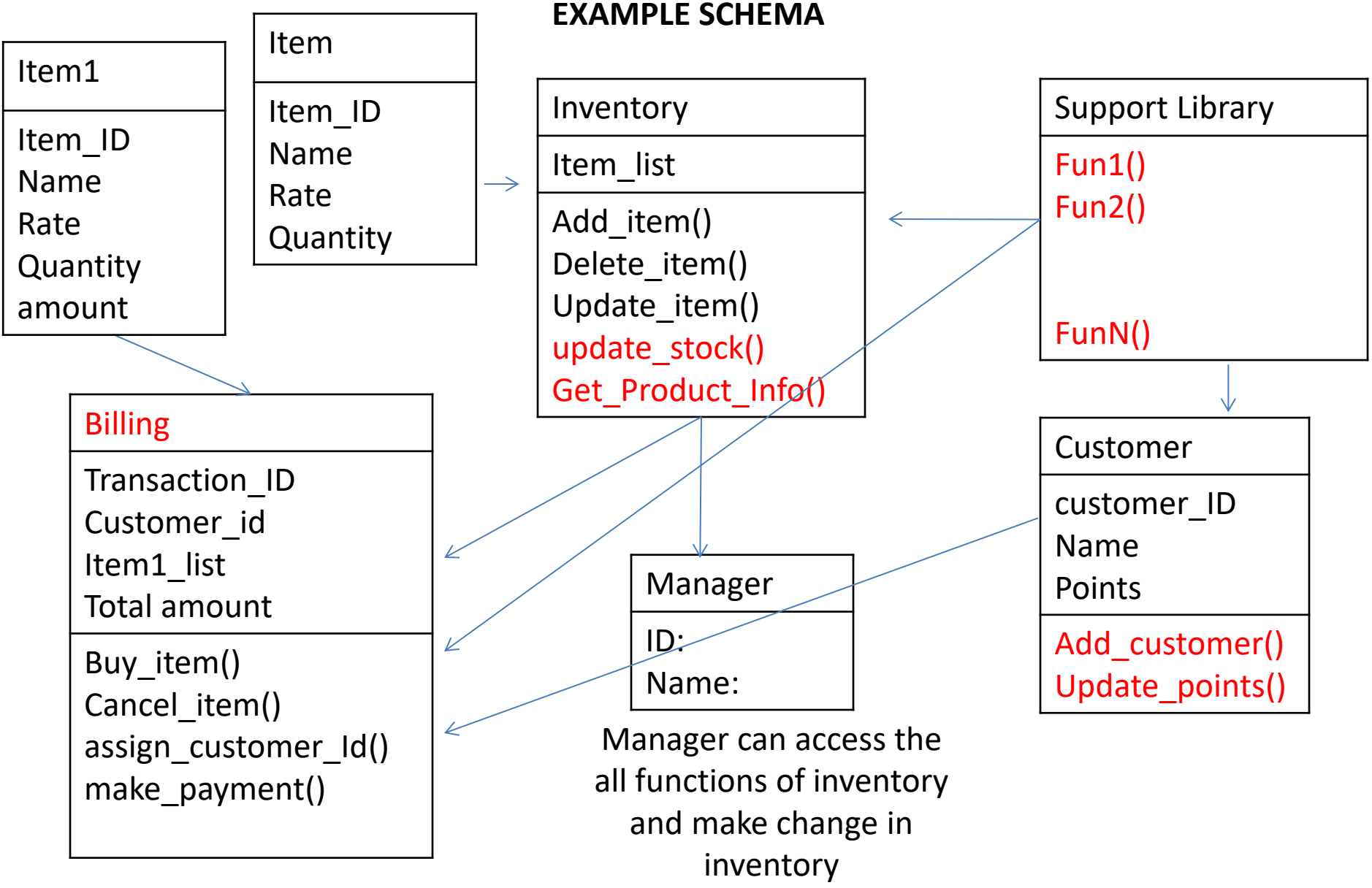
Final Assignment
SuperStore

IT206:DSA-LAB:2020

TASK

- ***YOU NEED TO WRITE C++ CODE (application) for supermarket scenario***
- **There is inventory dataset(object) that maintains the items and its stock information**
- Customer buy the items and go to billing counter
- **At Billing counter, bill is generated having item information, total amount , customer id and transaction id; customer rewarded with some points; in parallel one need to update the stock and customer points**

