

Project Description:

A user will begin by running the program, the default countries with their values of the number of troops, medics, tanks, planes, etc. will be created. You will then be allowed to select which country you want to be. The alliances are hidden and appear after the user has selected a country. The user acting as the country now will be able to attack another country by iterating through a list that does not include the alliance countries. When finished choosing a country, the user will be able to attack using different methods such as air, water, or land, and some of these will be disabled if not possible such as attacking on water when the country is surrounded by land. The countries will be observed by their medics and alliance countries and when hp drops below a certain point they are notified and start implementing methods to help out. An alliance country can help out by sending ammunition and troops and vehicles. The medics will help out by healing the soldiers and increasing their hp. A country will have troops that will be able to return to the medics where they get healed by up to 50% of their initial hp and then go fight again until they die.

Extra Points:

- A country's HP will be calculated by adding up all the hp of troops, tanks, etc of the country.

Task 2:

Patterns Implemented in UML:

- Template Method
- Chain of responsibility
- Factory Method
- State pattern
- Observer pattern
- Iterator pattern
- Composite pattern
- Strategy pattern
- Prototype pattern
- Memento pattern

2.1) -Be able to choose a war theatre

-Be able to choose starting country

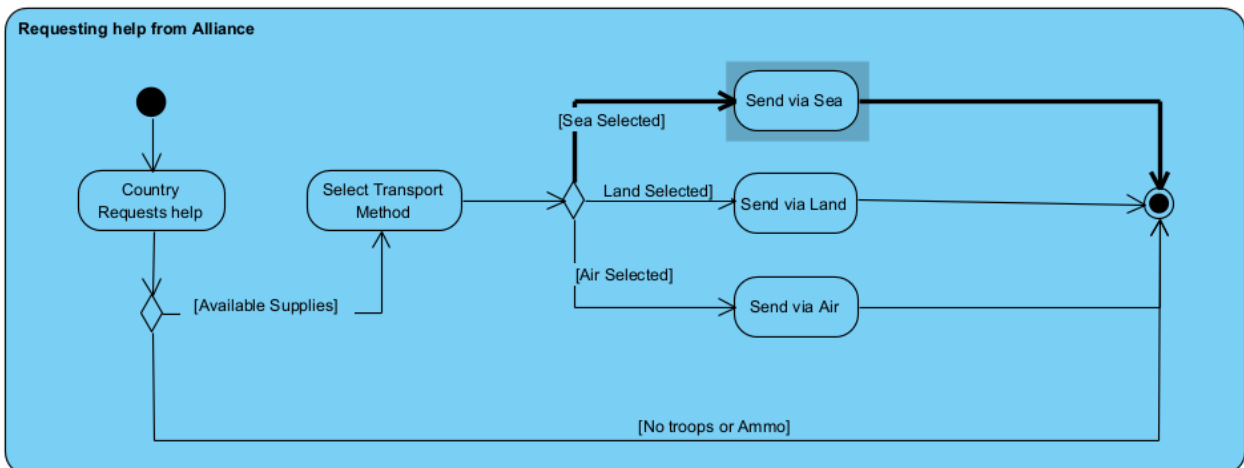
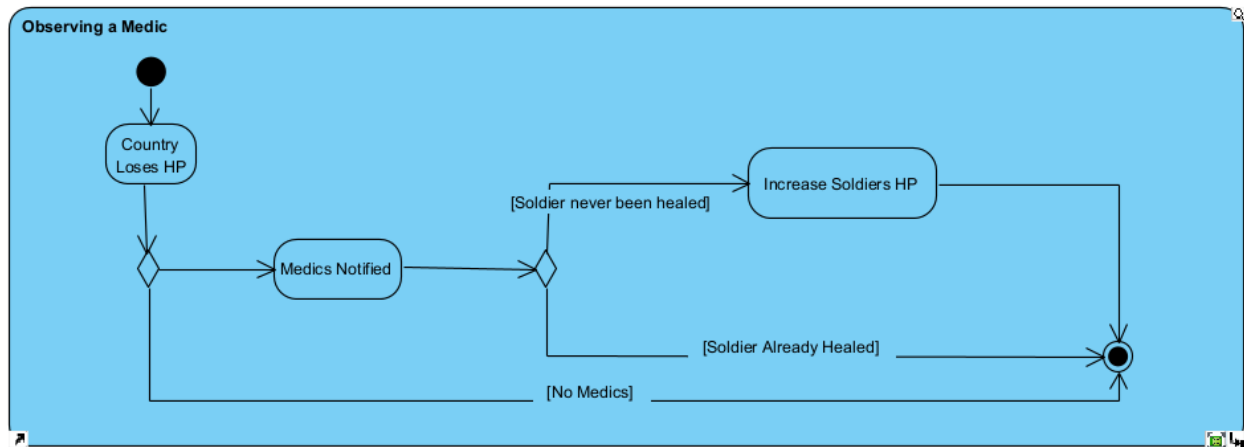
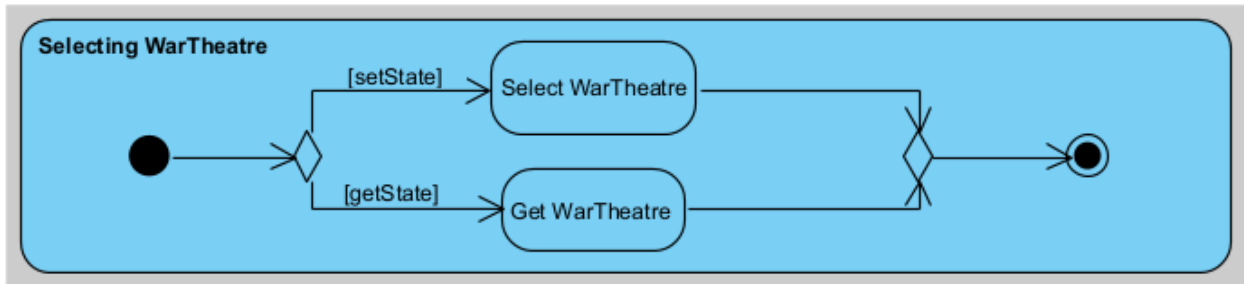
-Be able to attack other country

