

Assignment 2 Domino Testing

Shuffledoms

(domset used here is defined from (0,0), (1,0),(1,1), (2,0),(2,1), (2,2) (6,6) etc)

<u>Test</u> <u>Condition</u>	<u>Call</u>	<u>Result</u>
Test a low valued seed	shuffleDoms 23	[(4,2),(1,0),(3,3),(2,0),(4,3),(5,3),(1,1),(6,6),(6,1),(4,0),(3,1),(4,4),(6,5), (2,2),(5,2),(3,2),(6,4),(5,0),(6,3),(3,0),(5,5),(5,1),(4,1),(0,0),(5,4),(2,1), (6,2),(6,0)]
Test a high valued seed	shuffleDoms 8542458726	[(3,0),(0,0),(2,2),(4,2),(3,2),(2,0),(4,3),(4,1),(6,2),(6,6),(4,4),(3,3),(5,2), (5,1),(6,3),(1,1),(5,0),(5,3),(6,4),(6,0),(4,0),(1,0),(5,5),(3,1),(2,1),(5,4), (6,5),(6,1)]
Test a negative seed	shuffleDoms (-23564)	[(4,0),(5,3),(6,5),(6,6),(6,1),(5,0),(6,2),(6,0),(4,4),(4,1),(0,0),(6,4),(4,2), (5,1),(2,1),(3,2),(1,0),(1,1),(5,4),(5,5),(2,2),(4,3),(3,0),(5,2),(2,0),(3,1), (3,3),(6,3)]

defineHand1

<u>Test Condition</u>	<u>Call</u>	<u>Result</u>
Test to get the first 9 doms from random dom set	defineHand1 23	[(4,2),(1,0),(3,3),(2,0),(4,3),(5,3),(1,1),(6,6),(6,1)]
Test same above but with negative seed	defineHand1 (-23564)	[(4,0),(5,3),(6,5),(6,6),(6,1),(5,0),(6,2),(6,0),(4,4)]

defineHand2

<u>Test Condition</u>	<u>Call</u>	<u>Result</u>
Test to get the second set of 9 doms from random dom set	defineHand2 23	[(4,0),(3,1),(4,4),(6,5),(2,2),(5,2),(3,2),(6,4),(5,0)]
Test same above but with negative seed	defineHand2 (-23564)	[(4,1),(0,0),(6,4),(4,2),(5,1),(2,1),(3,2),(1,0),(1,1)]

simplePlayer

(gets first playable dom, checks each dom left then right, and returns move if playable)

<u>Test Condition</u>	<u>Call</u>	<u>Result</u>
Test to get move if board is empty	simplePlayer [] [(4,1),(0,0),(6,4),(4,2)]	(L,(4,1))
Test to get move if only one dom that can go is left	simplePlayer [(3,2)] [(4,1),(0,0),(6,4),(4,3)]	(L,(4,3))
Test to get move if multiple doms can go left	simplePlayer [(3,2)] [(4,1),(3,3),(6,3),(4,3)]	(L,(3,3))
Test to get move if only one dom that can go is right	simplePlayer [(3,2)] [(4,1),(2,4),(1,2),(2,2)]	(R,(1,2))
Test to get move if multiple doms can go right	simplePlayer [(3,2)] [(4,1),(2,4),(1,2),(2,2)]	(R,(2,4))

Test to see what happens when dom can go left and right	simplePlayer [(3,2),(2,4)] [(2,1),(3,4),(1,3),(1,4)]	(L,(3,4))
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hsdPlayer

(Gets the move of the highest scoring dom that can be played, if highest score of playable doms is 0 results to simplePlayer and so plays first dom that will go.)

