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Q1 (a)

A. Waterfall Model:

Waterfall model is a better choice in the scenarios as follows:

(i) when the project we are working on has clear requirements with nearly zero chance of any changes.

(ii) When the project is simple, low-risk highly constrained in terms of budget and time.

B. Spiral Model:

(i) The project we are working on has high associated risk and the chances of any changes in the flow are high.

(ii) The project when exact requirements are unclear and there is a chance of improvement.

C. Iterative Model:

(i) When the software needs to be launched as soon as possible. It is initially released with limited functionality with more functionality to be added later.

(ii) When new fundionalities, features needs to be added keeping the real world scenarios in mind.

Q1(b)

Spiral model suits the best for this scenario. The software company is new, so, it'll have high risk factor. Also, the client (The travel agency) has a well established business, so, the budget constraint will be not rigid. The workings of the travel agency are well established and tested in offline mode. So, they have to implement them online in the best possible way. So, there always remain a room for better implementation. The spiral model will perfectly fit this scenario.
Ethonography, in this case will help to understand the user mentality using which we can suggest changes in the planning phase so as to make it more user friendly and reachable to more people and to predict the time periods with maximum load on the servers.

Q1(c) (i) The Operating System Security comes under the non functional requirements. There could be different levels of security that different OS provides. The addition of non functional requirements can sometimes trigger the functional requirements for eg: improving the security will lead to the slowing down of some other.

Q1 c (ii) These are included under the functional requirements. Since, the application should be able to handle such loads after the users try to open that many tabs.

Q2 A. The Waterfall Model:

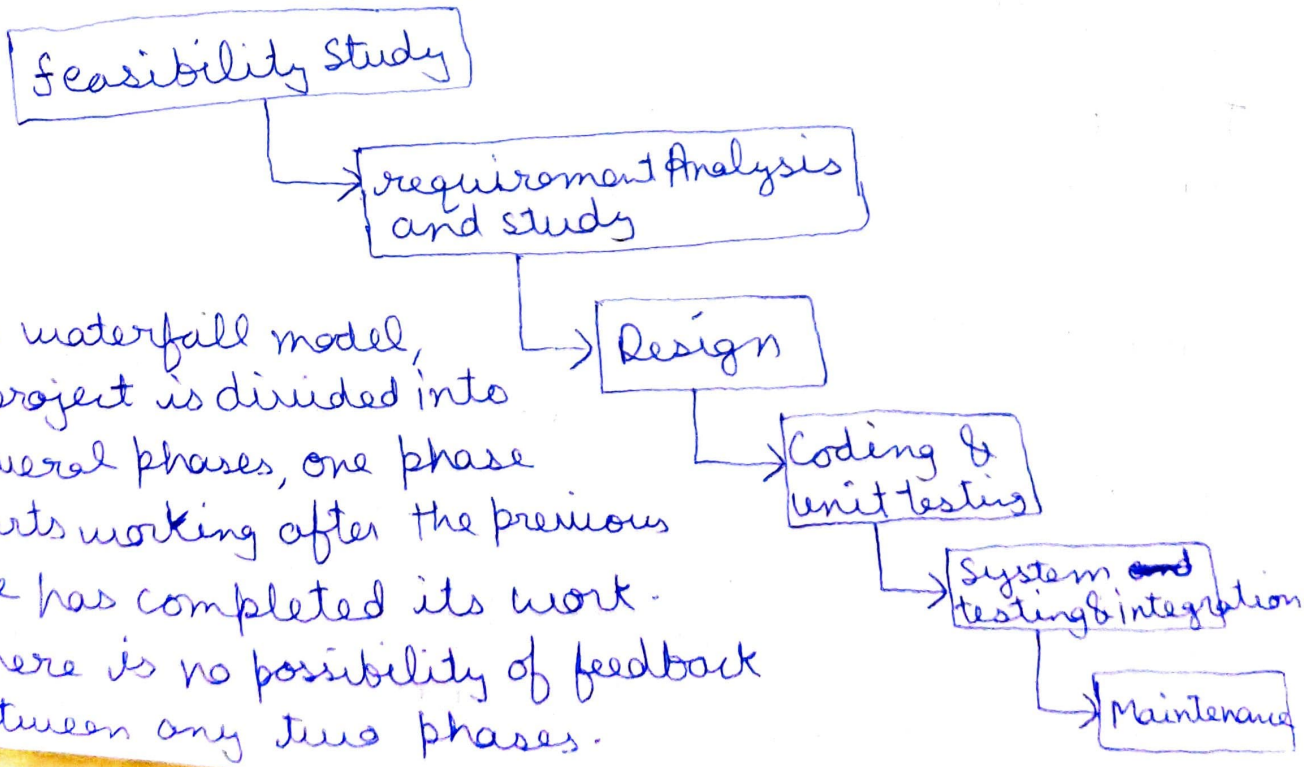
The waterfall model is a relatively outdated model but there are situations in which this model is the most useful one some of them are:

(i) possibility of a major data leak, data breach, cyber attacks etc. This model will ensure that the crisis can be contained for the time being.

(ii) To prevent the system failures, or during the times of emergencies.

Real life examples: ~~sensitive~~ handling of sensitive information, crucial services like healthcare, banking, defence etc.

Q2 B Waterfall Model:



In waterfall model, a project is divided into several phases, one phase starts working after the previous one has completed its work. There is no possibility of feedback between any two phases.

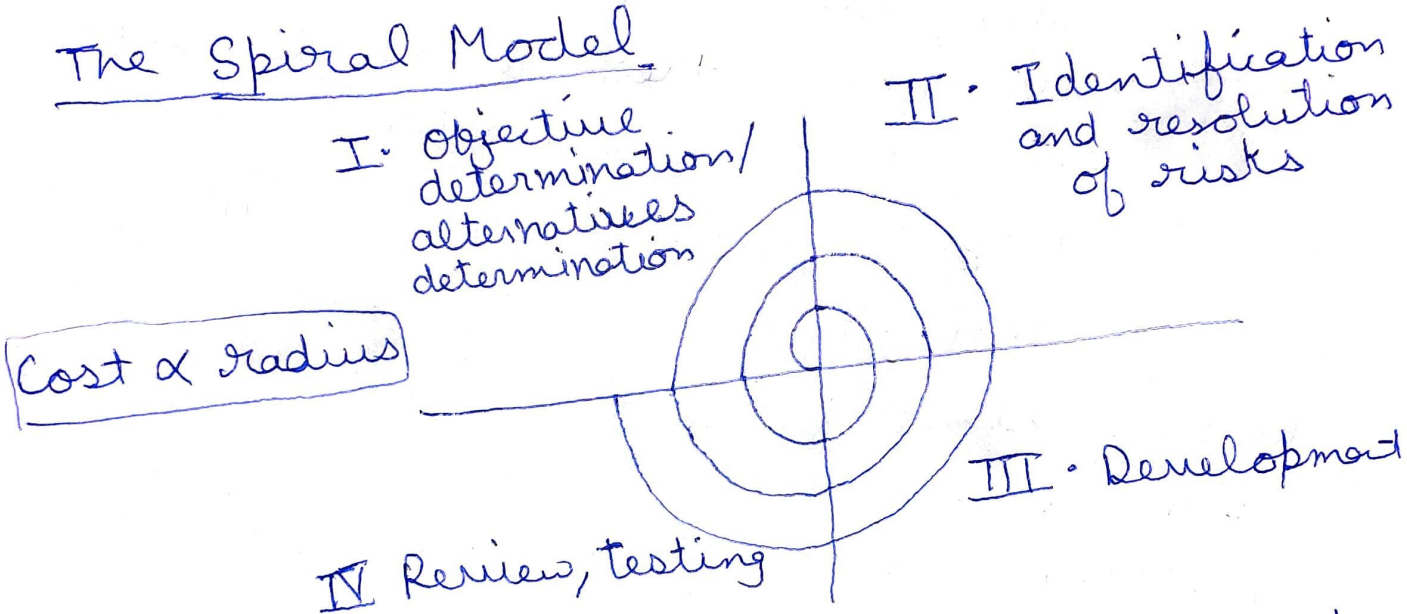
Advantages of Waterfall model

a. This is very simple and easy to implement and is suitable for small scale projects.

Disadvantages:

There is no feedback, no parallelism, high risk in this model.

The Spiral Model



~~The spiral model handles the risks most efficiently~~

The spiral model is broadly ~~categ~~ divided into 4 major categories each of which is responsible for a phase of development.