-Be able to request medics and troops from alliance

-A country must be able to create war participants

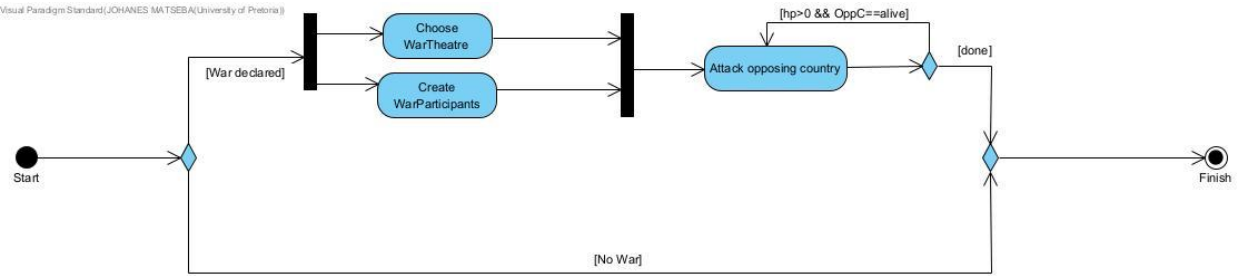
-Country must be able to join/leave alliance

-Country must be able to surrender
2.2)



