



Gamein 2021

Help Document

Sharif University of Technology

Industrial Engineering Department



Fall 2021

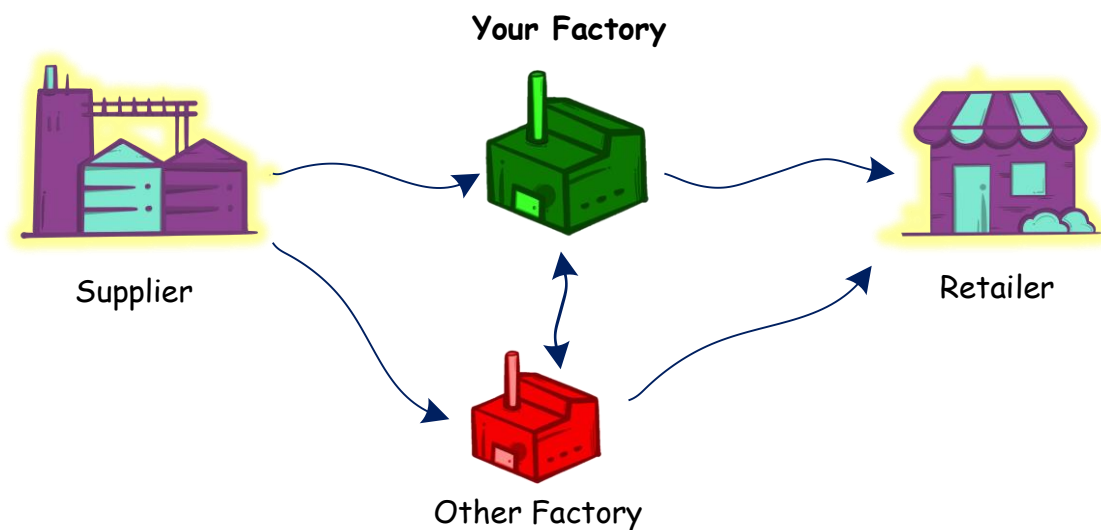


Game Introduction

Ladies and Gentlemen, I respectfully present the parallel world of Gamein 2021. We hope to be a good host for you. Unlike the real world, in the Gamein world, only money is important. Every decision must be made in this direction because when the game is over, you return to the world behind your monitor and leave the Gamein world in its eternal moment. However, if you win, you will receive \$ for your Gcoin. In this game, you do not have any tasks, except for managing your business... Having this excuse, you can clear your mind of all useless preoccupations on the 16th and 17th of December. It is recommended to have a drink with you during the competition, using it as an excuse to give up optimality for a short moment. The only prerequisite for starting the game is a ready, beautiful mind. So, are you ready?



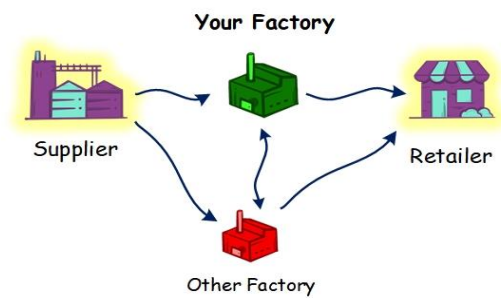
Now that you have decided to learn more about this world. I invite you to watch the following image:



In this view, your factory and its connections with other components of the game are shown. You own a beverage factory; simply! In the pre-and post-gaming world, you have to prove your abilities to others, get the knowledge you need on campus or alone, work in a few jobs that are not your interests; Provide the initial capital needed, and form your professional team; If you are lucky, you can own your own business or factory. This path is easily provided in the Gamein world. The only prerequisite for starting the game is a beautiful mind. Are you ready?

