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Internal Assessment Test 2 – July 2024

Sub:	Software Engineering and Project Management					Sub Code:	21CS61	Branch	ISE
Date:	09/07/2024	Duration:	90 min's	Max Marks:	50	Sem/Sec:	VI / A, B & C		OBE

	Answer any FIVE questions	MARKS	CLO	RBT
1	(a) Define use cases, actors and their relationships. (b) Describe use case diagram with a suitable example.	5 5	CLO2	L2
2	Describe Class-Responsibility-Collaborator (CRC) Model in details. Use proper diagram to explain the concept. Write a note on analysis package.	5 5	CLO1	L2
3	(a) What is an agile process? Discuss agility principles. (b) Explain the characteristics of an agile process.	5 5	CLO1	L2
4	(a) Differentiate between SCRUM and ASD process models. (b) Describe the phases of Extreme programming (XP) with a suitable diagram.	5 5	CLO1	L2
5	(a) Describe the design modeling principles in detail in software engineering process. (b) Write a note on dynamic system development method and crystal method.	5 5	CO3	L2
6	(a) Explain the principles that guide both the process and practice. (b) Prepare the CRC cards for the following case study: An automated ticket issuing system sells rail tickets. Users select their destination, and input a credit card and a personal identification number. The rail ticket is issued and their credit card account charged with its cost. When the user presses the start button, a menu display of potential destinations is activated along with a message to the user to select a destination. Once a destination has been selected, users are requested to input their credit card. Its validity is checked and the user is then requested to input a personal identifier. When the credit transaction has been validated, the ticket is issued.	4 6	CO5	L3

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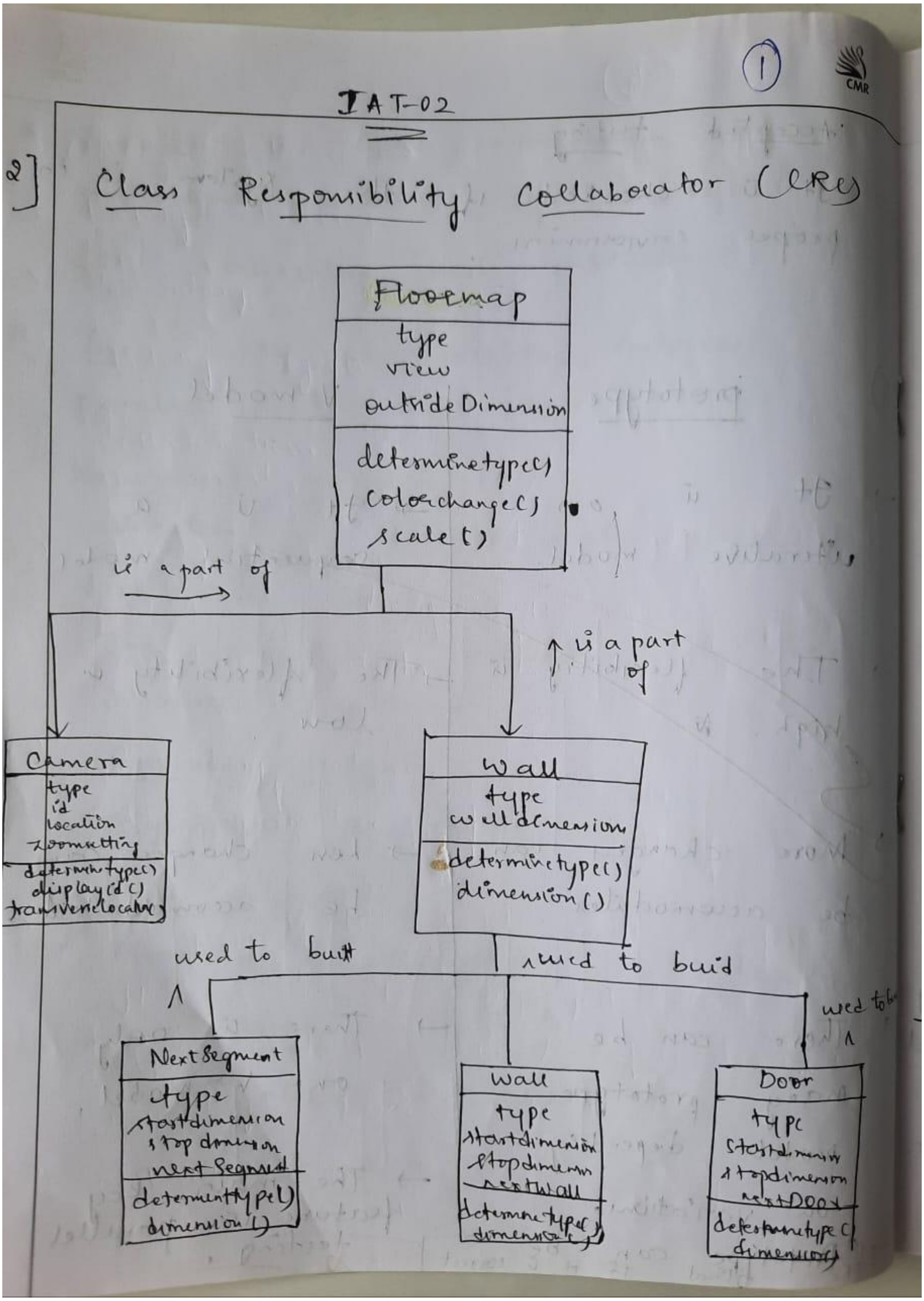
Solutions

Q2. Describe Class-Responsibility-Collaborator (CRC) Model in details. Use proper diagram to explain the concept. Write a note on analysis package.

Ans2



→ Class Responsibility collabolator modelling is used to identify and organise the classes required for system and product management.

→ Class Responsibility collaborator model has classes defined in it. On the top we have the class name written, on the left is the the responsibilities and on the right side we have collaboration.

→ Responsibilities is nothing but attributes that the class has known.

→ Collaborations are a set of classes which need to provide information to complete the responsibilities.