<u>Test Condition</u>	<u>Call</u>	<u>Result</u>
Test to get move if board is empty	hsdPlayer [] [(6,3),(6,6),(2,4),(3,5)]	(L,(6,6))
Only one dom can score left	hsdPlayer [(4,1),(1,5)] [(6,3),(6,6),(4,5),(3,3)]	(L,(4,5))
Only one dom can go left but no score	hsdPlayer [(4,1),(1,5)] [(6,3),(6,6),(4,2),(3,3)]	(L,(4,2))
Multiple doms can score left	hsdPlayer [(4,2),(2,5)] [(6,3),(4,0),(4,1),(4,5)]	(L,(4,1))

Multiple doms can go left but no score	hsdPlayer [(4,2),(2,5)] [(6,3),(4,2),(4,4),(4,6)]	(L,(4,2))
Only one dom can score right	hsdPlayer [(2,3),(3,1)] [(6,3),(4,1),(4,4),(4,5)]	(R,(4,1))
Only one dom can go right but no score	hsdPlayer [(2,3),(3,1)] [(6,3),(4,0),(1,1),(4,5)]	(R,(1,1))
Multiple doms can score right	hsdPlayer [(4,3),(3,1)] [(6,3),(1,6),(1,2),(1,5)]	(R,(1,5))
Multiple doms can go right but no score	hsdPlayer [(6,3),(3,1)] [(4,0),(2,3),(1,2),(1,1)]	(R,(1,2))
Doms can go left and right and some can score	hsdPlayer [(6,3),(3,0)] [(5,0),(6,6),(0,6),(0,3)]	(L,(6,6))
Doms can go left and right but none can score	hsdPlayer [(2,3)] [(5,1),(3,0),(2,1),(5,3)]	(R,(3,0))

getHighestAtEnd

(cases used above cover cases required for testing getting the highest scoring domino at an end e.g. if only one scores, multiple scores or none scores at a given end. I have covered these for left and right above.

Note if non score it results to returning the first playable domino like simplePlayer.)

compareHighest

(here the first dom is always the highest scoring dom that goes right and the second is highest that goes left e.g. takes results of getHighestAtEnd and plays left one if left>right)

<u>Test Condition</u>	<u>Call</u>	<u>Result</u>
Test when 2 doms score same	compareHighest (6,6) (0,6) [(6,3),(3,0)]	(R,(0,6))
Test when 2 doms score differently (higher is left)	compareHighest (6,6) (0,5) [(6,3),(3,0)]	(L,(6,6))
Test when 2 doms score differently (higher is right)	compareHighest (6,5) (0,6) [(6,3),(3,0)]	(R,(0,5))

playDomsRound

(difficult to show testing for this, so I have included evidence of updating the player hands, their scores and board using traceshow **after their turn** the traceshow is underneath each test)

I have included examples using hands of sizes 3, 5 and 9 in order to follow the tracshow easier.

<u>Test Condition</u>	<u>Call</u>	<u>Result</u>
Test 2 simple players		
a) 3 dom hands	playDomsRound simplePlayer simplePlayer 42	(0,0)
(0,[(3,0),(3,2)],[(4,4)]) (0,[(5,1),(1,1),(6,6)],[(4,4)]) (0,0)		
b) 5 dom hands	playDomsRound simplePlayer simplePlayer 42	(0,3)
(0,[(3,0),(3,2),(5,1),(1,1)],[(4,4)]) (2,[(6,6),(2,0),(4,0),(5,5)],[(2,4),(4,4)]) (0,[(3,0),(5,1),(1,1)],[(3,2),(2,4),(4,4)]) (3,[(6,6),(2,0),(5,5)],[(3,2),(2,4),(4,4),(4,0)]) (0,[(5,1),(1,1)],[(0,3),(3,2),(2,4),(4,4),(4,0)]) (3,[(6,6),(5,5)],[(2,0),(0,3),(3,2),(2,4),(4,4),(4,0)])		