In the world of Gamein 2021, there are only three types of businesses:

- Raw material suppliers (left)
- Beverage factories (two middle factories)
- Beverage chain stores (right)



The first and third companies are led by the Lord of this world, and you take on the role of business manager, managing the factory. As you know, the manager of a business is not only responsible for the production of the product but also manages the supply chain of the company. This chain consists of 5 main processes, which are briefly described below:

Process1: Purchase of raw materials

Process 2: Primary logistics (receiving raw materials by determining the type of means of transport)

Process 3: Production of intermediate and final products

Process 4: Secondary logistics (distribution of intermediate products to other companies or chain stores)

Process 5: Pricing and sales of final products

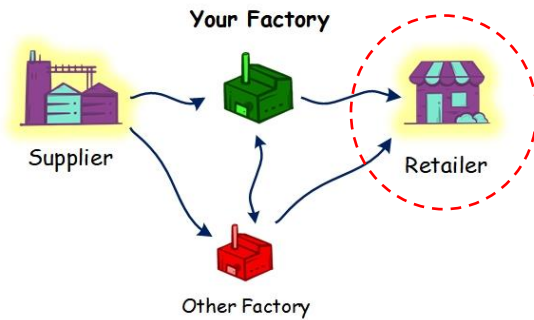
In the complex world of the 21st century, only those who think simply will be able to solve problems. Sometimes by asking a "why?" it is possible to avoid wasting the lives, time, and energy of many individuals and organizations. We can prevent complications in our interactions by asking the simple, basic questions below:

This question is the basis of game theory:

What do competitors think? And what will be the reaction?

If you are confident in your simple thinking, you can close this page and, like the world before and after the Gamein, act heedlessly like before and go on and on. But if you are conservative, or think of a 60 million game prize; I recommend you continue reading this guide. According to the figure above, and considering the importance of the endpoint of the chain, the description of the sales department is given first, and we will go back to the production and supply departments.

Sale



In the Gamein world, there are chain stores that only sell drinks. Your job is to meet the demand of these stores. If you break the game production record by building your 15238th production line, you have only filled your warehouse and sent your capital into hibernation until you have sold those products.

Therefore, demand analysis of the game will help you to produce the required amount. After forecasting the demand, you should plan your production and build your supply network to supply the required materials. These will be mentioned in the following sections. Now suppose you have 1000 pieces of a final product ready for sale in stock. To sell them, you have to go to a chain store and give them an offer that they cannot refuse!

This offer or so-called “bid” specifies that:

- How many energy drinks? (Amount)
- At what price? (Price)
- From where? (Distance)
- And with what brand (score)?

Your offer goes to the store manager. This manager reviews all offers from all brands and fills his store shelf with different brands using a specific pattern. As a reward for those of you who have read the text so far; you can use the following trick to overtake others:

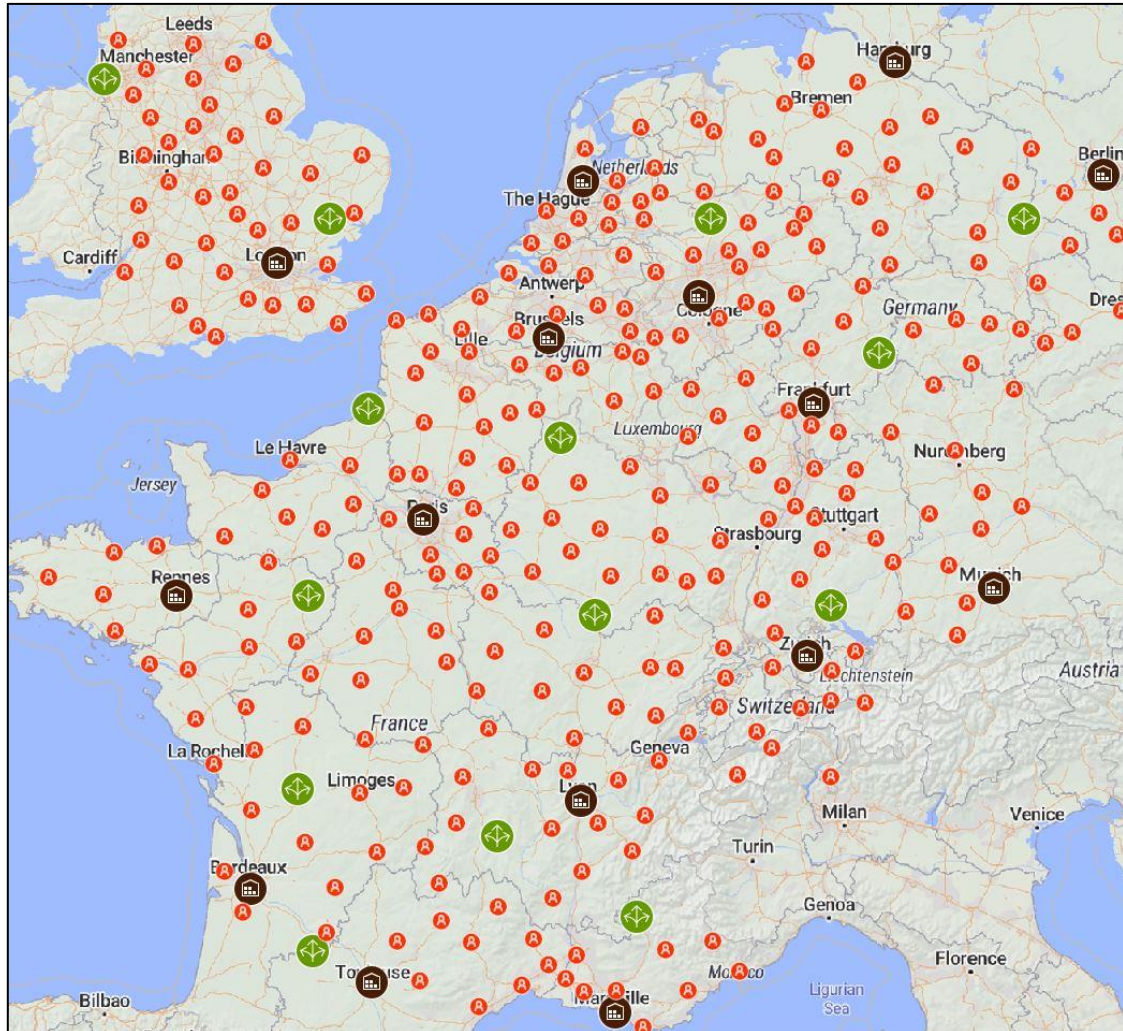
The higher the brand rank, the lower the price and the shorter the distance, the more credibility you will have with the store owner and she will allocate a large shelf for your beverage brand. But a vital thing to remember is that these three parameters are relative, I mean lower price or better brand score is relative and compared to other participants.

I hope the following table helps to clarify the subject:

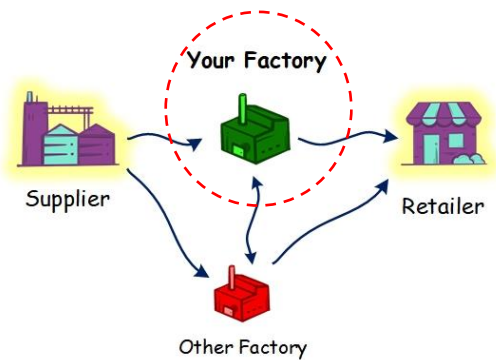
You must specify these two variables for each sale. (There is also a long-term sales mode in the game)		Automatically the result of your previous decisions is determined each time	
Price	Supply	Brand Score	distance
Your selling price must be within the allowed price range of the product.	The amount you want to offer to the store.	Depending on the quality of the products, the number of exchanges and your market share will increase or decrease.	Once your location is marked on the map, your distance to the end of the game with any other business will be determined.

The game world is a map of Europe. This is the world of Gamein. The red dots are the factories, the green dots are the suppliers of raw materials and the black dots are the chain stores.

This image was designed using “AnyLogistics” software.



Production



In this part of the value chain of the game, each team must set up its production line and produce different products according to the resources at its disposal.

In this way, the producer must be fully aware of the products as well as the raw materials required for production so that he can turn them into intermediate and final products by creating added value on the raw materials.

Supplying the required raw materials also has its challenges and you should pay attention to the moment and the amount of the order. Fixed and variable production costs are other issues to consider. To make this world more tangible, let's review the objects in it.

