Q.1   What is in data aggeregation in WSN. explain

→   IN WSN, data aggeregation is a process
of collecting and combining tu useful
information in a particular region of
interest. The effectiveness of the communicati-
on among nodes depends on tu data
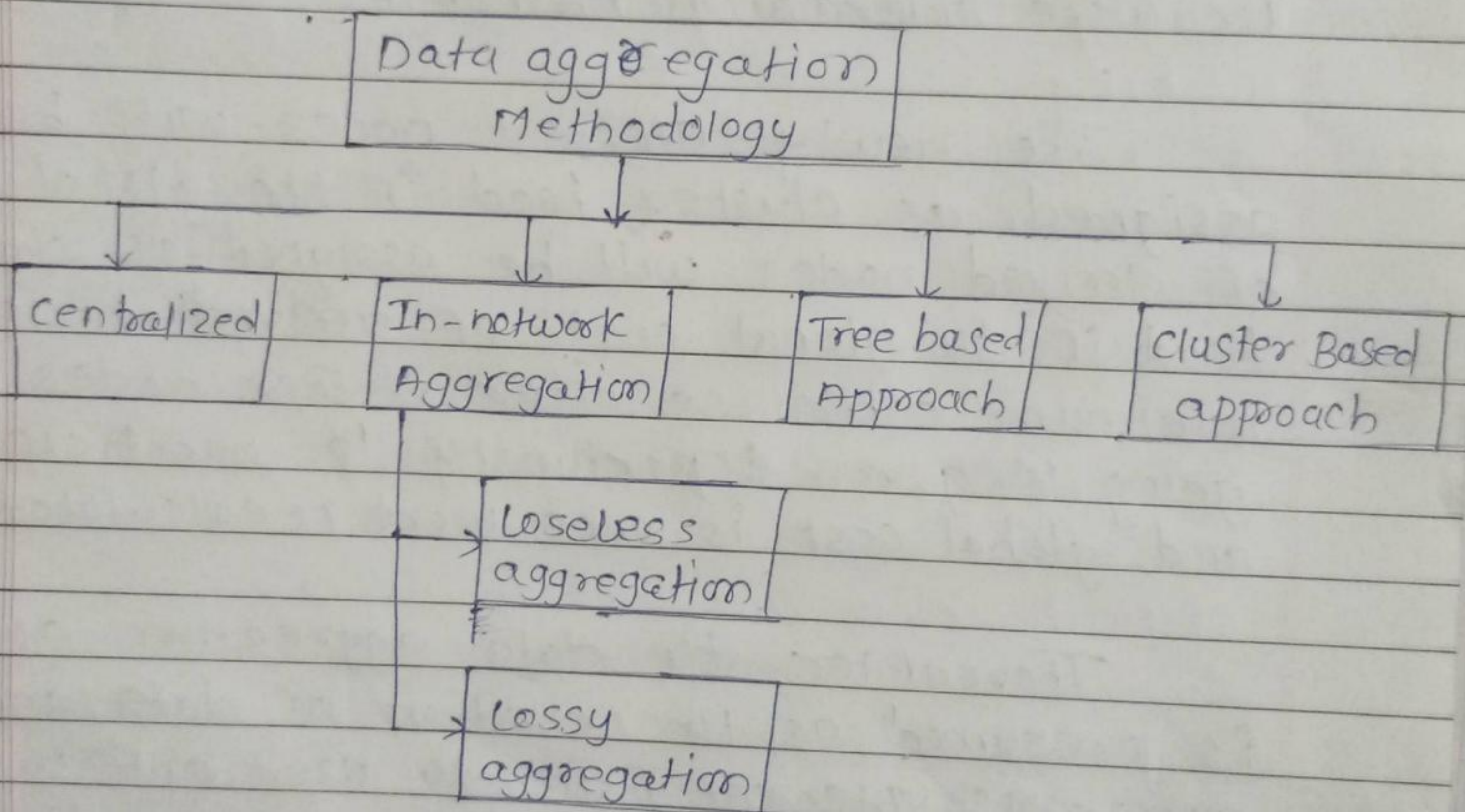aggregation technique being used.

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            ┌─────────────────────┐
            │  Data aggregation   │
            │     Methodology     │
            └─────────────────────┘
     ┌──────────┬──────────┬──────────┐
┌──────────┐ ┌──────────┐ ┌──────────┐ ┌──────────┐
│Centralized│ │In-network│ │Tree based│ │Cluster Based│
│          │ │Aggregation│ │Approach  │ │ approach │
└──────────┘ └──────────┘ └──────────┘ └──────────┘
               ┌──────────┐
               │ Loseless │
               │aggregation│
               └──────────┘
               ┌──────────┐
               │  Lossy   │
               │aggregation│
               └──────────┘
```

Fig ⓐ Data aggregation.

    The working of WSN proposed architecture
model illustrated in figure ⓐ It starts.
working by choosing selecting of nodes and
divided into clusters. Those clusters can
satisfy the intended parameter requirements
and conditions The parameters can like
RSSI, TTL, MRIC, bandwidth, battery
consumption are accustomed verify tu amount
of nodes lies within the each cluster.

Thereafter a cluster head (CH) is selected among nodes lies within the each cluster. Thereafter a cluster. CH are going to be responsible for administration of all different nodes inside several cluster and collecting the data? from the nodes within the cluster and transferring the information to the neighbouring cluster head. for more information exchange and updation.

The newly arrived nodes will be assigned as cluster head if the global cost of arrived nodes will be assigned as cluster head if the global cost of arrived node is minimum otherwise other cluster nodes are going to given Oppertunity to participate and global cost is once more recalculated.