CRC contains →

- * Entity classes
- * Boundary classes
- * Entity objects
- * Collaborations

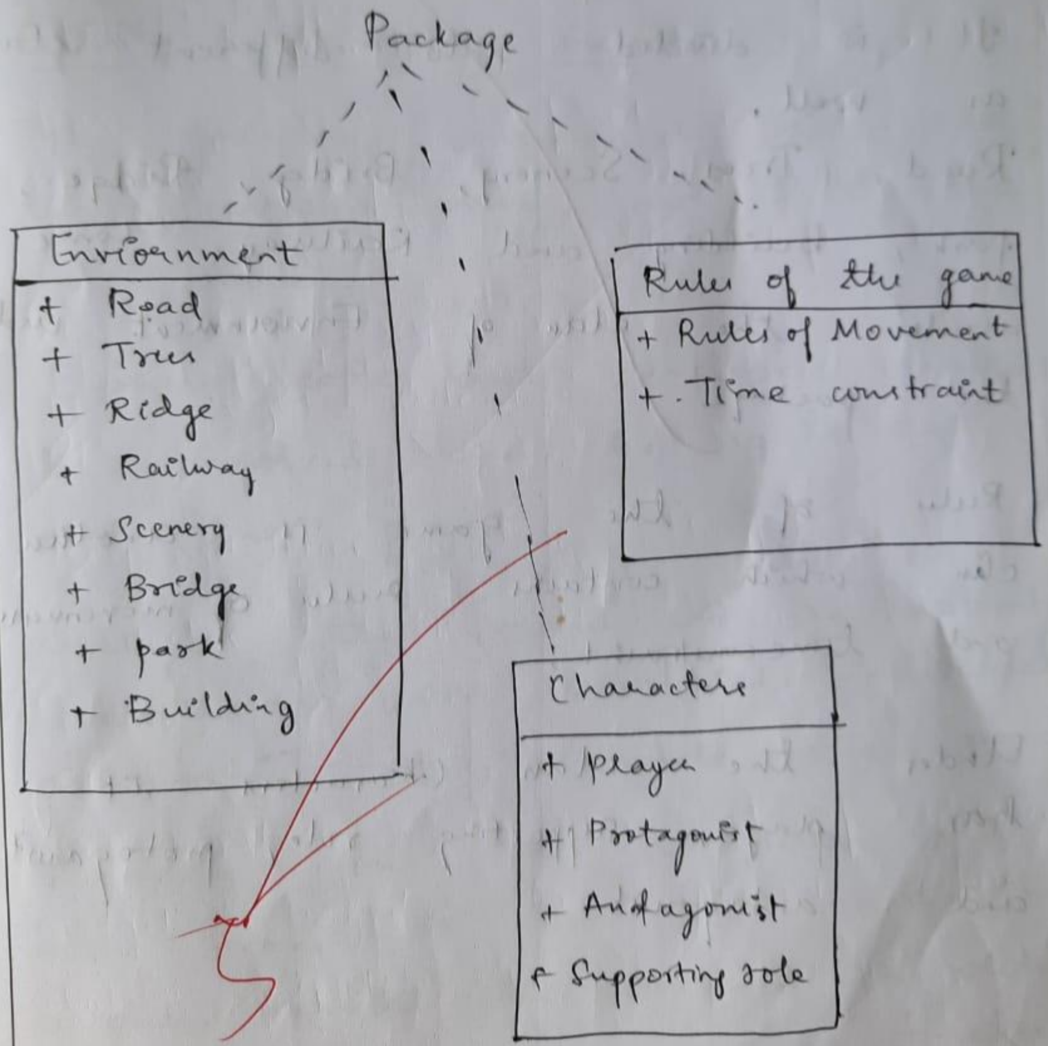
→ Entity classes are the main classes which are formed during the object creations

→ Boundary classes are used in the formation of interface classes.

→ Entity objects hold the information. It is not displayed that entity objects hold the information, instead Boundary classes mark it.

→ Collaraborations are also very important. It is used as a communication between the objects. It is also used when validation happens between the two communicating objects.

* Analysis package



→ Analysis is a very important and essential thing, to divide the different components into their respective package.