Game objects

Objects, goods, or game products consist of three main categories.

- **Raw materials**

Raw materials can be obtained from suppliers of Gamein, which can be seen below in different categories:

1. Packaging raw materials
 - Silica
 - Polymer
 - Aluminum
2. Fruit concentrate
 - Cherries
 - Pineapple
 - Apple
 - Orange
3. Cereal extract
 - Cereal sprouts
 - Razak
4. Additives
 - Caffeine
 - Preservative
 - Sugar

- Essence
 - CSD Essence
 - VIT Essence
 - HOP Essence
- **Intermediate goods**

Intermediate goods are goods that have gone through the stages of production and have become semi-finished goods that can be used to produce final products or exchanged with other manufacturers.

5. Drink syrup
 - Soft drinks
 - Malt syrup
 - Fruit syrup
 - Mango syrup
 - Orange syrup
 - Pineapple syrup
 - Cherry syrup
 - Energy syrup
6. Carbon dioxide
7. Packaging containers
 - 250 cc glass packaging
 - 500 cc aluminum packaging
 - 1000 cc Plastic packaging

- **Final products**

Final products are in fact products that are in demand and Gamein buyers will be willing to buy them according to the demand they are announcing.

8. Soft drink 250 cc
9. Soft Drink 500 cc
10. Soft drinks 1000 cc
11. beer 500 cc
12. beer 1000 cc
13. orange juice 250 cc
14. cherry juice 250 cc
15. mango juice 250 cc
16. pineapple juice 250
17. Energy soda 500 cc

- **Volume ratios**

These ratios are determined to make the game number-oriented their dimensions and prices were added to the game according to these units. The following game products tree were shown for interpretation:

Volume equivalent to one unit	Product Title				Product category
5 cc	Silica aluminum polymer	Essences Preservative sugar Caffeine	Hops Cereal sprouts	Cherries Pineapple Mango Orange	Raw material
100 cc	Carbon dioxide	Mango Fruit syrup Pineapple Fruit syrup Orange Fruit syrup Cherry Fruit syrup		Soft drink syrup Malt syrup Energy syrup	Intermediate goods
250 cc	Glass packaging 250cc aluminum packaging 500cc Plastic packaging 1000cc	250cc mango juice 250cc Pineapple Juice 250cc orange Juice 250cc cherry juice		Soda 250cc Soda 500cc Soda 1000cc beer 500cc beer 1000cc Energy 500cc	Final products and packaging