Thereafter the data aggreation approach is presumed as the collection of data and numerous queries from the user end are checked and transfered into low level schemes by query processor.

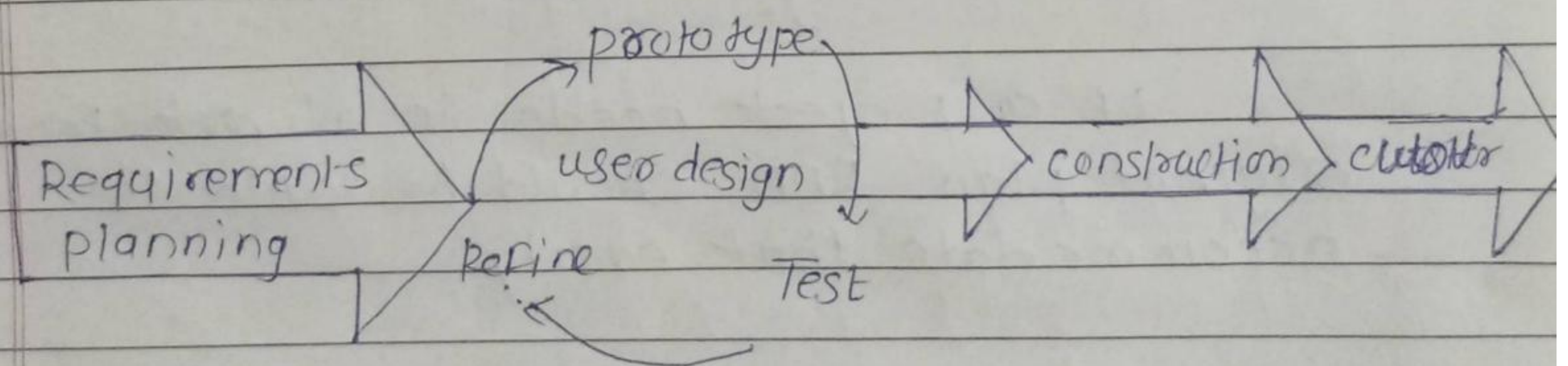All data collected and aggregated is stored at a sterage location database servel.

Q.2 Explain design and deployment w.r.t. any one WSN application

→ Application deployment is the process of designing, building and implementing software applications.

Most application developement methodologies can be grouped into one of three categories.

1) Waterfall
2) RAD
3) Agile.

⋏ RAD (Rapid application Developement.

Requirements planning → prototype → user design → Refine → Test → construction → cutover

As you might imagine, the waterfall method of application developement presented some big problems. The developement process often took a long time to see a working product, teams had to be large to accommodate all the requirements and tensions ran high when a customer is unhappy with the end product and whole

project has to start over from the beginning. So, a new method emerged called rapid application develoment (RAD).

In many ways, RADs was the opposite of the waterfall method.

RAD is based mostly on prototypes, meaning that the global is to produce a working version of the application as quickly as possible, and then to continously iterate after that. The application develoement team and the customer work very closly with each other throughput the proces.

RAD teams are usually small and only involve experienced developers who are skilled in many disciplines.

If a project needs to divert from the original plan, RAD should be able to accommodate that easily.

In the RAD model as each iteration is completed, the product gets more and more refined.

Q.3 What is testing and validation is WSN application.

→ We propose in this paper a formal syntax and semantics to express tu requirements of WSN routing protocols and to passively test them on real operating system.

Surveillance and monitoring for security threat detection. Enviromental temperature, humidity and air pressure. Noise level of the surrounding. medical applications like patient monitoring.

There are two types of architecture used in WSN:
① Layerd network.
② Clustered network.

Among tu standarlized protocols we find wireless M-Bus, KNX RF multi, zigbee and 6LOWPAH - based solution.

Area monitoring is a common application of WSNs. In area monitoring, tu WSN is deployed over a region where some phenomenon is to be monitored. A military example is use of sensors to detect. enemy intrusion: a civilian examples.

Q 4 Explain in detail: Designing and Deploying WSN applications.

→ A systematic approach toward desiging and deploying complete wireless sensor networking applications. It provides you with the basic steps needed and discuss their properties, challenges and advantages.

Node link, path, and global problems are general problems in wireless sensor networks.

Whatever the purpose of an application or the target of a study there are several testing methodologies applications or the target of a study, there are study several testing methodologies applicable to WSNs.

The main principle of testing and validation is to: implement the application in several steps. incrementally increasing the complexity of the testing enviroment.

The main goal of the requirements analysis is to ensure that you understand the application, the enviroment in which it will be running, and expectations of the user. Finally the chaper explores some of the most important concepts and approaches when implementing the vineyard application, including requirements analysis.

Q.5 Feplain various Routing metrices and Routing protocles in WSN. What are different clustering techniques.

→ 'In this various Routing metrices and Routing protocoles in wsn have outlined a few modern energy-efficient clustering approaches to improve the lifetime of WSN

The preposed clustring methods are.

1) fuzzy-logic-based cluster head election.
2) efficient sleep duty cycle for sensor nod
3) hierachical clustring
4) estimated energy harvesting

Routing protocols

Static   Default   Dynamic

IGP   EGP

Distance vector Link   Hybrid   Path vector.
                State

(RIP) (OSPF) (EIGRP)   (BGP)

(IGRP) (ISIS)