## **Template Method Design Pattern:**

Title Natural language description of the implemented Template Method Design Pattern.

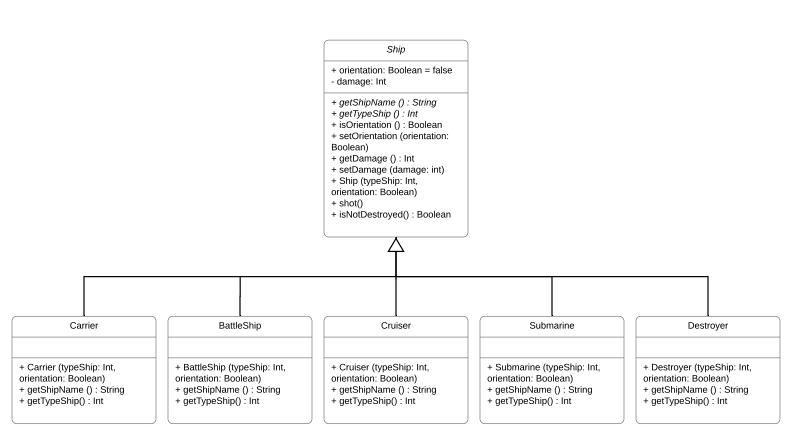
Author/Date SEM\_GROUP\_79 / 08-01-2020

Modification/Date no modification / 10-01-2020

Purpose Adding more ships for future releases will be easier.

Overview There is an abstract Ship class which are extended by the specific ship types such as Carrier, BattleShip, Cruiser, Submarine, Destroyer & Mini.

Cross References The game shall offer five ships with specified size and orientation upon starting a new game.



## **Factory Method Design Pattern:**

Title Natural language description of the implemented Factoriy Method Design Pattern.

Author/Date SEM GROUP 79 / 08-01-2020

Modification/Date Added an interface BoardCreator / 15-01-2020

**Purpose** Displaying different type of boards. For future releases adding more levels will be easier.

Cross References The game shall offer different game modes defined by the boardshape.

Overview There is an interface BoardCreator which is implemented by the two type of boards, resulting in StandardBoardCreatore and EnhancedBoardCreator. The creators create there own type of board upon starting a new game. The Board class is an abstract class extended by the StandardBoard and EnhancedBoard. In the Board classes the features of each board are eleborated

<<Interface>> BoardCreator Board + squaresInGrid: ArrayList<Square> = new ArrayList<Square> () + squaresInGridOpponent: ArrayList<Square> = new ArrayList<Square> () + createBoard(): Board + shipList: List<Ship> = new ArrayList<> () + rows: VBox = new Vbox() + ships: Int = 5 + opponent: Boolean = false + opponentPlayer: OpponentPlayer = new OpponentPlayer() + misses: Int = 0 + totalScore: Int = 0 StandardBoardCreator EnhancedBoardCreator + startCoordinate: Int = -1 + startSquare: Square = null # inProgress: Boolean = false # inProgress: Boolean = false + frontShip: Map<String, Point2D> = new HashMap<>() # opponentBoard: Board # opponentBoard: Board + game: Game # playerBoard: Board # playerBoard: Board # game: Game # game: Game + Board (opponent: Boolean, handler: EventHandler<? super MouseEvent>) - allShipsPlaced: Int = 4- allShipsPlaced: Int = 4 + makeListWithShips(): List<Ship> + canPlaceShip (ship: Ship, x: Int, y: Int, board: Board) : Boolean + createBoard(): StandardBoard + createBoard(): EnhancedBoard + placeShip (ship: Ship, x: Int, y: Int, board: Board) : Boolean startGame () startGame () + isValidPoint (point: Point2D, board: Board) : Boolean + inRange (x: Int, y: Int, board: Board): Boolean + getSquare (x: Int, y: Int) : Square + getNeighbourSquares(x: Double, y: Double, board: Board) : Square[] + getBoard(): Board StandardBoard EnhancedBoard + StandardBoard (opponent; Boolean, handler; EventHandler<? super MouseEvent>) + EnhancedBoard (opponent: Boolean, handler: EventHandler<? super MouseEvent>) + isValidPoint (point: Point2D, board: Board): Boolean + isValidPoint (point: Point2D, board: Board): Boolean + inRange (x: Int, y: Int, board: Board): Boolean + inRange (x: Int, y: Int, board: Board) : Boolean