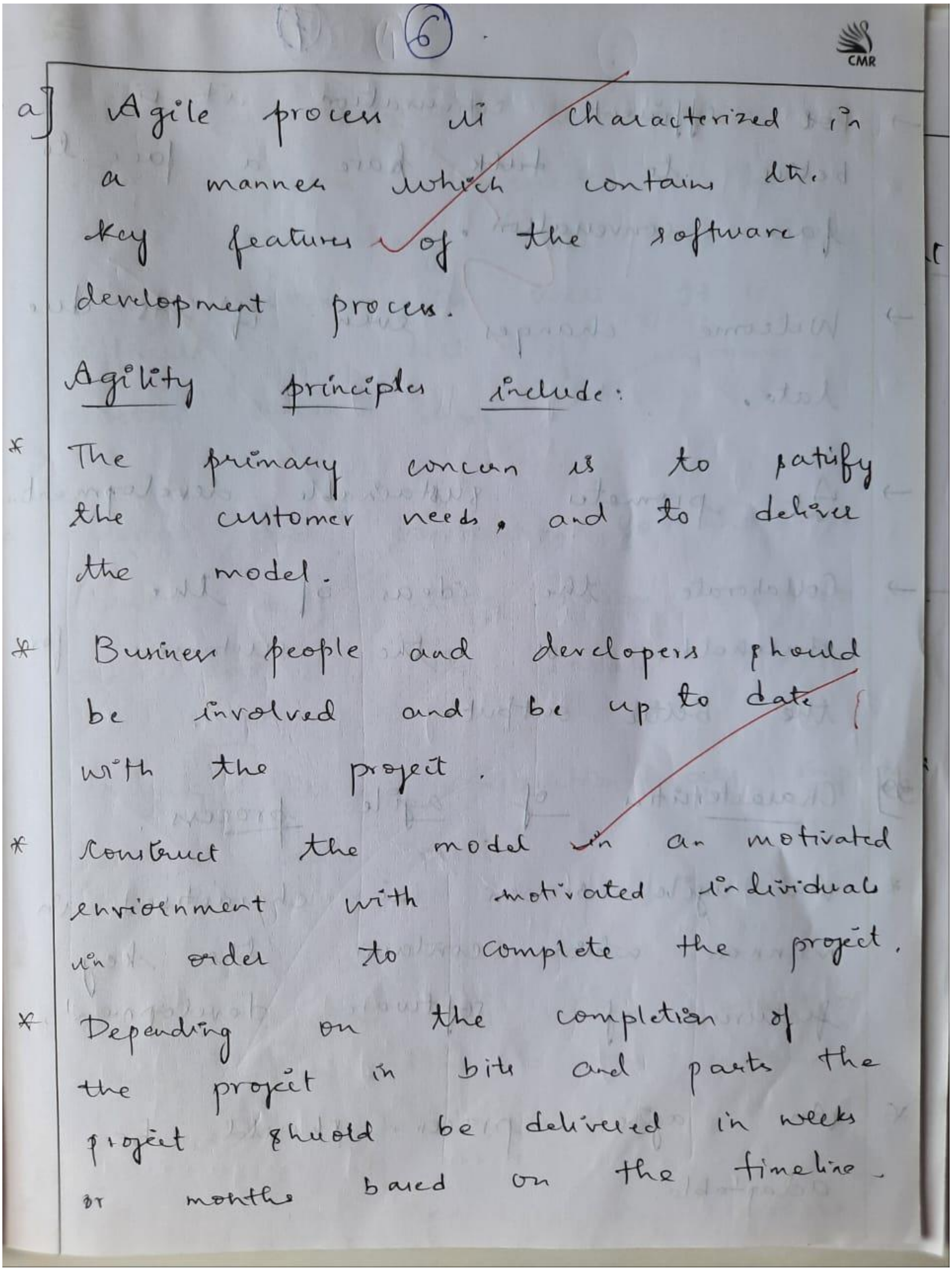
→ It is divided into different classes as well.
Road, Trees, Scenery, Bridge, Ridge, park, building and Railway come under the class of Enviornment under the package

→ Rules of the game is another class which contains rules of movement and time constraint.

→ Under the class Characters it has player, supporting role, protoganist and antagonist.

Q3. (a) What is an agile process? Discuss agility principles.
(b) Explain the characteristics of an agile process.

Ans3:



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a] Agile process is characterized in a manner which contains the key features of the software development process.

Agility principles include:

* The primary concern is to satisfy the customer needs, and to deliver the model.

* Business people and developers should be involved and be up to date with the project.

* Construct the model in an motivated envirionment with motivated individuals in order to complete the project.

* Depending on the completion of the project in bits and parts the project should be delivered in weeks or months based on the timeline.

→ For efficient conversation it is better to ~~talk~~ have a face to face conversation.

→ Welcome changes even if its due late.

→ It promotes sustainable development.

→ Collaborate the ideas of the stakeholders or the customers for the better output.

10] Characteristics of agile process.

* An agile process is charactised in manner which contains the key features of software development.

* An agile process should be adaptable.

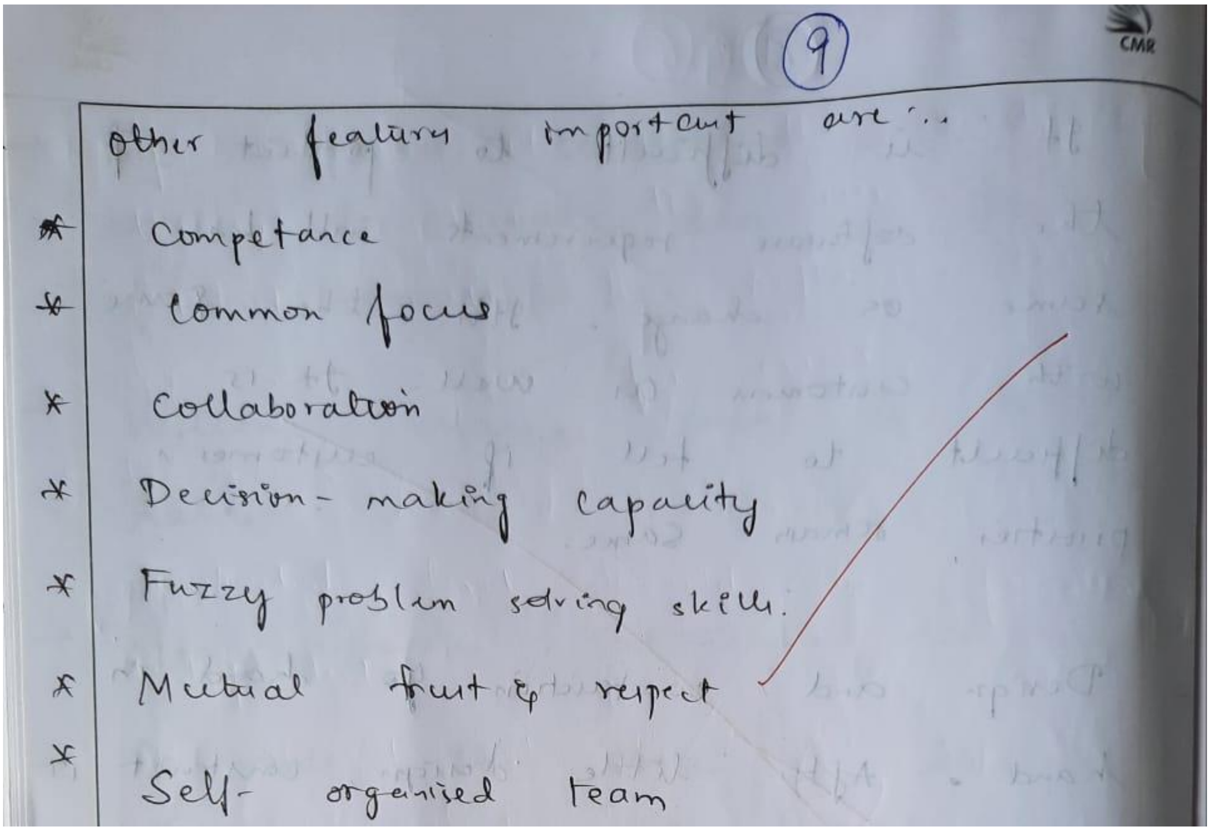
- It is difficult to predict if the software requirements will be same or change. Its the same with customers as well. It is difficult to tell if customers's priorties remain same.

