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1  package Pieces;
2
3  import Game.Board;
4  import Game.Colour;
5  import Game.Player;
6
7  /**
8   * This class represents the Pawn piece
9   *
10  * @author E
11  */
12  public class Pawn extends Piece {
13
14      public boolean canMove;
15      public boolean hasMovedTwo;
16
17      public Pawn(Colour colour) {
18          super(PieceType.Pawn, colour, 1);
19          hasMovedTwo = false;
20      }
21
22      @Override
23      public int threats(Board board, int row, int column) {
24          Piece[][] currentBoard = board.getBoard();
25          Piece toExamine;
26          int threatened = 0;
27          if (colour == Colour.White && row >= 1) {
28              if (column >= 1) {
29                  toExamine = currentBoard[row - 1][column - 1];
30                  if (toExamine != null && isOppositeColour(toExamine)) {
31                      threatened += toExamine.weight;
32                  }
33              }
34              if (column <= 6) {
35                  toExamine = currentBoard[row - 1][column + 1];
36                  if (toExamine != null && isOppositeColour(toExamine)) {
37                      threatened += toExamine.weight;
38                  }
39              }
40          } else if (colour == Colour.Black && row <= 6) {
41              if (column >= 1) {
42                  toExamine = currentBoard[row + 1][column - 1];
43                  if (toExamine != null && isOppositeColour(toExamine)) {
44                      threatened += toExamine.weight;
45                  }
46              }
47              if (column <= 6) {
48                  toExamine = currentBoard[row + 1][column + 1];
49                  if (toExamine != null && isOppositeColour(toExamine)) {
50                      threatened += toExamine.weight;
51                  }
52              }
53          }
54          return threatened;
55      }
56
57      @Override
58      public int[][] attacks(Board board, int row, int column) {
59          int[][] attacked = new int[8][8];
60          if (colour == Colour.White && row >= 1) {
61              // check if there are pieces that can be taken
62              if (column >= 1) {
63                  attacked[row - 1][column - 1]++;
64              }
65              if (column <= 6) {
66                  attacked[row - 1][column + 1]++;
67              }
68          }
69      }

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70     } else if (colour == Colour.Black && row <= 6) {
71         // check if there are pieces that can be taken
72         if (column >= 1) {
73             attacked[row + 1][column - 1]++;
74
75         }
76         if (column <= 6) {
77             attacked[row + 1][column + 1]++;
78
79         }
80     }
81     return attacked;
82 }
83
84 @Override
85 public boolean[][] validMoves(Player opponent, Board board, int row, int column) {
86     Piece[][] currentBoard = board.getBoard();
87     Piece toExamine;
88     // reset to false and check
89     canMove = false;
90     boolean[][] validPositions = new boolean[8][8];
91     if (colour == Colour.White && row >= 1) {
92         // check if it can move up
93         toExamine = currentBoard[row - 1][column];
94         if (toExamine == null) {
95             validPositions[row - 1][column] = true;
96             canMove = true;
97         }
98         // check if there are pieces that can be taken
99         if (column >= 1) {
100             // check if there are pieces that can be taken
101             toExamine = currentBoard[row - 1][column - 1];
102             if (toExamine != null && isOppositeColour(toExamine)) {
103                 validPositions[row - 1][column - 1] = true;
104                 canMove = true;
105             }
106         }
107         if (column <= 6) {
108             toExamine = currentBoard[row - 1][column + 1];
109             if (toExamine != null && isOppositeColour(toExamine)) {
110                 validPositions[row - 1][column + 1] = true;
111                 canMove = true;
112             }
113         }
114         // check if it can move up 2
115         if (row == 6) {
116             toExamine = currentBoard[row - 2][column];
117             if (toExamine == null && currentBoard[row - 1][column] == null) {
118                 validPositions[row - 2][column] = true;
119                 canMove = true;
120             }
121         } // check if it can perform en passant
122         else if (row == 3) {
123             // use opponent info
124             Piece lastMoved = opponent.getLastMoved();
125             if (lastMoved.piece == PieceType.Pawn && lastMoved.validSpecial()) {
126                 // checks if my pawn is in right position and moves to right space
127                 if (opponent.getLastC() == column - 1
128                     || opponent.getLastC() == column + 1) {
129                     validPositions[row - 1][opponent.getLastC()] = true;
130                     canMove = true;
131                 }
132             }
133         }
134     } else if (colour == Colour.Black && row <= 6) {
135         // check if it can move up
136         toExamine = currentBoard[row + 1][column];
137         if (toExamine == null) {
138             validPositions[row + 1][column] = true;

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139         canMove = true;
140     }
141     // check if there are pieces that can be taken
142     if (column >= 1) {
143         toExamine = currentBoard[row + 1][column - 1];
144         if (toExamine != null && isOppositeColour(toExamine)) {
145             validPositions[row + 1][column - 1] = true;
146             canMove = true;
147         }
148     }
149     if (column <= 6) {
150         // check if there are pieces that can be taken
151         toExamine = currentBoard[row + 1][column + 1];
152         if (toExamine != null && isOppositeColour(toExamine)) {
153             validPositions[row + 1][column + 1] = true;
154             canMove = true;
155         }
156     }
157     // check if it can move up 2
158     if (row == 1) {
159         toExamine = currentBoard[row + 2][column];
160         if (toExamine == null && currentBoard[row + 1][column] == null) {
161             validPositions[row + 2][column] = true;
162             canMove = true;
163         }
164     } // check if it can perform en passant
165     else if (row == 4) {
166         // use opponent info
167         Piece lastMoved = opponent.getLastMoved();
168         if (lastMoved.piece == PieceType.Pawn && lastMoved.validSpecial()) {
169             //checks if my pawn is in right position and moves to right space
170             if (opponent.getLastC() == column - 1
171                 || opponent.getLastC() == column + 1) {
172                 validPositions[row + 1][opponent.getLastC()] = true;
173                 canMove = true;
174             }
175         }
176     }
177     }
178     return validPositions;
179 }
180
181 @Override
182 public boolean validSpecial() {
183     // has moved two, thus can be en passant (other conditions elsewhere)
184     return hasMovedTwo;
185 }
186
187 @Override
188 public void modifySpecial() {
189     // only call method if piece confirmed to move two
190     hasMovedTwo = true;
191 }
192
193 @Override
194 public String printToBoard() {
195     return this.colour == Colour.White ? "\u2659" : "\u265F";
196 }
197
198 @Override
199 public String printToLog() {
200     return "";
201 }
202
203 @Override
204 public boolean getCanMove() {
205     return canMove;
206 }
207 }

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