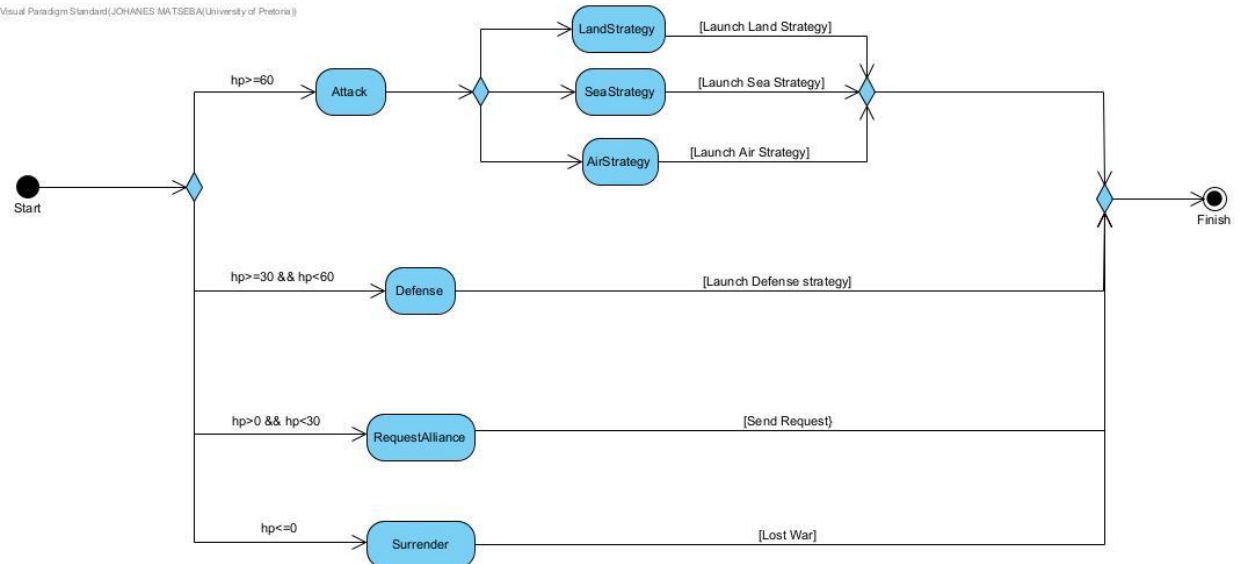
[Game Engine execution]

Visual Paradigm Standard (JOHANES MATSEBA/University of Pretoria)



[Attack opposing country]

Visual Paradigm Standard (JOHANES MATSEBA/University of Pretoria)



4.3. Patterns to meet Functional requirements:

State-Country decides between Attack, Defence, Surrender or Request Alliance State.

Strategy-Country selects a strategy to fight with in Attack state depending on its ammunition.

Chain of responsibility-Assists to choose state of country so the relevant state can handle the request.

Memento-Used to restart the game.

Composite-Allows countries/alliances to join other alliances.

Factory method-Used to create all warParticipants such as soldiers, missiles, etc.

Prototype-Used to clone instantiated warParticipants to create multiple copies.

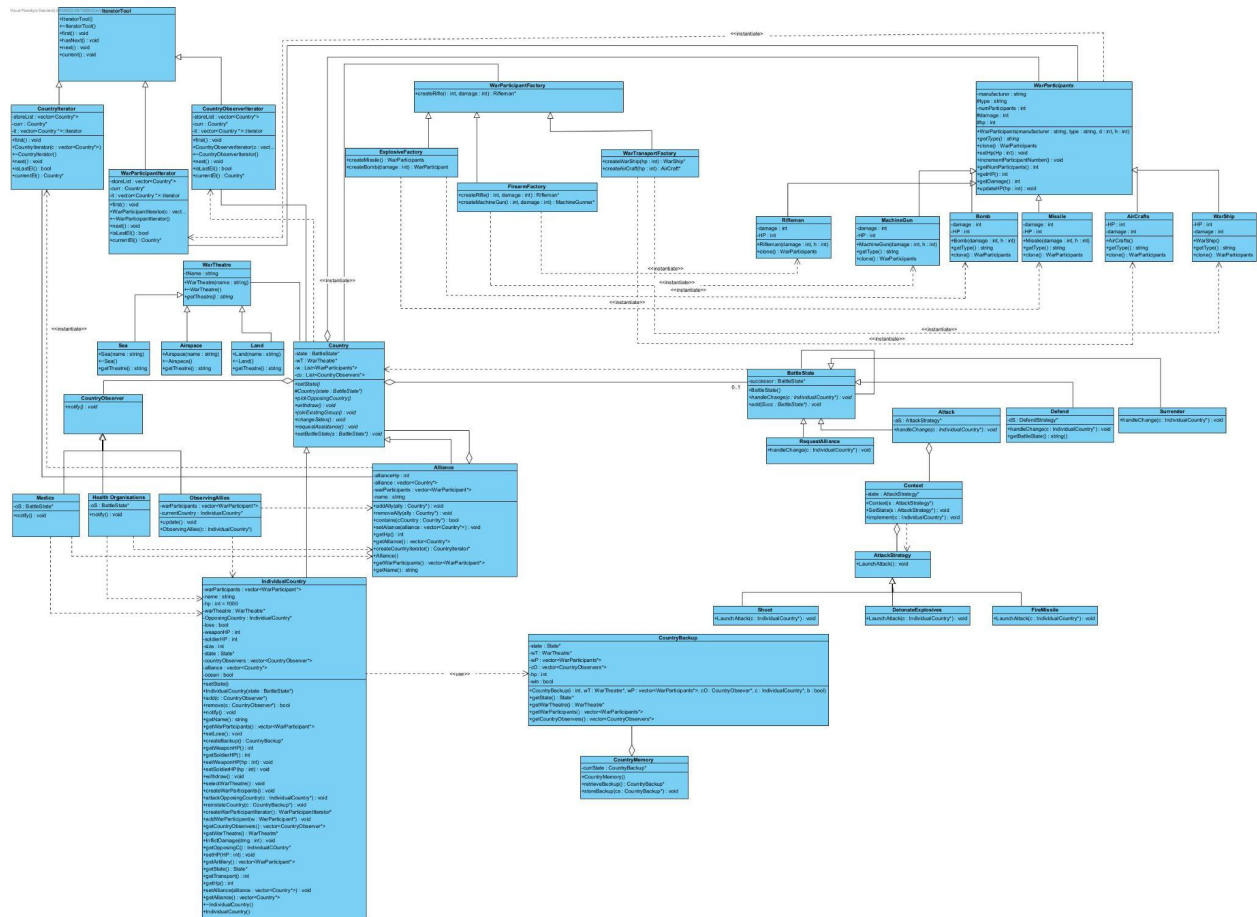
Observer-Used to observe countryHp so alliances can help when too low.