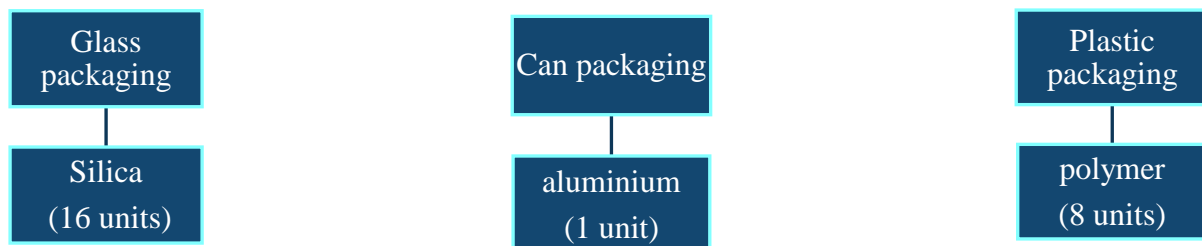
- **Product Tree (BOM)**

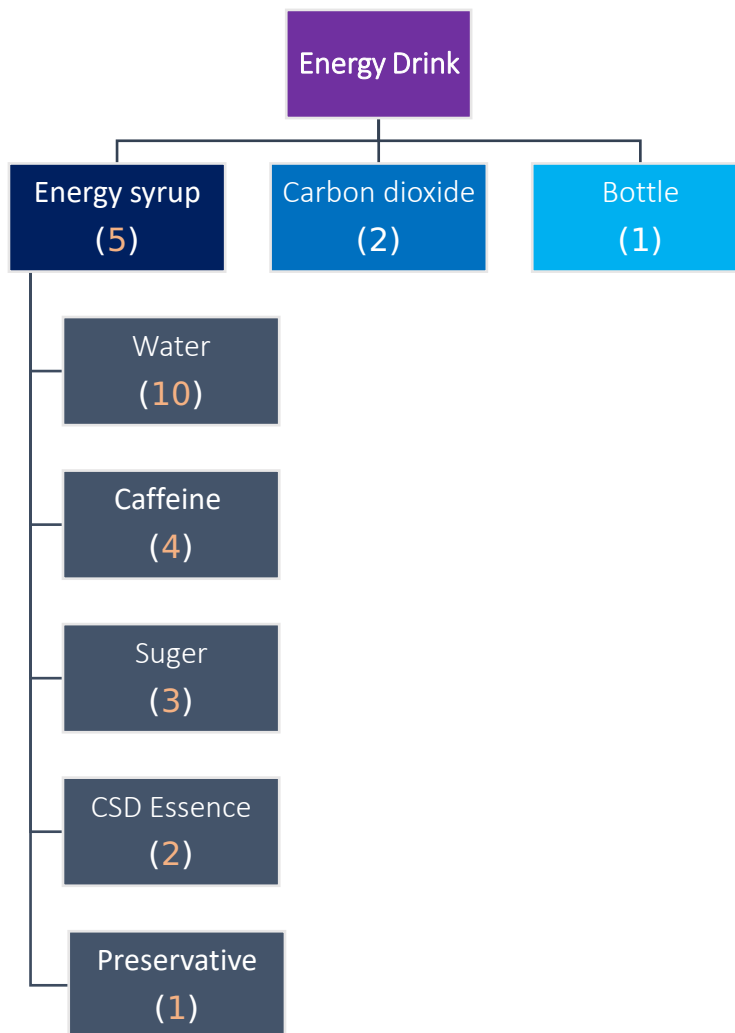
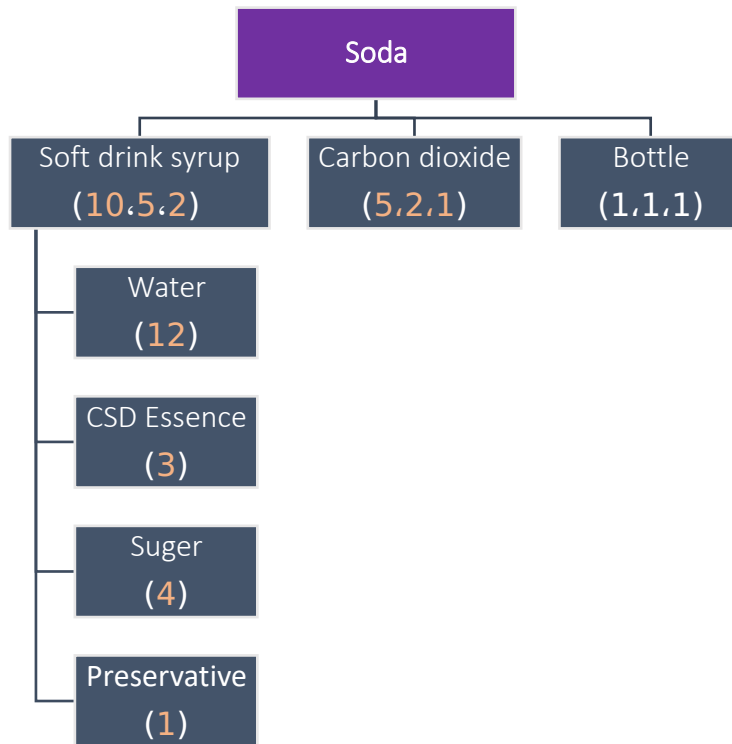
The product tree or Bill of Materials shows what combination of materials leads to the production of another product.