- Design and construction go hand in hand. After little design, construct it and ~~test~~ if it's feasible or not.

- Analysis, design, construction are important for an agile process.

- It is an iterative process. After creation of some model or design from time to time customer feedback is taken.

- It is a step by step process.



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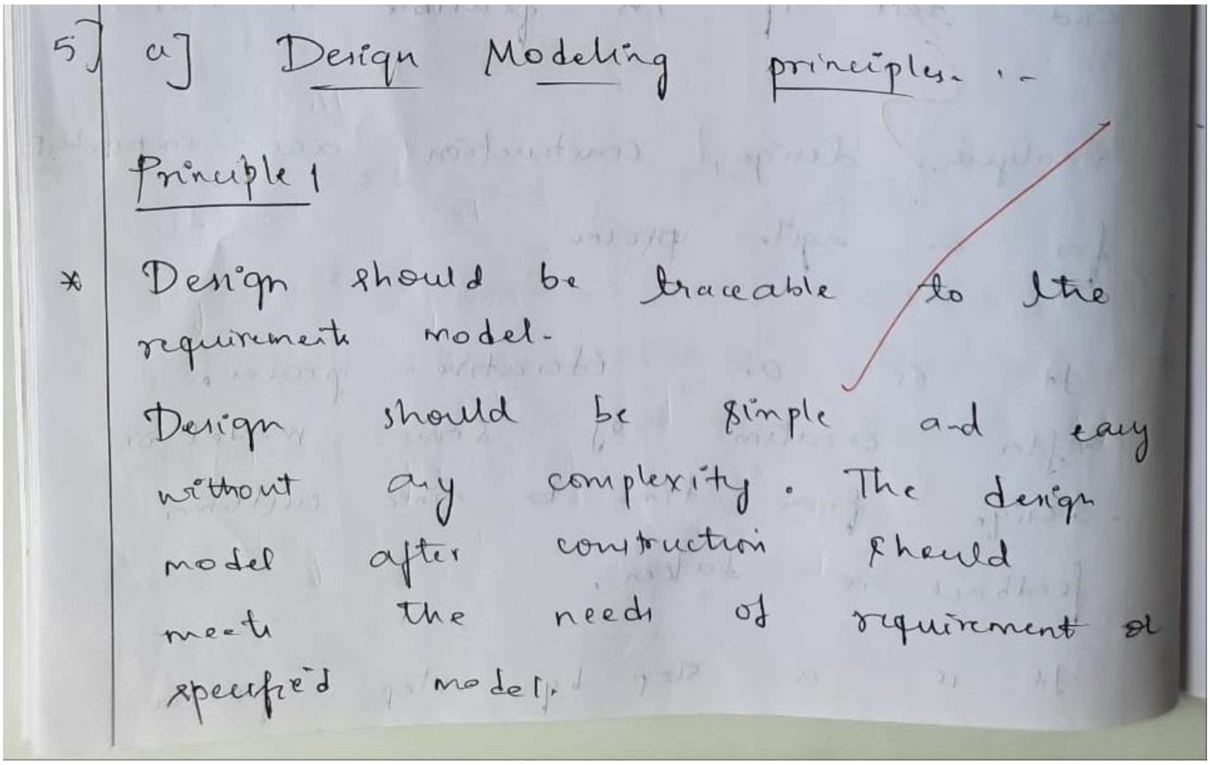
other features important are :-

* Competance
* Common focus
* Collaboration
* Decision-making capacity
* Fuzzy problem solving skills.
* Mutual trust & respect
* Self-organised team

Q5. (a) Describe the design modeling principles in detail in software engineering process.
(b) Write a note on dynamic system development method and crystal method.

Ans 5:



5] a] Design Modeling principles :-

Principle 1

* Design should be traceable to the requirements model.

Design should be simple and easy without any complexity. The design model after construction should meet the needs of requirement or specified models.

Principle 2

* Always consider the architecture of the system . .

→ Architecture is also really important for building and constructing a proper system as expected in the output.

Principle 3

* Design of data is as important as design of processing function

→ Our data designed should be functional in nature and plays a important role as the processing function

Principle 4 :

* Interface must be designed with care.

Interface must be specially taken care

of because it is the medium through which the users interact with the software. There are no room for errors.

* Principle 5

Contructed level should be functionally independent.

→ It should not be functionally dependent on each other

b] DSDM

→ ~~Astrial and Ji~~

Dynamic system development method is a agile software technology which gives framework for building and maintaining.

→ DSDM follow the poretall mechanism which is the 80/20 rule, It means 80% of the project can be completed in the 20% of the total time alloted for the project.

→ DSDM is a iterative approach. All the steps complete in first 80%. and can go to next increment step the remaining 20 can be completed when extra details are available.

→ The life cycle of DSDM is 3 - iterative steps with 2 initiation steps.

→ The DSDM has world wild group of company where they store and update the method to make sure the methods are effective.

Crystal method

→ It was give by Adrial and Jim Highburg together in collaboration.

→ It had the set of methodologies which was effective for all the process.

→ Depending the project you are choosing the methodologies can be taken.

→ It had —

* ~~Iterative~~ Initiation stage
* Elaborative stage
* Collaborative stage
* Transitional. stage.

→ Initiation stage → we had to start the project with all the requirements. It was 1st step.