Iterator-Used to iterate through composite structure of allies and the relevant data structure that holds warParticipants

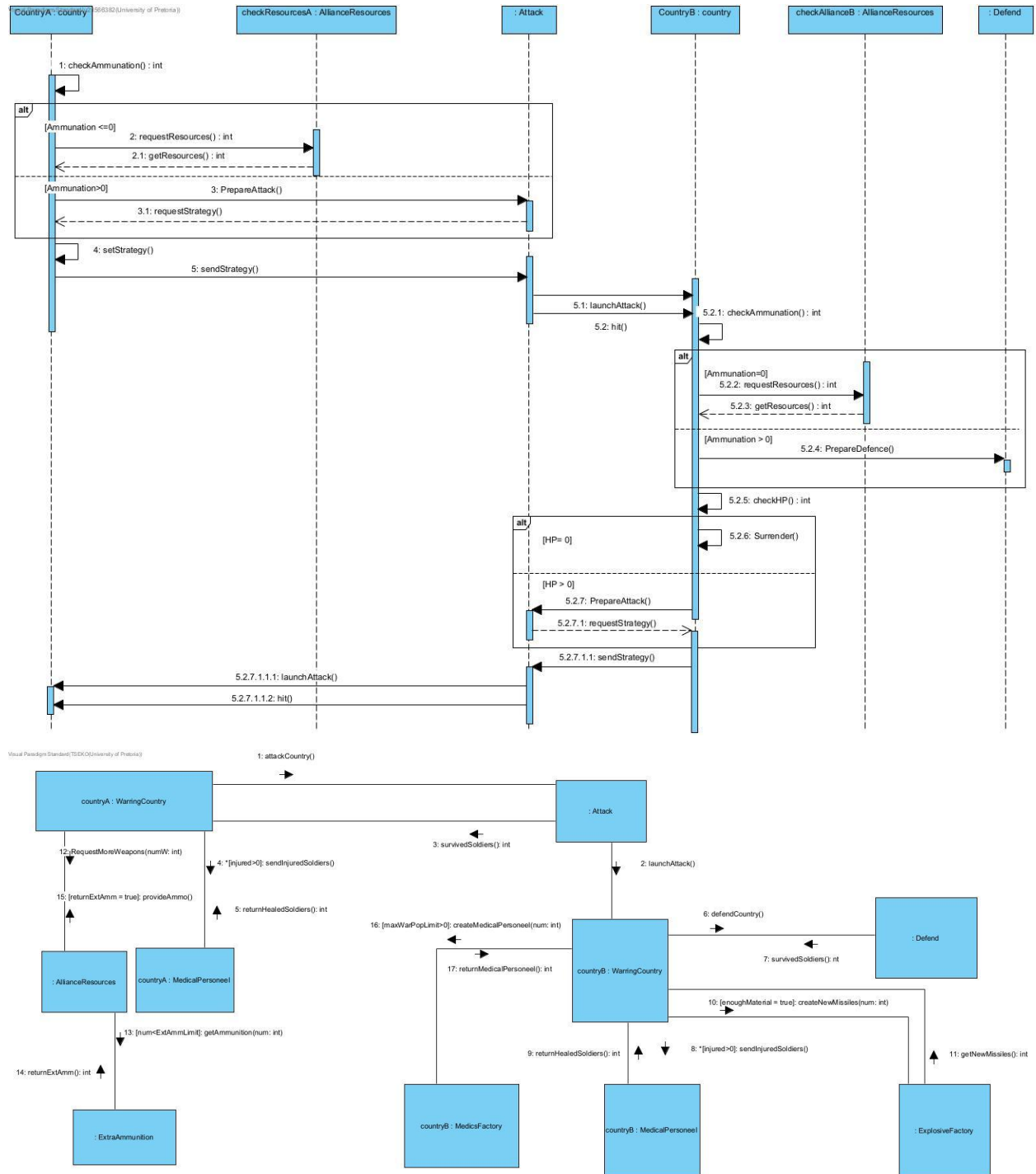
Factory method-Used to create differing warTheatres with some similarities.