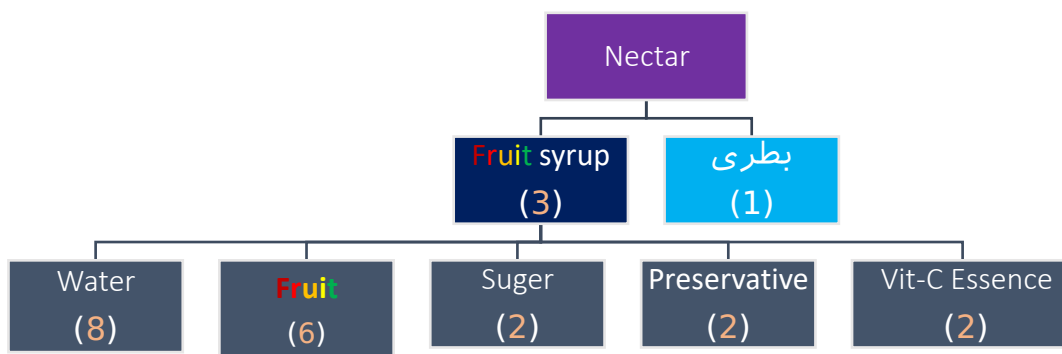
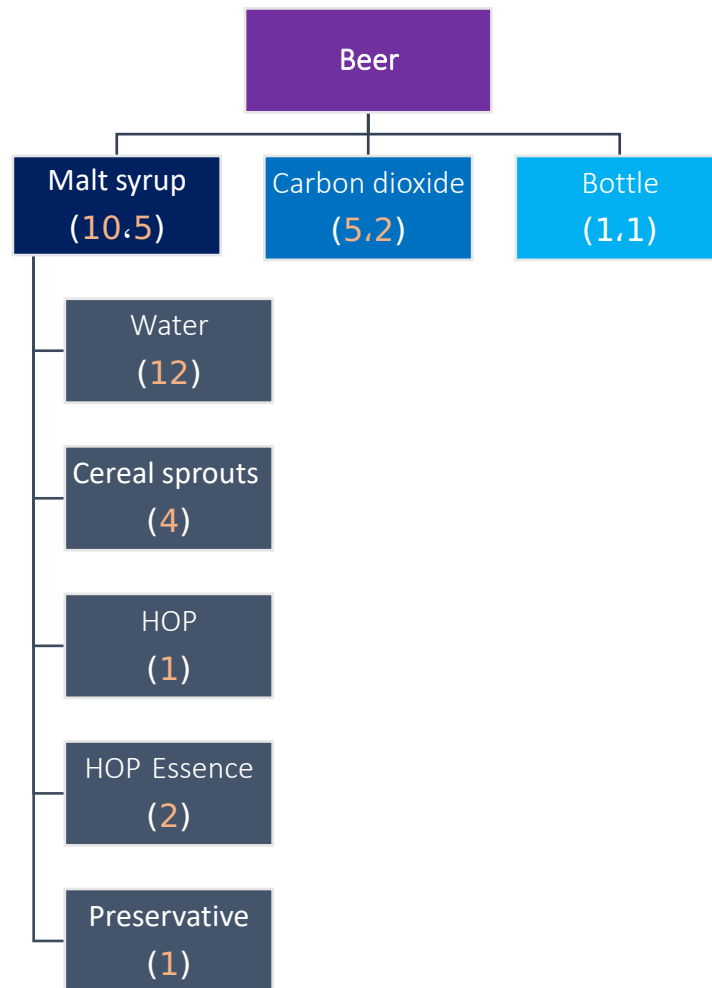
The numbers written in the parentheses show the number of product units required to produce an intermediate or final product unit. BOM of the final products for different volumes inside the parentheses are shown as follows:

(for 1000cc, for 5000 cc, for 250cc)

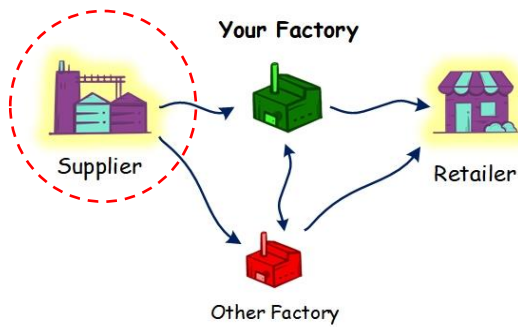
For packaging these items will be as follows:







Supply



In the supply section, you must provide the raw materials (or intermediate goods) you want. To buy raw materials, you have to go to the map and select the supplier you want.