Advantages

a) efficient risk handling

b) Flexible and maximum customer satisfaction

disadvantages

a) Complex and expensive approach

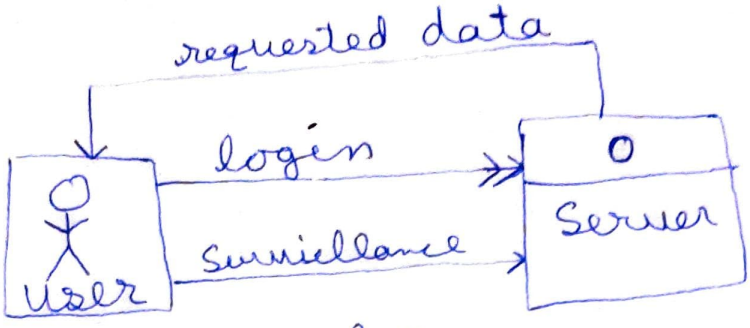
b) Time consuming and high analysis required

Q2 C

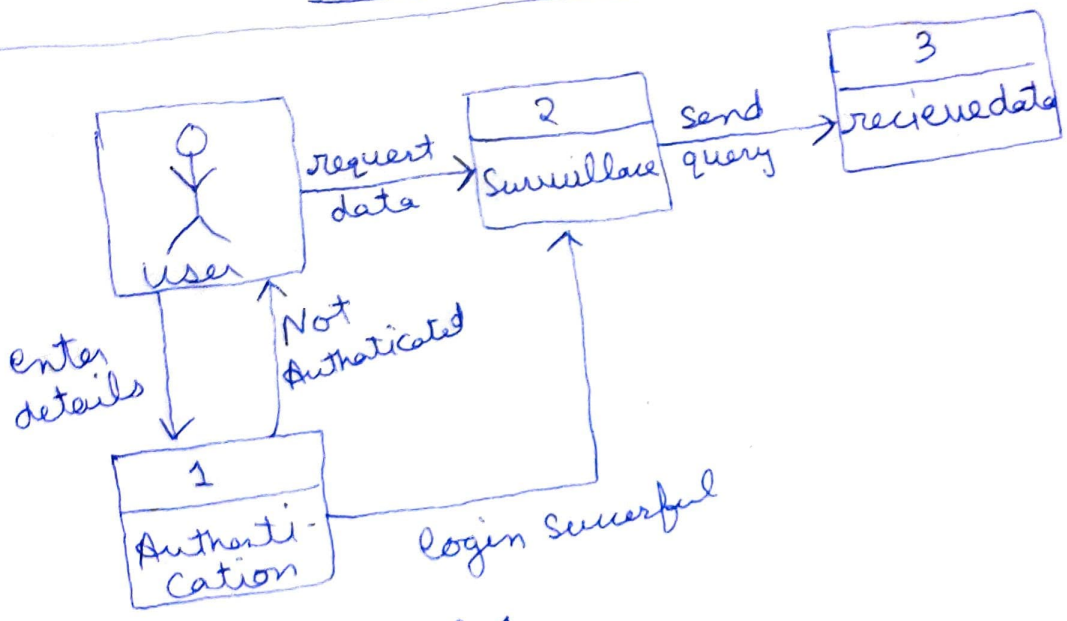
Waterfall	Spiral
(i) Suitable for small projects	(i) Suitable for larger projects
(ii) highly risky with plenty room for errors and bugs	(ii) Very efficient risk handling and error removal techniques
(iii) not flexible and no feedback	(iii) flexible and feedbacks are considered for improvement.
(iv) cost-friendly and easy to implement	(iv) expensive and very complex to implement
(v) Testing is done after the whole development is done.	(v) Testing occurs phase wise and is more efficient
(vi) No parallelism possible.	(vi) parallelism is possible
(vii) Sequential approach	(vii) Continuous approach.

