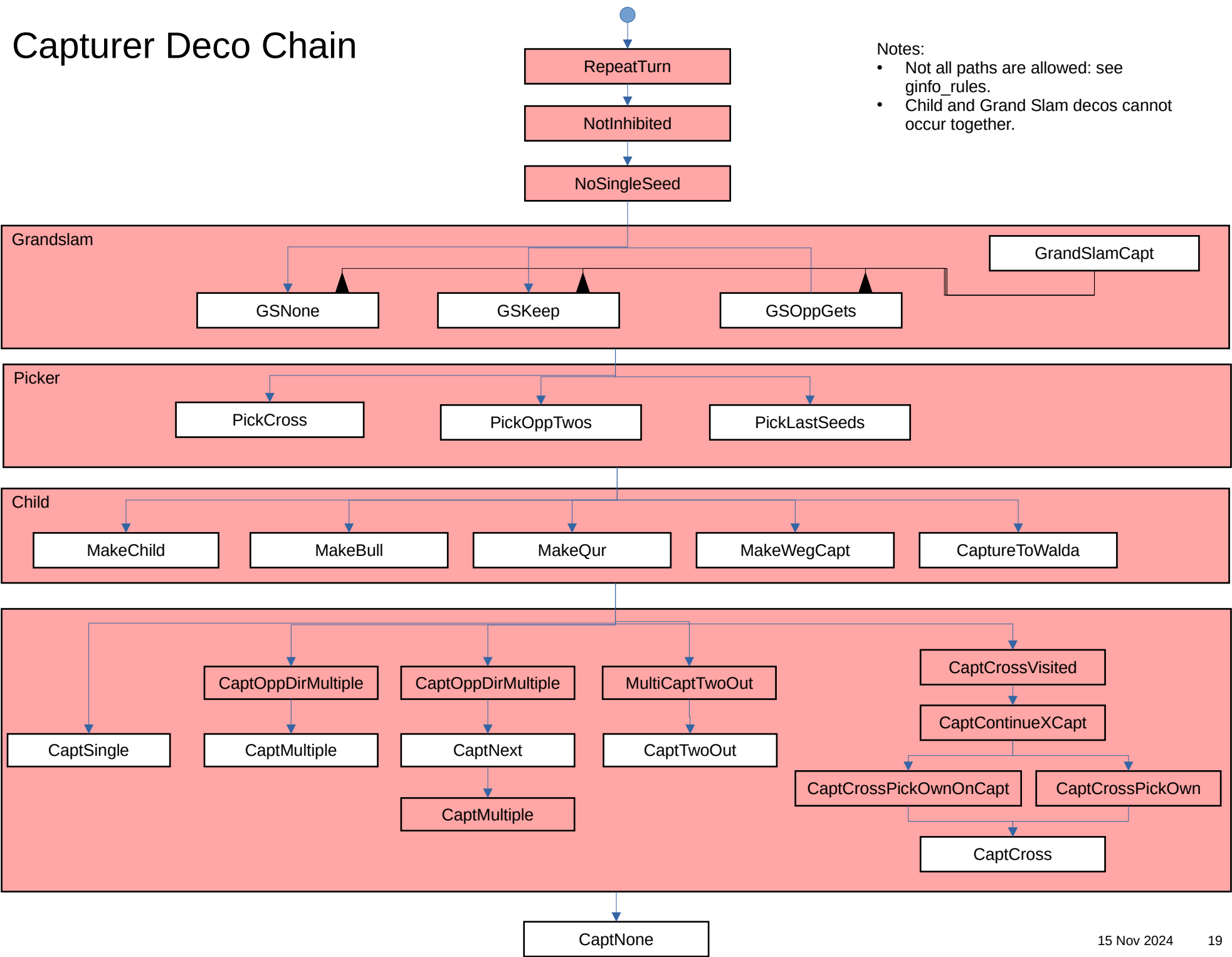
board
child
store

Parameters:

capsamedir
capt_max
capt_min
capt_next
capt_on
capt_rturn
captwoout
child_cvt
child_type
crosscapt
evens
grandslam
mlaps
multicapt
nocaptfirst
nosinglecapt
oppsidecapt
pickextra
prescribed
round_fill
xc_sown
xcpickown



Capturer Deco Chain



Ender & Quitter Decorators and Chains

State variables:

Reads:
child
owner
turn

Changes:
board
store

Parameters:

capt_min
capt_next
capt_on
capttwoout
child_cvt
child_type
crosscapt
evens
goal
gparam_one
min_move
mlaps
mustpass
mustshare
no_sides
round_fill
rounds
sow_own_store
stores