(0,3)		
c) 9 dom hands	playDomsRound simplePlayer simplePlayer 42	(12,9)
(0,[(3,0),(3,2),(5,1),(1,1),(6,6),(2,0),(4,2),(4,0)],[(4,4)]) (0,[(5,5),(6,0),(0,0),(2,2),(3,1),(2,1),(6,4),(5,0)],[(5,4),(4,4)]) (3,[(3,0),(3,2),(1,1),(6,6),(2,0),(4,2),(4,0)],[(1,5),(5,4),(4,4)]) (0,[(5,5),(6,0),(0,0),(2,2),(2,1),(6,4),(5,0)],[(3,1),(1,5),(5,4),(4,4)]) (3,[(3,2),(1,1),(6,6),(2,0),(4,2),(4,0)],[(0,3),(3,1),(1,5),(5,4),(4,4)]) (0,[(5,5),(0,0),(2,2),(2,1),(6,4),(5,0)],[(6,0),(0,3),(3,1),(1,5),(5,4),(4,4)]) (7,[(3,2),(1,1),(2,0),(4,2),(4,0)],[(6,6),(6,0),(0,3),(3,1),(1,5),(5,4),(4,4)]) (4,[(5,5),(0,0),(2,2),(2,1),(5,0)],[(4,6),(6,6),(6,0),(0,3),(3,1),(1,5),(5,4),(4,4)]) (9,[(3,2),(1,1),(2,0),(4,0)],[(2,4),(4,6),(6,6),(6,0),(0,3),(3,1),(1,5),(5,4),(4,4)]) (8,[(5,5),(0,0),(2,1),(5,0)],[(2,2),(2,4),(4,6),(6,6),(6,0),(0,3),(3,1),(1,5),(5,4),(4,4)]) (9,[(1,1),(2,0),(4,0)],[(3,2),(2,2),(2,4),(4,6),(6,6),(6,0),(0,3),(3,1),(1,5),(5,4),(4,4)]) (8,[(5,5),(0,0),(2,1),(5,0)],[(3,2),(2,2),(2,4),(4,6),(6,6),(6,0),(0,3),(3,1),(1,5),(5,4),(4,4)]) (10,[(1,1),(2,0)],[(3,2),(2,2),(2,4),(4,6),(6,6),(6,0),(0,3),(3,1),(1,5),(5,4),(4,4),(4,0)]) (9,[(5,5),(2,1),(5,0)],[(3,2),(2,2),(2,4),(4,6),(6,6),(6,0),(0,3),(3,1),(1,5),(5,4),(4,4),(4,0),(0,0)]) (11,[(1,1)],[(3,2),(2,2),(2,4),(4,6),(6,6),(6,0),(0,3),(3,1),(1,5),(5,4),(4,4),(4,0),(0,0),(0,2)]) (9,[(5,5),(5,0)],[(3,2),(2,2),(2,4),(4,6),(6,6),(6,0),(0,3),(3,1),(1,5),(5,4),(4,4),(4,0),(0,0),(0,2),(2,1)]) (12,[],[(3,2),(2,2),(2,4),(4,6),(6,6),(6,0),(0,3),(3,1),(1,5),(5,4),(4,4),(4,0),(0,0),(0,2),(2,1),(1,1)]) (9,[(5,5),(5,0)],[(3,2),(2,2),(2,4),(4,6),(6,6),(6,0),(0,3),(3,1),(1,5),(5,4),(4,4),(4,0),(0,0),(0,2),(2,1),(1,1)]) (12,9)		
Test simple player vs hsdplayer		
a) 3 dom hands	playDomsRound simplePlayer hsdPlayer 2385	(1,0)
(1,[(4,0),(6,0)],[(3,0)]) (0,[],[(3,0)]) (1,[(6,0)],[(3,0),(0,4)]) (0,[],[(3,0),(0,4)])		