Distance is a criterion for selecting suppliers in a supply chain.

Inventory of these suppliers of raw materials is inexhaustible, like oil wells, and can be bought as much as you have the capacity; However, their prices will fluctuate according to market needs and weather conditions. Price floor forecasting is one of the types of data-driven analysis in the business environment.

Based on the vegetation of different regions, fruits do not grow equally in the different parts of Europe. Therefore, transportation management is interpreted as the duty of the logistics manager to receive the required materials on time from the map.

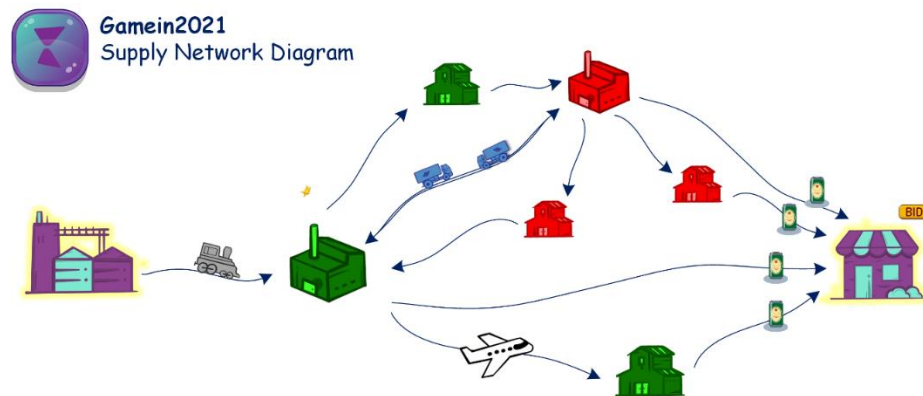
Game transport vehicles have the following specifications:

Type of transportation facility	Speed (Km per hour)	Transportation costs (Per vehicle and one kilometer) In Gcoin units	Device capacity for raw materials	Device capacity for intermediate goods	The capacity of the device for packaging and final products
Plane	800	5000	500000	40000	10000
Train	70	400	1000000	80000	20000
Big Truck	80	450	250000	20000	5000
Small Truck	90	300	200000	16000	4000

Check the game supply chain

The supply chain designed is a convergent chain in which several raw materials become an intermediate commodity, and these intermediate commodities become intermediate products by being filled in packaging containers.

The communication schematic of this chain is as follows:



In the communication network, players can obtain their raw materials from Gamein suppliers in different parts of the map; Exchange their intermediate goods with each other, and finally sell their final products to Gamein stores.

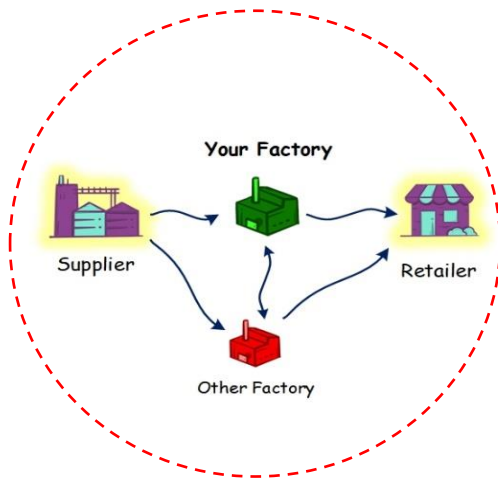
Cross-chain contracts allow businesses to build coordination chains and, by pursuing the goals of the entire chain, become profitable and surpass other chains.

At the same time, there is competition between companies because only Gcoin is important ...

