

COMP1110 - D2B

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1 Design

1.1 Class 'Board'

$$\text{Board} \left\{ \begin{array}{l} \text{Spot}[] [] \text{ spotMatrix;} \\ \text{void setResources;} \\ \text{boolean endPhaseOne;} \\ \text{void preparationPhaseTwo;} \\ \text{int emptyStoneCircles;} \end{array} \right.$$

The class 'Board' will contain information about the overall status of the game.

- 'Spot[] [] spotMatrix' will be the matrix of spots representing the whole board. We will use axial coordinates for our (see Section 2.1).
- 'void setResources' will be a method that sets resources onto each of the stone circles using a random number generator and some parameters to ensure that there are not too many of any individual resource.
- 'boolean endPhaseOne' is a method that will determine whether the Exploration Phase has been completed or not.
- 'void preparationPhaseTwo' is a method that will withdraw all Settlers and Villages on stone circles from the board in preparation of the Settlement Phase.
- 'int emptyStoneCircles' is a parameter that will count the number of unoccupied stone circles remaining. When this reaches zero, the phase ends as all resources have been collected.

1.2 Class 'Spots'

$$\text{Spots} \left\{ \begin{array}{l} \text{int occupiedByPlayer;} \\ \text{int spotType;} \\ \text{int resources;} \\ \text{int island;} \\ \text{int settlerOrVillage;} \\ \text{Player[] majority(int island)\{\}} \end{array} \right.$$

The class 'Spots' will contain information about each individual spot.

- 'int occupiedByPlayer' will be a parameter that describes which player is currently occupying any specific spot on the board.
- 'int spotType' will be a parameter that describes what type each spot is; that is, whether it is a land, sea or stone circle tile.
- 'int resources' is a parameter that describes which resource is on the tile, if any.
- 'int island' is a parameter that describes if a spot belongs to an island, if any.
- 'int settlerOrVillage' is a parameter that describes whether a player is occupying a tile with a Settler or a Village.
- 'Player[] majority(int island){}' is a method that will calculate for each island which player occupies the most spots on the island. It will return an array as there can be ties and thus more than one player with the majority.

1.3 Class 'Player'

```
Player {
    string playerName;
    int settlers;
    int villages;
    int bamboo;
    int coconut;
    int stone;
    int water;
    int statue;
    Spot[] link
    int points;
```

The class 'Player' will contain information about each individual player in the game.

- 'string playerName' will be a parameter that sets the name of each player.
- 'int settlers' will be a parameter that describes how many settler tokens a player has remaining.
- 'int villages' is a parameter that describes how many villages a player has remaining.
- 'int bamboo', 'int coconut', 'int stone', 'int water' and 'int statue' are parameters that describe how many of each of the resource types a player possesses.
- 'Spot[] link' is a method that returns the longest link that a player has in the form of an array of spots.
- 'int points' is a parameter that describes how many points a player has.

2 Illustrations

2.1 Board Coordinates



Figure 1: An image of the coordinate system we will be using along with example points.