

IT214 - DBMS

Lab-7

Group : 4

Section : 2.15

Group Members :

Ketan khunti - 202001213

Rishabh Nandania - 202001209

Description

Among alcoholic drinks, Beer is quite common and popular in almost every Country of the World. People from different Countries drink beer in varying amounts, much like a soft drink in European Countries it is just a substitute for water. The alcoholic contents and main source stuff also keep varying according to the tastes of the major part of the population of the particular country although it is a fashion to ask for beer of every origin in every Country. Formulations of beer manufacturing are done with the view of availability of the raw materials in that particular part of the World where the brewery is proposed to be established. In most of the parts of the world, barley is a universal source of beer extraction. But, beers are manufactured from Chamomile flowers and powdered gingers etc. as well. Separate formulations have been adopted for every major ingredient used in brewing & distillation of beer. All the ingredients are placed in a container, Water (to boil) is poured into it. When fully cooled, yeast is added. As soon as fermentation starts, pour it into the fermentation jar. The manufacturing processes and quality control measure, can make the

beer nutritions, energy packed and refreshing. Among All alcoholic drinks beers have become so common, as if they were soft drinks. Beer in the Western countries is an important constituent of daily food. The most important characteristic of a drink is to keep the body warm and certain refreshness throughout the body. Beer is a dilute alcoholic product.

Raw materials:

barley, malted to develop the necessary enzymes and the desired flavors. naked rice, oats, and corn. Brewing sugars and syrups(corn sugar, glucose) and yeast

Beer is produced in three steps

1. brewing of the mash through to the cooled hopped wort
2. fermentation
3. storage, finishing and package

Types of beers:

- Lager: Beers made with yeast that settle on the bottom (*Saccharomyces carlsbergensis*) of the container used. Thus, all the yeast and other material settles on the bottom which results in a clear beer.
- Pilsner: A colorless lager beer originally brewed in the city of Pilsen. Water used for this style of beer tends to be harder, with a higher calcium and magnesium content than water used for lager. The color of pilsner is also lighter than that of lager beer.
- Ale: Beers made with yeast that floats (*Saccharomyces cerevisiae*) to the top of the brewing vats, resulting in a cloudier beer. They tend to have a higher alcohol content than lagers.

- Porter: A very dark ale. The darker color and special flavor comes from toasting the malt before brewing. This usually results in a stronger taste and higher alcohol content.
- Stout: A very dark, almost black ale. The dark color and roasted flavor is derived from the roasted barley, and/or roasted malt

Production process

- The entire mash is passed to a filter press or a strainer where the wort is separated from the insoluble spent grains through a sloped false bottom and run into the copper wort cooker. For recovery of all substances water at 74°C is sprayed.
- The wort is cooked for 1-1.5h . To concentrate wort to the desired strength. To sterilize it. To destroy all the enzymes. To coagulate certain proteins by heat(82°C).
- Modify its malty odor. To extract the hop resins, tannin and aroma from the hop which are added during the cooking process.
- At the end the spent hops are separated from the boiling wort very quickly in a whirlpool separator. Wort is then cooled in a heat exchanger to 16°C and then aerated.
- The initial fermentation temperature is 4 to 6°C and increases to 14°C, during which the conversion of sugar to CO₂ and ethyl alcohol by the enzyme yeast occurs.
- The yeast gradually settles to the bottom of the fermenting tanks in about 7 to 10 days.
- The beer from the fermenter is sent to the lagering tanks where second fermentation takes place. During this time the taste and aroma are improved and tannins, proteins, and hop resins are removed by settling.

workflow of production and distribution in factory

- The working of this database starts from the inputs required in the production of beer. The stock of the ingredients.
- From there, it goes to the production department, where the required amounts of ingredients for each type of beer is needed. They ask the stock department for the availability of ingredients in order to complete production
- There is also an equipment check department that maintains the machines required or are working or have been affected by some issues.
- If all needed machines are working fine and the factory has enough stock of ingredients then the production department starts production.
- Now the sales and goods department receives the produced goods and is now ready to be sold to the buyers.
- Stock already produced is ready to be sold on some requirements which is that the order has to be in a large number. You cannot ask for just a bottle or a carton.
- Now if the buyer wants to place an order if his requirements are not in stock, then he can place an order with some amount in advance according to the quantity and that advance cannot be refunded once the ingredients are ordered. The buyers need to provide a valid government verified document that makes them legal to buy our stock.

This was the working of the factory.

working flow of database during production to distribution process.

Authorization :

- There is an admin in the factory who have all kinds of access to the database.
- Admin can grant access to others and also can revoke access from others.

Data insertion into database

- There is a different table for each department.
- employees of one department can only update / insert / delete operations on their department table only.
- although, they can access some unrestricted information from other departments for read only purpose.

1) Admin

- Admin will manipulate information about current employees working in the factory. I.e How many employees are on leave today , what are the salaries of the employee,name,age,gender,etc..

2) Ingredient department

- This department will only manipulate information in the database related to ingredients needed in production of beers . i.e., in how much stock specific ingredients will be needed , cost , availability etc.

3) machinery department

- This department will manipulate information about machines used in production like i.e., how many and what kinds of machines the factory has, what is the current status of machines , how many machines are not working , cost of machines etc.