2.4)

2.5)

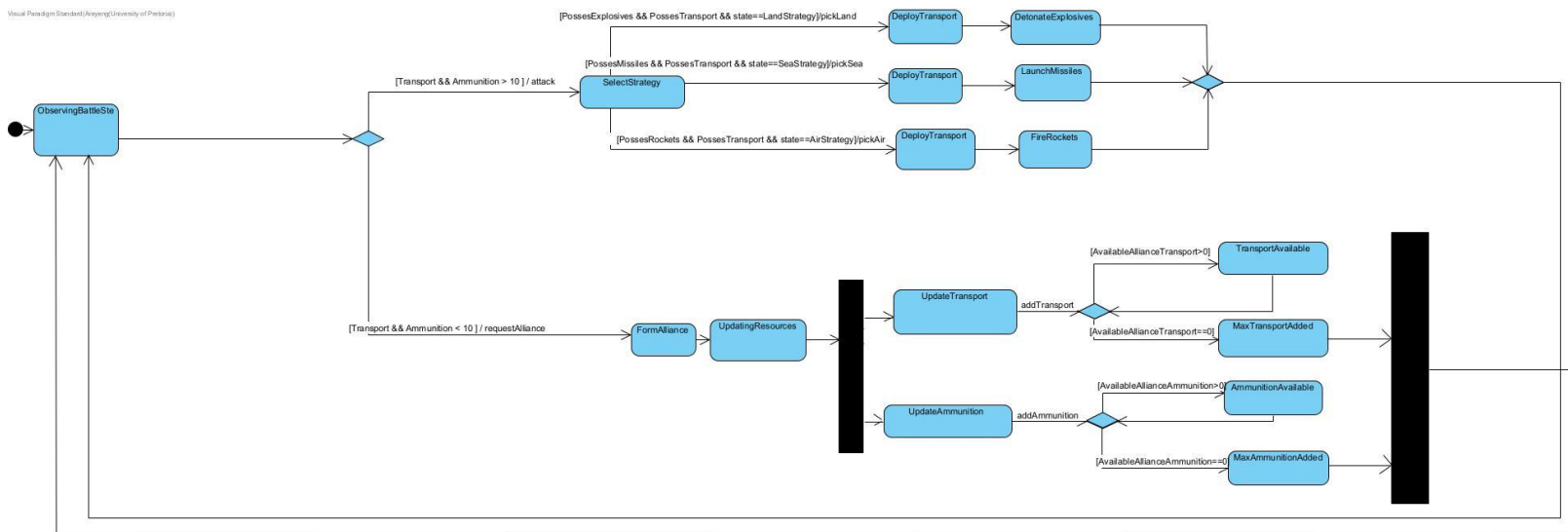


2.6)



2.7

Visual Paradigm Standard (Anyerg/University of Pretoria)



2.8

Visual Paradigm Standard (Anyerg/University of Pretoria)