Q3- A- Use Case Diagram

Q3 B DFD diagrams



level 0



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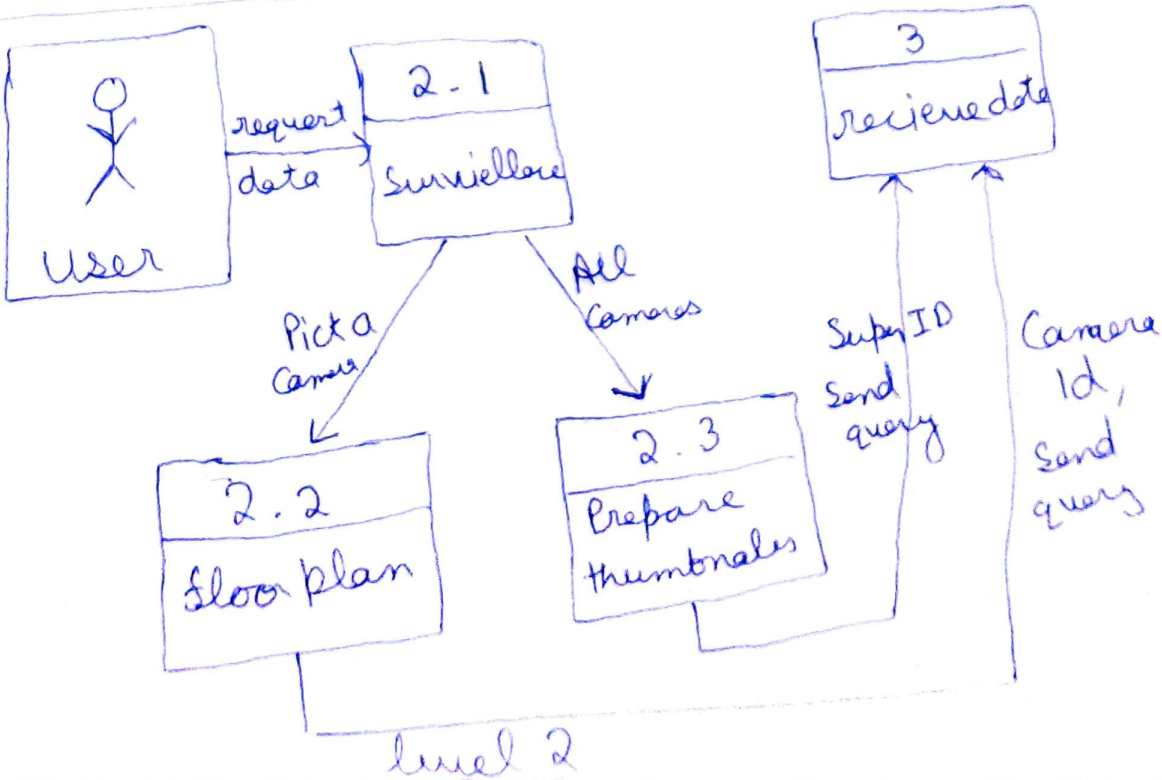

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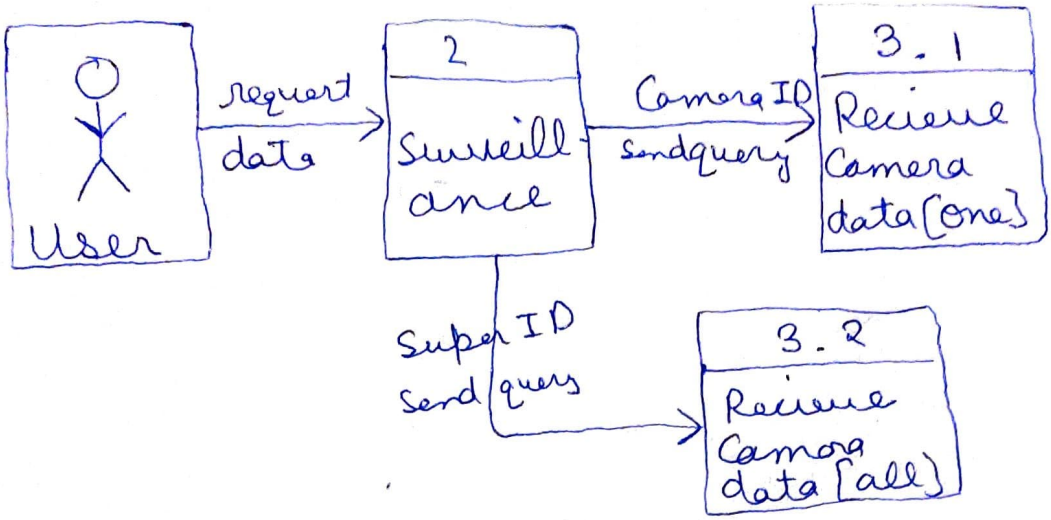

Level 3

Q3 C - Technical difficulties [feasibility] ~~analysis~~

a). There could be network problems, network lags due to the homeowner being in a remote place.

b) Maintenance of hardwares, cables, cameras, servers can be an issue - poorly maintained hardware creates problems in ~~requesting~~ sending and recieving data

c) There could be a possibility of errors and bugs in the software.