EXAMPLE SCHEMA



Manager can access the all functions of inventory and make change in inventory

Billing object can not access the Add_item(), Delete_item() and Update_item()
e.g. Billing object only have access to change quantity

TASK

- *item and customer dataset is bigger*
- *Searching and update of inventory information and customer information is frequent*
- *Above schema is just for outline, you may define your member functions, but with informative names; you may create additional objects or you may change objects*
- *But, try to keep Inventory database(object), customer database (object), billing object and manager object separately.*

INVENTORY object

- UPLOAD DATA TO INVENTORY
  - Remember we have limited memory and bigger inventory data
  - What is your structure of inventory object? Array, link-list or hash or something else or combination
  - Item_ID is the 12 digit number

Manager Object

- Manager can upload and update the inventory data
- Manager can retrieve any information about item and can make any changes to the inventory
- Manger can add or delete the product from inventory; and can change the rate, and quantity of the product e.g. update_item()

Billing Object

- It is the agent having functionalities that you generally encounter at billing counter
- On calling make_payment() function, it print the bill containing
  - On the top of bill Transaction_ID and Custormer_ID. Then product Id, rate, quantity, amount
  - at last total amount
  - You need to adjust stoke of inventory along with buy or cancel process or just after make_payment() executed
- If there is new customer; add customer to customer dataset , Here Phone No. is customer ID

Customer Object

- It is database of customer information
- Remember, number of customer may be high in number in future
- What is your structure of Customer dataset ? Array, link-list or hash or something else

- When customer purchases the items. Total amount paid is added to the points in customer database

- Customer object is accessible from billing object

Support Library

- This object is accessible from billing, inventory or any other object if required
- you can right the common and supportive functions to this library

Input Inventory example

Product ID	Name	rate	quantity
100000100001	product_A	100	100
100000100002	product_B	200	100
100000100003	product_C	50	200
100000100004	product_D	40.50	200
……..	…….	…….	…….
200300100001	product_Q	1000	100
200300100002	product_X	200	100
200300100003	product_Y	500	300
200300100004	product_Z	400.50	400

Inventory upload by Manager Object; using add_item() or update_item() from inventory (data will be provided as text, similar to csv file format)

Customer dataset example

Product ID	Name	Points
9909988088	Name001	0
8909988088	Name002	0
7909988088	Name003	0
6909988088	Name004	0
……..	…….	…….
9909988081	Name777	0
9909988082	Name777	0
9909988083	Name888	0
9909988084	Name999	0

Customer information upload by Billing Object
(data will be provided as text, similar to csv file format)

Billing Agent

- Customer (ID: 9909988081) brought following products at **billing counter**
- *Before payment, billing agent can cancel the product from list on customer request*

Transaction_ID: ABCDEFGH

Customer_ID: 9909988081

Product ID,	**Name,**	**Rate,**	**Quantity,**	**Amount,**
100000100002,	product_B,	200,	1,	200
200300100001,	product_Q,	1000,	2,	2000,
200300100003,	product_Y,	500,	5,	2500
			Total:	4700

Inventory dataset after one billing episode

Product ID	Name	rate	quantity
100000100001	product_A	100	100
100000100002	product_B	200	99
100000100003	product_C	50	200
100000100004	product_D	40.50	200
……..	…….	…….	…….
200300100001	product_Q	1000	98
200300100002	product_X	200	100
200300100003	product_Y	500	295
200300100004	product_Z	400.50	400

Customer dataset after one billing episode

Product ID	Name	Points
9909988088	Name001	0
8909988088	Name002	0
7909988088	Name003	0
6909988088	Name004	0
……..	…….	…….
9909988081	Name777	4700
9909988082	Name777	0
9909988083	Name888	0
9909988084	Name999	0

Customer information upload or updated by Billing Object
On every purchasing episode, total amount added as points to the customer

In **MAIN** Function

STEP1: Manager; read item dataset and upload to inventory database or object

STEP2: Billing ; read provided customer data and upload to customer database or object

STEP3: Billing ; generate shopping episode with customer

STEP4: Billing ; make payment and print the bill

STEP5: Manager: search particular item information (one of the product purchased by customer) and print it

Repeat STEP 3, 4, and 5 one more time with a different customer and similar or different products