→ Elaborative stage → next step where we check of all the requirement avaible are working

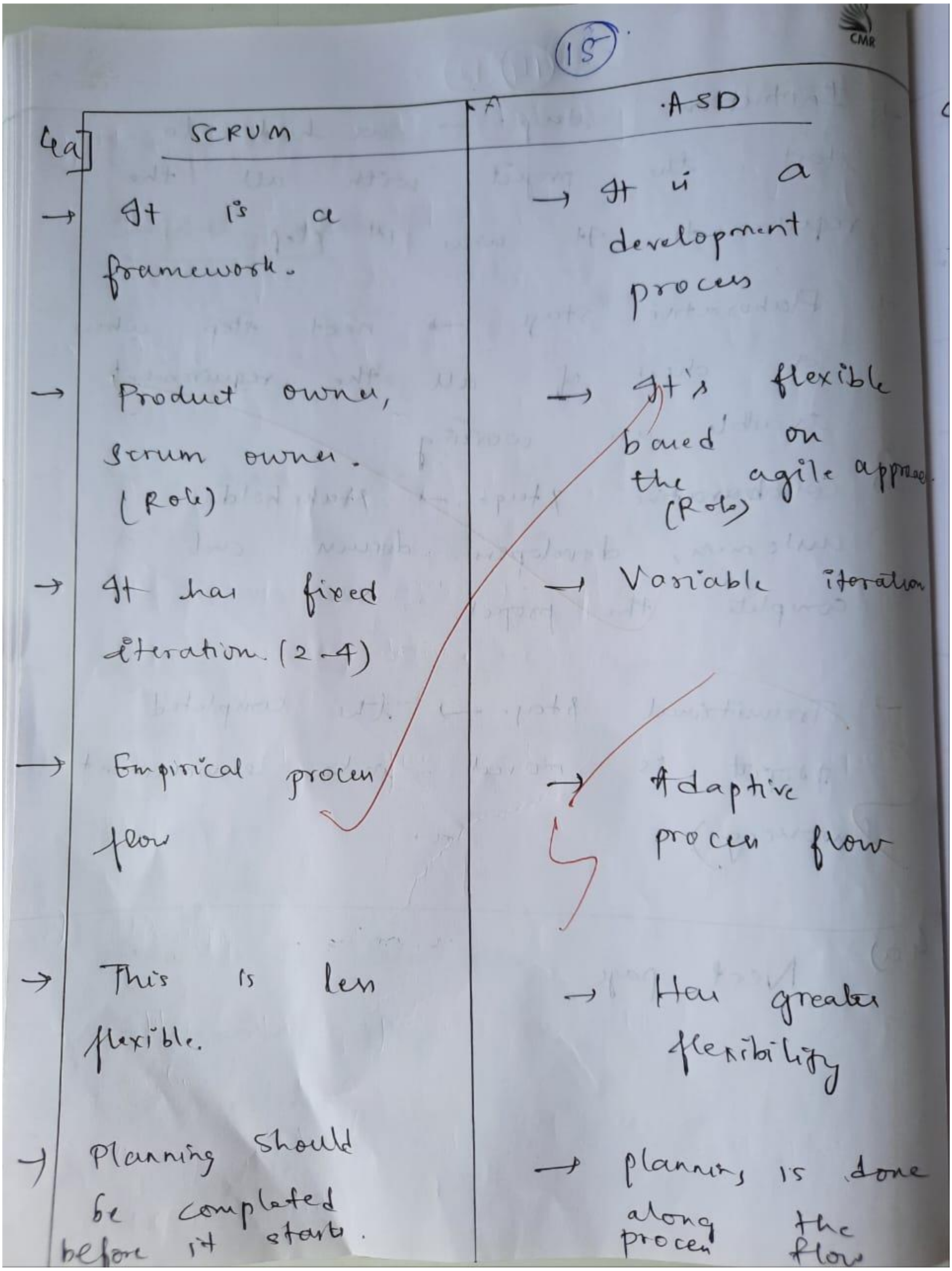
→ Collabarative stage → stakeholders customers, developers discuss and complete the project

→ Transitional stage → the completed project is moved into enviornment (working)

Q4. (a) Differentiate between SCRUM and ASD process models.

(b) Describe the phases of Extreme programming (XP) with a suitable diagram.

Ans 4.



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4a

SCRUM	ASD
→ It is a framework.	→ It is a development process
→ Product owner, Scrum owner. (Role)	→ It's flexible based on the agile approach. (Role)
→ It has fixed iteration. (2-4)	→ Variable iteration
→ Empirical process flow	→ Adaptive process flow
→ This is less flexible.	→ Has greater flexibility
→ Planning should be completed before it starts.	→ planning is done along the process flow