Game Geography

Factories	300
Suppliers	14
Distribution Centers	300
Retailers	15

Country	Factories
France	120
Belgium	20
Germany	80
Netherland	20
Switzerland	20
England	40



Describe the features and connections of the areas

Each player will have a geographical location and the connections between them will be determined by the exchanges they make. Whenever a transaction is made between two entities, a line of communication is drawn between them, and whenever a transfer is made from one to the other, this movement will be shown by moving vehicles on the map at the same time.

What is a Distribution Center or DC?

Distribution centers play a key role in supply chain management and are used to distribute products more widely and better in a geographical area. Distribution centers are a kind of high-capacity warehouse for a factory's products, which are used for faster and cheaper transportation. For example, a soft drink factory is located in Tehran and sells soft drinks to three large stores in Isfahan, Shiraz, and Bushehr. Since every time he wants to ship these products from Tehran to destinations, a great deal of money should be paid, the company can buy a distribution center in Shiraz and transfer the products there. This reduces the per capita cost of transporting products and makes it easier to manage.

Brand Score

Defining a brand is not as simple as we think. Because we are dealing with all the assets of a business and its most important and valuable assets. Therefore, to define the brand, different perspectives are considered from different aspects such as economic, commercial, identity, and attitude.

But overall, a brand is the method and the way that a company, business, organization, and even an individual is perceived by others. Anyone with experience in branding has an understanding. A brand is more than a trademark, a design, or a symbol and we should consider it a recognizable feeling of a product or business.

Brands become immortal in the minds of the people who live with them. Employees, shareholders and investors, the media, and most importantly customers have the most interaction and experience from one brand. However, many people commonly refer to the brand as a trademark. Why a business is more often repeated in the minds of the audience with its name?

But, in a word, brand means others' perception of us.

In the game, to enter this important component, a score called Brand Score is used for each team to model the mentioned concept.

This score is set at 20 at the beginning of the game for everyone and will be changed by the following pattern:

- I. This score decreases steadily by 0.2 per week.*
- II. For each termination of the sales contract or lack of inventory, the brand score is reduced by 0.2.*
- III. For the production of each final product with level 1 quality, 0.0001 is added to the score.
And respectively for levels 2 and 3, 0.0003 and 0.0006 Score will be Added.*
- IV. For every exchange that the team makes with other teams, this point improves by 0.05.*

The minimum score will be 1 and the maximum will be 100.

Method for Evaluating Participants

In this game, you will be ranked based on the value you created. Your value will be calculated by your assets and Gcoins.

Your assets (after a 50 percent depreciation reduction at the end of the game) will be added to your coins and it makes your value. The first three teams win the prizes.

In the Gamein world, companies are audited every six months and if they were broke (negative Gcoin), they would be *eliminated* (Like Squid Game!).

Apart from the main prizes, other prizes will be given to superior teams based on these KPIs:

Higher brands, more expanded supply chain, Lower price fluctuation, Lower Costs, and

Scenarios for starting the game

At the start of the game, you enter the Gamein world with 210 million Gcoin. Then you should choose the location of your factory. This location can be interesting for other participants, so an auction should be organized to assign the location to the highest bidder. If a team never wins a location, the game assigns one of the free locations to them randomly. These auctions are organized in 3 rounds, each lasting for 5 minutes. After that, the game will start.

Main Rules of the Game

- Production Lines Are Out of Reach During Production Time and After Finishing Production, Products Are Entered into The Related Warehouse.
- Vehicles May Have an Accident with a Probability ($P = 0.05$) And the Products Get Wasted. Buying Insurance Is a Way for Managing These Incidents.
- Repealing Sale Suggestions or Inventory Shortage, Lead to A Penalty Equal To 51 Percent of The Expected Sale Revenue and The Contract Will Be Canceled.
- If There Isn't Enough Warehouse Capacity, Extra Received or Produced Stock Would Be Discarded. In Addition, All Game Objects Will Be Worthless in the 100th Week.
- For Making a Contract Between Teams, The Suggested Prices Should Be Equivalent for The Two Sides. Having The Equivalent Price Means That Both Sides Have Signed a Contract.

Good Luck

Written by H. Mohammadiha

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