CODING CONVENTIONS

1. **Indentation:** Precise and consistent indentation is used to write easy to read and maintainable programs. Indentation of 4 whitespaces is applied in this project.
2. **Comments:** Comments are used regularly to improve code understandability and over commenting is avoided. Javadoc is also used to improve the overall understandability.

```
    case "add": {
        if (i + 2 < len) {
            String countryName = command[++i], neighborCountryName = command[++i];

            // adding sub-command to queue
            addNeighborToQueue(countryName, neighborCountryName, queue);
        } else {
            print("Invalid Command. Cannot find 'countryname' or 'neighborcountryname'.");
            good = false;
            return;
        }
        break;
    }
    case "remove": {
        if (i + 1 < len) {
            String countryName = command[++i], neighborCountryName = command[++i];

            // adding sub-command to queue
            removeNeighborToQueue(countryName, neighborCountryName, queue);
        } else {
```

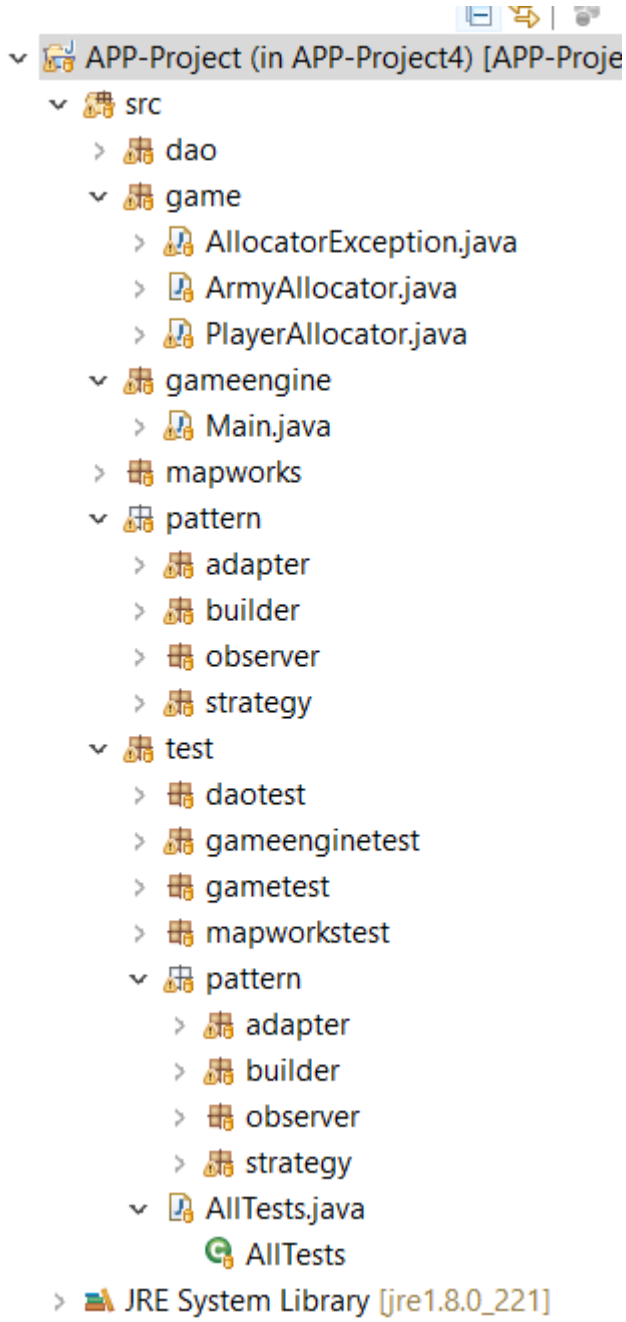
3. **Methods** are reasonably sized and perform only one function so as to avoid large and overcomplicated methods.

```
/**
 * This method adds sub-command, of removing country, to queue.
 *
 * @param countryName Country to be removed
 * @param queue       Queue
 * @return Queue
 */
public ArrayList<ArrayList<String>> removeCountryToQueue(String countryName, ArrayList<ArrayList<String>> queue) {

    // if country name is actually a tag
    if (countryName.charAt(0) == '-') {
        print("Invalid Command. Type Again.");
        good = false;
        return null;
    }

    // add valid sub-command to queue
    queue.add(new ArrayList<>(Arrays.asList("remove", countryName)));
    return queue;
}
```

4. Different packages and classes are created to provide modularity and each class is responsible for a specific entity.



5. **Use of Braces:** The opening braces are present on the same line as the method and class.

```
    for (Player p : listOfPLayers) {

        for (int i = 0; i < p.getAssigned_countries().size() && p.getUnassignedarmies() > 0; i++) {
            if (p.getAssigned_countries().get(i).getNoOfArmies() == 0) {
                p.getAssigned_countries().get(i)
                        .setNoOfArmies(p.getAssigned_countries().get(i).getNoOfArmies() + 1);
                p.setUnassignedarmies(p.getUnassignedarmies() - 1);
            }
        }
```

6. **Naming Conventions:** All the variables, methods and classes are given meaningful names that describe the intent of their usage. The following naming conventions are used in this project:-
    a) Class name is written in mixed case starting with an uppercase letter and the first letter of each internal word capitalized. Eg:- PlayerAllocator
    b) Method and variable names are written in mixed case starting with a lowercase letter and the first letter of each successive word in uppercase. Eg:- addContinent, continentValue
    c) Package names are written in lowercase letters to avoid any conflict with the names of classes.

Packages

Package	Description
dao	
game	
gameengine	
mapworks	
pattern.adapter	
pattern.builder	
pattern.observer	
pattern.strategy	
test	
test.daotest	
test.gameenginetest	
test.gametest	
test.mapworkstest	
test.pattern.adapter	
test.pattern.builder	
test.pattern.observer	
test.pattern.strategy	

7. Blank lines are added between different code components and sections to improve code readability.

8. **Exception Handling :** Effective use of try-catch blocks handling exception prone codes . Also used to handle user- defined exception scenarios.

```
if (str[i].equals("-add")) {
    checkDuplicate = 0;
    for (int h = 0; h < listOfPlayers.size(); h++) {
        if (str[i + 1].equals(listOfPlayers.get(h).getName())) {
            throw new AllocatorException(
                    "This player is already added, kindly add a new player.");
        }
    }
    if (listOfPlayers.size() == map.getListOfCountries().size()) {
        throw new AllocatorException("Sorry! Cannot add more players than no of countries");
    }
```