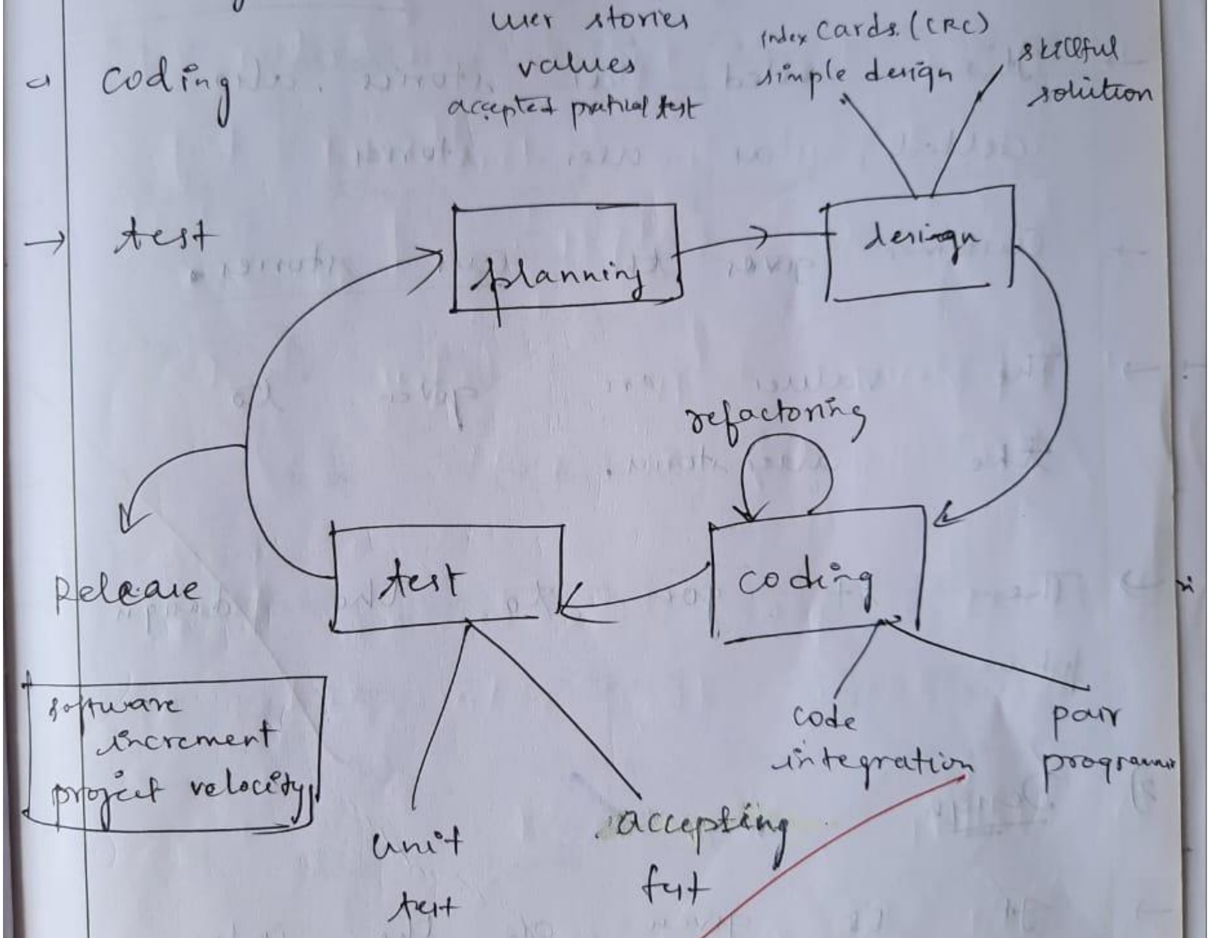
4 b] Phases include :-

→ planning

→ design

→ coding

→ test



1] planning

→ This is the 1st step of XP programming.

→ It starts with listening .

→ Then the requirment gathering depending on the expected output.

→ It's called as stories . also called as user stories

→ Customer gives th. user stories.

→ The values are given to the user stories.

→ Then it goes to the design phase

2) Design

→ It is given on the index cards

→ The index cards are called CRC cards.

→ It is constructed based on the given design.

→ These are called skilful solutions.

→ It follows KIS (Keep it simple)

→ Most simple and efficient solution will be given to prevent complexity.

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→ XP has refactoring

→ Refactoring is the restructuring of the code without any output changes. We chang the input code for the same output

→ It increases performance and efficiency.

3) Coding

→ Even before coding start test cases or unit tests are given.

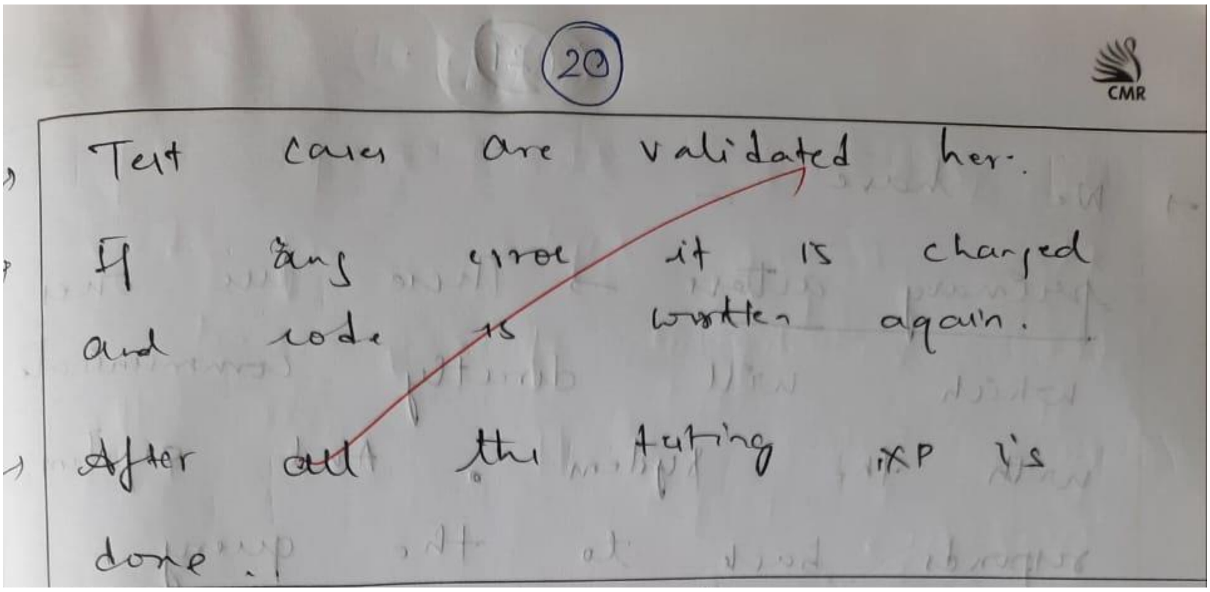
→ Based on the test cases code will be formulated to get the output.

→ Refactoring happen before and after coding as well.

→ Next goes to testing after formulating the entire code.

4) Testing

→ Unit testing, integrating testing, smoke testing & acceptance testing.