(1,0)		
b) 5 dom hands	playDomsRound simplePlayer hsdPlayer 2385	(5,1)
(1,[(4,0),(6,0),(2,1),(6,2)],[(3,0)]) (1,[(6,6),(6,4),(4,4),(6,1)],[(5,3),(3,0)]) (4,[(6,0),(2,1),(6,2)],[(5,3),(3,0),(0,4)]) (1,[(6,6),(4,4),(6,1)],[(5,3),(3,0),(0,4),(4,6)]) (5,[(2,1),(6,2)],[(5,3),(3,0),(0,4),(4,6),(6,0)]) (1,[(6,6),(4,4),(6,1)],[(5,3),(3,0),(0,4),(4,6),(6,0)])		
c) 9 dom hands	playDomsRound simplePlayer hsdPlayer 2385	(4,11)
(1,[(4,0),(6,0),(2,1),(6,2),(6,6),(6,4),(4,4),(5,3)],[(3,0)]) (2,[(6,1),(4,1),(5,5),(1,0),(5,1),(3,1),(3,2),(4,2)],[(3,3),(3,0)]) (3,[(6,0),(2,1),(6,2),(6,6),(6,4),(4,4),(5,3)],[(3,3),(3,0),(0,4)]) (4,[(6,1),(4,1),(5,5),(1,0),(5,1),(3,1),(4,2)],[(2,3),(3,3),(3,0),(0,4)]) (4,[(6,0),(6,2),(6,6),(6,4),(4,4),(5,3)],[(1,2),(2,3),(3,3),(3,0),(0,4)]) (7,[(6,1),(4,1),(5,5),(1,0),(3,1),(4,2)],[(5,1),(1,2),(2,3),(3,3),(3,0),(0,4)]) (4,[(6,0),(6,2),(6,6),(4,4),(5,3)],[(5,1),(1,2),(2,3),(3,3),(3,0),(0,4),(4,6)]) (9,[(4,1),(5,5),(1,0),(3,1),(4,2)],[(5,1),(1,2),(2,3),(3,3),(3,0),(0,4),(4,6),(6,1)]) (4,[(6,0),(6,2),(6,6),(4,4)],[(3,5),(5,1),(1,2),(2,3),(3,3),(3,0),(0,4),(4,6),(6,1)]) (11,[(4,1),(5,5),(1,0),(4,2)],[(3,5),(5,1),(1,2),(2,3),(3,3),(3,0),(0,4),(4,6),(6,1),(1,3)])		
(4,11)		
Test 2 hsd players		
a) 3 dom hands	playDomsRound hsdPlayer hsdPlayer 48577	(4,3)
(3,[(4,2),(4,3)],[(5,4)]) (2,[(2,0),(6,5)],[(2,5),(5,4)])		

(4,[(4,2)],[(2,5),(5,4),(4,3)]) (3,[(6,5)],[(0,2),(2,5),(5,4),(4,3)]) (4,3)		
b) 5 dom hands	playDomsRound hsdPlayer hsdPlayer 48577	(8,19)
(3,[(4,2),(4,3),(2,0),(5,2)],[(5,4)]) (2,[(6,6),(3,1),(6,0),(3,3)],[(6,5),(5,4)]) (6,[(4,2),(2,0),(5,2)],[(6,5),(5,4),(4,3)]) (10,[(3,1),(6,0),(3,3)],[(6,6),(6,5),(5,4),(4,3)]) (6,[(4,2),(2,0),(5,2)],[(6,6),(6,5),(5,4),(4,3)]) (16,[(3,1),(6,0)],[(6,6),(6,5),(5,4),(4,3),(3,3)]) (6,[(4,2),(2,0),(5,2)],[(6,6),(6,5),(5,4),(4,3),(3,3)]) (18,[(3,1)],[(0,6),(6,6),(6,5),(5,4),(4,3),(3,3)]) (6,[(4,2),(5,2)],[(2,0),(0,6),(6,6),(6,5),(5,4),(4,3),(3,3)]) (19,[],[(2,0),(0,6),(6,6),(6,5),(5,4),(4,3),(3,3),(3,1)]) (8,[(4,2)],[(5,2),(2,0),(0,6),(6,6),(6,5),(5,4),(4,3),(3,3),(3,1)]) (19,[],[(5,2),(2,0),(0,6),(6,6),(6,5),(5,4),(4,3),(3,3),(3,1)]) (8,19)		
c) 9 dom hands	playDomsRound hsdPlayer hsdPlayer 48577	(26,10)
(4,[(4,2),(4,3),(5,4),(2,0),(5,2),(6,5),(3,1),(6,0)],[(6,6)]) (0,[(3,3),(4,0),(3,2),(5,0),(2,1),(2,2),(5,5),(1,1)],[(6,6),(6,2)]) (8,[(4,2),(4,3),(5,4),(5,2),(6,5),(3,1),(6,0)],[(6,6),(6,2),(2,0)]) (0,[(3,3),(3,2),(5,0),(2,1),(2,2),(5,5),(1,1)],[(6,6),(6,2),(2,0),(0,4)]) (16,[(4,2),(5,4),(5,2),(6,5),(3,1),(6,0)],[(6,6),(6,2),(2,0),(0,4),(4,3)]) (6,[(3,2),(5,0),(2,1),(2,2),(5,5),(1,1)],[(6,6),(6,2),(2,0),(0,4),(4,3),(3,3)]) (18,[(4,2),(5,4),(5,2),(6,5),(3,1)],[(0,6),(6,6),(6,2),(2,0),(0,4),(4,3),(3,3)]) (6,[(5,0),(2,1),(2,2),(5,5),(1,1)],[(0,6),(6,6),(6,2),(2,0),(0,4),(4,3),(3,3),(3,2)]) (19,[(4,2),(5,4),(6,5),(3,1)],[(0,6),(6,6),(6,2),(2,0),(0,4),(4,3),(3,3),(3,2),(2,5)]) (8,[(5,0),(2,1),(2,2),(1,1)],[(0,6),(6,6),(6,2),(2,0),(0,4),(4,3),(3,3),(3,2),(2,5),(5,5)]) (21,[(4,2),(5,4),(3,1)],[(0,6),(6,6),(6,2),(2,0),(0,4),(4,3),(3,3),(3,2),(2,5),(5,5),(5,6)]) (8,[(2,1),(2,2),(1,1)],[(5,0),(0,6),(6,6),(6,2),(2,0),(0,4),(4,3),(3,3),(3,2),(2,5),(5,5),(5,6)])		