4) Production department :

- This department manipulates information in databases related to the production process of beer. i.e., which beer is to be produced ,

how much time it will take to produce the required stock of a particular kind of beer etc.

5) Stock and sales department

- This department manipulates information about current stock that has been produced and also required stock by different distributors that will be produced.
- Also, which beer has more outcome in market than others and which beers are not in demand.

Reading data from database

There are two types of reading access from database

- 1) **Access within factory** (among employee or different department)
- 2) **User access** (distributors who want to orders beers in stock)

1) Access within factory

- employees of one department can only do update / insert / delete operations on their department table only.
- although, they can access some unrestricted information from other departments for read only purpose.

2) User access

- Distributors can only access information related to product details .

- Also , they can see what the current stock of a particular type of beer in the factory.
- if their demand is fulfilled within current stock they can directly order it else they can place order for production of their demand.

5. User Categories and Privileges

- There is an admin who can access data of the entire database.
- Then there are other departments which access their own department data and also the data relevant to their department from other departments.
- For example the sales and stock department can access the production department's data to check the availability of the stock of particular beer or beers.
- The production department accesses the data of the ingredients department in order to make the product and the machine department for the working of the machines.
- The users(distributors who want to buy in stock) can only see the data related to products only. Then I can not see what is going inside the factory. I.e., he can not see how our production process works etc.

6. Assumptions:

- We expect to have large orders from clubs,pubs and bars who require beer on a daily basis
- We expect liquor shops to buy in stock from time to time for sales

- The targeted audience is usually between the age of 21-35
- We will provide an appreciable discount to distributors who buy beers in larger quantities so often.

7. Business Constraints

In order to buy/order from this factory you need to:

- Provide a legal age document
- Provide a legal document about your company if you are buying or placing a large order(eg for clubs,bars,liquor stores etc)
- You cannot place a small order (minimum requirement has to be 10-15 cartons)
- You need to pay some amount in advance if placing an order
- Once the ingredients are bought or the production has started, the advance will be not refunded
- Your company or store should be of a state or country where alcohol is legal
- Provide a working contact number

1. Noun (& Verb) Analysis.

Nouns	Verbs
Beer	Drink
Raw materials	brewing

brewery	Producing
Chamomile flowers	toasting,manufacturing
powdered gingers	toasting ,manufacturing
ingredient	manufacturing
fermentation jar	coagulate ,fermentation
nutritions	
alcoholic drinks	
Water	Producing
soft drinks	
daily food	
product	
barley	Producing
flavor	
rice	Producing

oats	Producing
sugar	Producing
syrups	Producing
glucose	Producing
yeast	Producing

Address	
Pilsner	categorize
calcium	Manufacturing
magnesium	Manufacturing
Ale	categorize
cloudier beer	
alcohol	
Porter	categorize
Stout	categorize
roasted barley	Producing
roasted malt	Producing
aroma	fermentation
tannins	fermentation
proteins	fermentation

production	
production department	Producing
Ingredients department	Stock
stock department	Demand
equipment check department	
machines	Working,Producing

factory	Brewing
stock	
sales and goods department	Receives,Distributes
cost	
order	Buying
Id proof	Buying
admin	Grant , Revoke,Access
department	
employee	working,Insert,Update,Delete
salaries	
name	
age	
gender	

status	
Availability	Buying
distributor	Buying
Buyer	Buying,ordering
demand	

clubs	Buying
-------	--------

pubs	Buying
bars	Buying
liquor shops	Buying
enzymes	coagulate
Contact number	

2. Create Table.2. & Table.3. as per the below-given format for the accepted nouns list.

Candidate entity set	Candidate attributes set	Candidate relationship set
Beer	Type, alcohol %, cost, Availability	Brewing, searching, producing
Raw materials	Barley, Naked rice, Oats, Syrup, Sugars, yeast	brewing
admin	Name, Age, Gender,	Grant role

employee	Name Age Gender Id Department salary	Working, grant role
Buyer	Type, Location, Quantity, Id proof, Contact no	searching, ordering
Production Department	Type of beer, Required amount of beer, Production time, Total production cost, Throught,	Producing, ingredients needed, machines working fine
Machines	Type of machine, Working fine , Cost of machine, Efficiency of machine, Avg. maintenance cost for machine,	Machines working fine, working in
stock	Type of beer, Stock amount, Stock needed Stock to be produced, Required stock	demanded stock,working in

	above 20 carton or not , Advanced amount paid or not,	
Sales	Type of beer, Cost, Market demand, Profit, Sales, Total revenue,	Ordering, demanded stock, working in
Ingredients	Ingredient name, Available amount, Currently require amount, Amount to be bought,	Ingredients needed , working in

3. Create Table.3. as per the below-given format for rejected nouns list.

Noun	Reject Reason
Raw materials	Duplicate
brewery	Duplicate
alcoholic drinks	Duplicate

soft drinks	Vague
daily food	Vague
Product	General
cloudier beer	Irrelevant
alcohol	Irrelevant
Availaility	Duplicate
distributor	Duplicate
Chamomile flowers	Attribute
powdered gingers	attribute
nutritions	General
Water	Attribute
barley	Attribute
rice	Attribute
oats	Attribute
sugar	Attribute
syrups	Attribute
glucose	Attribute
yeast	Attribute
cost	Attribute
Id proof	Attribute

salaries	Attribute
name	Attribute
age	Attribute
gender	Attribute