1. **Your names:** Ryan Washburne, Sukeerth Vegaraju, Minsu Gim
2. **Tentative Title:** POP-SIM (Population Simulator)
3. **The Setting:** The situation that the player is faced with is the growth rate of a made-up country that uses the growth rate of the global growth rate (which is currently 1.11%). The game is set in a government office as an official in charge of making country decisions that have effects that either increase or decrease the country’s population growth rate. It takes place in the present but it is turn-based and the turns will take the player many years into the future. From Milestone A, we are taking the global population growth rate as the growth rate for the made-up country. We’re also using many of the operators that we brainstormed in the first milestone. One of the major aspect of the wicked problem that that we are leaving out are global effects that this specific country has when making changes. The reason for this is because we deemed that aspect too large to address in a game of this scale.
4. **Initial Situation:** The initial situation of the player is of a government agent having to solve their country’s population growth rate issue. More specifically, their country is growing at a rate of 1.11% per year and they can’t support all the people with their current resources. Action is required to solve the problem and the player has a variety of actions. From the first move, the growth rate will somehow be impacted, as well as several other resources such as government funding and country resources like food and water.
5. **Roles:** There is only one role for the game, and that is of the government official in charge of implementing specific actions that affect the growth rate of the country. The role is static so its main purpose does not change throughout the game. The role is neutral, as their goal is in the best interest of everyone in their country.
6. **Objective:** The objective is for the player to reach a growth rate of 1, in which the birth rate equals death rate so that the population remains at a constant. Unless the player tries to kill the population as fast as they can, this should be the objective of the player. Of course, players will vary and they can change their objective whichever way they want.
7. **Player Affordances:** The single player can choose operators that will change the birth rate and/or the death rate of their country. The player may choose several operators, such as increase sex education, which would not necessarily affect death rate, but would decrease birth rate. Also, they might choose to use the one-child policy which will affect birth rate and perhaps death rate by increasing the amount of resources per capita with the declining population. These kinds of operators will have many types of effects on the game, and the player should really think through the kinds of repercussions these policies may have on a population. The player will be able to see the population of their country, the birth rate and death rate.
8. **Communication:** Since this game is a single player, there should be no communication with other people required.

**Implementation Considerations**

1. **Initial State:**

Birth rate, death rate are the variables that mainly influence the growth rate and therefore the overall population. Thus in our state representation, the growth rate and current population will be included. Birth rate and death rate are being considered to be in our representation, however it is not completely necessary since growth rate is the fraction of birth rate over death rate. The initial population will be 500 people, with a growth rate of 1.185.

1. **Operators:**

1) Require sex education in schools → Decrease birth rate

2) Support Planned Parenthood → Decrease birth rate

3) Increase government investment in technology sector → Decrease death rate, increase birth rate (temporarily)

4) ‘One-child’ policy → Decrease birth rate

5) Provide universal access to contraceptives to both sexes → Decrease birth rate

6) Guarantee education through secondary school (esp. girls) → Decrease birth rate, decrease death rate

7) Eradicate institutional gender bias → Decrease birth rate

8) End financial reward based on number of children → Decrease birth rate

9) Integrate population, environment, development education → Decrease birth rate

10) Tax environmental damages → Increase death rate

11) Adjust to aging population, stop boosting childbearing → Decrease death rate, decrease birth rate

12) Convince leaders to stabilize growth through human rights development → Decrease birth rate

1. **Goals and Scores:**

The goal of this game will be to get the growth rate (birth rate as related to death rate) of the population to 1.000, and keep the total population below an unsustainable value such as 10,000.

1. **Specification of First Working Code:**

The initial state will be implemented as described above, with a starting population of 500, and a growth rate of 1.185. The operators will be implemented to decrement or increment the growth rate and thus affect the population.

1. **Specification of Second Working Code:**

The second working code will essentially be the same as the first working code, with the addition of a goal state which checks that the population is below 10000 and that the growth rate is 1. There will only be one role, the player.