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(23, [(4,2), (3,1)], [(4,5), (5,0), (0,6), (6,6), (6,2), (2,0), (0,4), (4,3), (3,3), (3,2), (2,5), (5,5), (5,6)])
(8, [(2,1), (2,2), (1,1)], [(4,5), (5,0), (0,6), (6,6), (6,2), (2,0), (0,4), (4,3), (3,3), (3,2), (2,5), (5,5), (5,6)])
(23, [(3,1)], [(2,4), (4,5), (5,0), (0,6), (6,6), (6,2), (2,0), (0,4), (4,3), (3,3), (3,2), (2,5), (5,5), (5,6)])
(10, [(2,1), (1,1)], [(2,2), (2,4), (4,5), (5,0), (0,6), (6,6), (6,2), (2,0), (0,4), (4,3), (3,3), (3,2), (2,5), (5,5), (5,6)])
(23, [(3,1)], [(2,2), (2,4), (4,5), (5,0), (0,6), (6,6), (6,2), (2,0), (0,4), (4,3), (3,3), (3,2), (2,5), (5,5), (5,6)])
(10, [(1,1)], [(1,2), (2,2), (2,4), (4,5), (5,0), (0,6), (6,6), (6,2), (2,0), (0,4), (4,3), (3,3), (3,2), (2,5), (5,5), (5,6)])
(26, [], [(3,1), (1,2), (2,2), (2,4), (4,5), (5,0), (0,6), (6,6), (6,2), (2,0), (0,4), (4,3), (3,3), (3,2), (2,5), (5,5), (5,6)])
(10, [(1,1)], [(3,1), (1,2), (2,2), (2,4), (4,5), (5,0), (0,6), (6,6), (6,2), (2,0), (0,4), (4,3), (3,3), (3,2), (2,5), (5,5), (5,6)])
(26, 10)
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The testing of the functions `updateBoard`, `updatePlayerScore` and `updateHand` can be trivially seen in the results of the traceshows of the above tests e.g.

updateBoard

1. Look where a player has a piece in their hand that is playable after the next players turn (flips included), then look at the state of the board on their next turn.
2. Look where board was not updated because no doms were playable in that players hand.

updatePlayerScore

1. look where a player has placed a piece on the board, if it was a scoring piece their accumulated score is updated.
2. look where a player has been unable to play (hand was same as previous turn), score remains the same.

updateHand

1. look where a player has played a piece on the board, it is no longer in their hand.
2. look where a player was unable to play, their hand will be the same as it was before.