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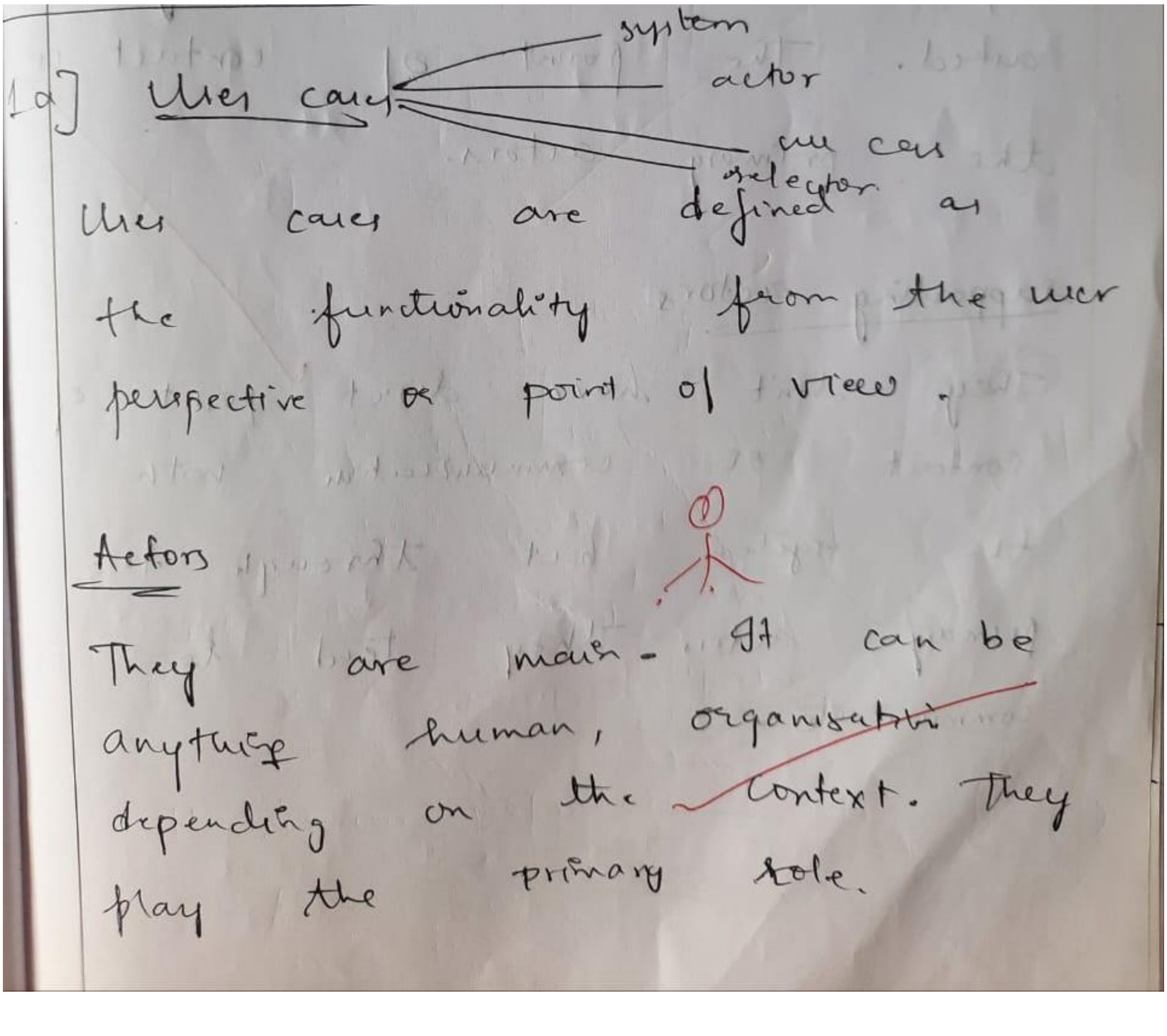
Test cases are validated her.

If any error it is charged and code is written again.

After all the testing XP is done.

Q1. (a) Define use cases, actors and their relationships.
(b) Describe use case diagram with a suitable example.

Ans 1:



1a] Uses case

- system
- actor
- use case
- selector

Uses cases are defined as the functionality from the user perspective or point of view.

Actors

They are main - It can be anything human, organisation depending on the context. They play the primary role.

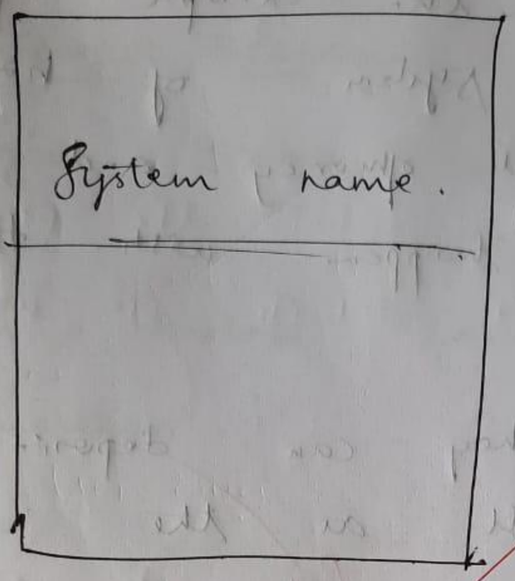
We have –

primary actors → These are ones which will directly communicate with the system. And system responds back to the query asked. The point of contact is the primary actors.

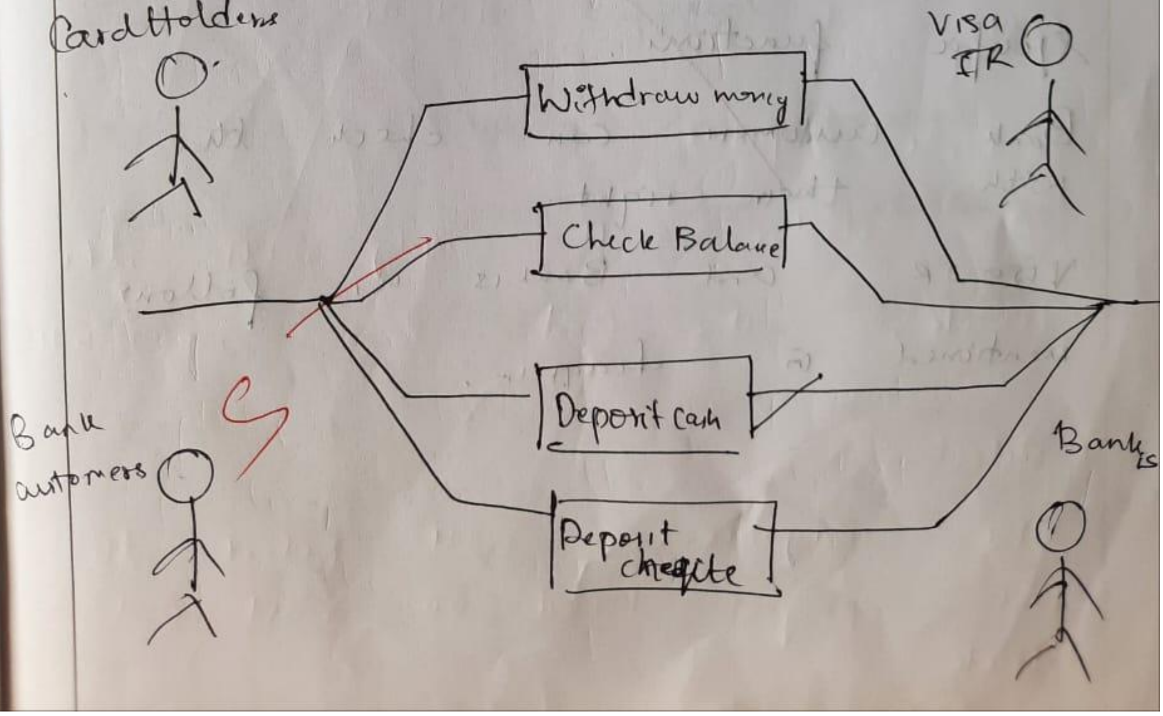
supporting actors

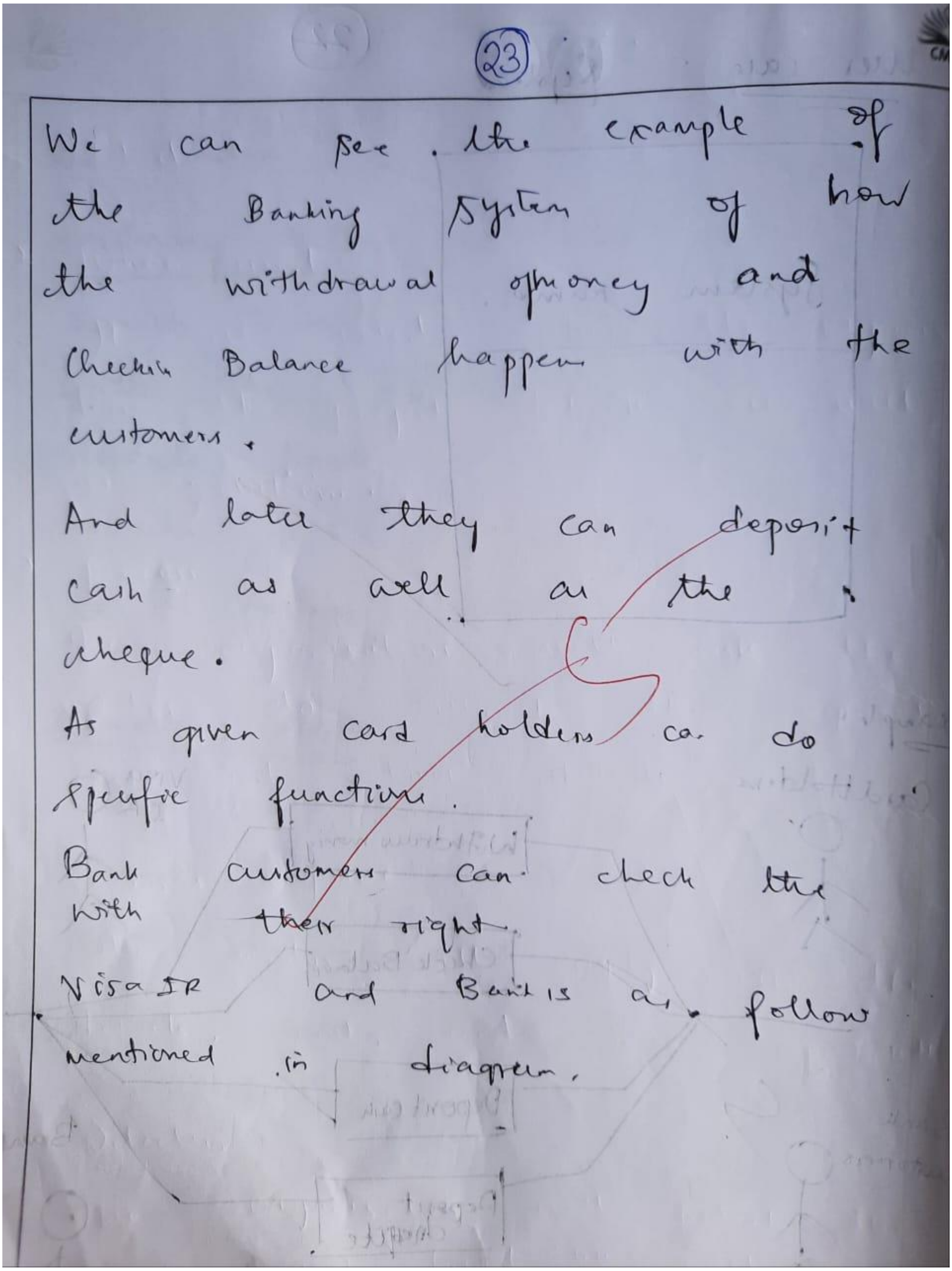
They don't have direct point of contact or communication with the system but through the primary actors they tend to communicate.

User case : System



Example:





We can see . the example of the Banking System of how the withdrawal ofmoney and Checkin Balance happen with the customers.

And later they can deposit cash as well as the cheque.

As given card holders ca do specific function.

Bank customers can check the with their right.

Visa IR and Bank is as follow mentioned in diagram.

******************************End***