Unit V: Requirements Gathering

1. Discuss the Requirements Gathering Process.

Requirements Gathering is the process of generating a list of requirements (functional, system, technical, etc.) from the various stakeholders (customers, users, vendors, IT staff, etc.) that will be used as the basis for the formal Requirements Definition.

Functional Requirements: functional requirements relate to a product's functionality: its capabilities, usability, features, and operations as they relate to the intended purpose of the product.

Non-Functional Requirements: Non-functional requirements encompass anything not related to a product's functionality: its performance, stability, security, and technical specifications, to name just a few types of non- functional requirements in the digital industry.

An example of functional and non-functional requirements:

- Functional Requirement: payment processing functionality
- Non-Functional Requirement: SSL certificate

Techniques Can Be Used for Requirements Gathering:

- **Interviews:** It is an invaluable tool at the beginning of the process for getting background information on the business problems and understanding a current-world perspective of what the system being proposed needs to do. You need to make sure that your interviews cover a diverse cross-section of different stakeholders, so that the requirements are not skewed towards one particular function or area.
- **Questionnaires:** One of the challenges with interviews is that you will only get the information that the person is consciously aware of. Sometimes there are latent requirements and features that are better obtained through questionnaires. By using carefully chosen, probing questions (based on the information captured in prior interviews), you can drill-down on specific areas that the stakeholders don't know are important, but can be critical to the eventual design of the system.
- **User Observation:** One of the best ways to determine the features of a system, that does not result in "paving the path" (i.e., building a slightly improved version of the current state) is to observe users actually performing their daily tasks, and ideally recording the actions and activities that take place. By understanding the holistic context of how they perform the tasks, you can write requirements that will reinvent the processes rather than just automating them, and will ensure that usability is paramount.
- **Workshops:** Once you have the broad set of potential requirements defined, you will need to reconcile divergent opinions and contrasting views to ensure that the system will meet the needs of all users and not just the most vocal group. Workshops are a crucial tool that can be used to validate the initial requirements, generate additional detail, gain consensus and capture the constraining assumptions.
- **Brainstorming:** This is a powerful activity, which can be performed either in the context of a workshop or on its own. By considering different parts of the system and considering 'what-if' scenarios, or 'blue-sky' ideas, you can break out of the context of

the current-state and consider visionary ideas for the future. Tools such as whiteboards or mind-mapping software can be very helpful in this phase.

- **Role Playing:** In situations where the requirements depend heavily on different types of users, formal role-playing (where different people take on the roles of different users in the system/process) can be a good way of understanding how the different parts of the system need to work to support the integrated processes (e.g., in an ERP system).
- **Use Cases and Scenarios:** Once you have the high-level functional requirements defined, it is useful to develop different use-cases and scenarios that can be used to validate the functionality in different situations, and to discover any special exception or boundary cases that need to be considered.
- **Prototyping:** Often stakeholders won't have a clear idea about what the requirements are, but if you put together several different prototypes of what the future could be, they will know which parts they like. You can then synthesize the different favored parts of the prototypes to reverse-engineer the requirements.

Requirement Analysis:

Requirement Analysis, also known as Requirement Engineering, is the process of defining user expectations for a new software being built or modified. In software engineering, it is sometimes referred to loosely by names such as requirements gathering or requirements capturing.

Here are the objectives for performing requirement analysis in the early stage of a software project:

- **From What to How**: Software engineering task bridging the gap between system requirements engineering and software design.
- **3 Orthogonal Views:** Provides software designer with a model of:
  - system information (static view)
  - function (functional view)
  - behavior (dynamic view)
- **Software Architecture**: Model can be translated to data, architectural, and component- level designs.
- **Iterative and Incremental Process**: Expect to do a little bit of design during analysis and a little bit of analysis during design.

Activities for Requirement Analysis: Four types of activities

- **Eliciting requirements**: The task of communicating with customers and users to determine what their requirements are. This is sometimes also called requirements gathering.
- **Analyzing requirements**: Determining whether the stated requirements are unclear, incomplete, ambiguous, or contradictory, and then resolving these issues.
- **Requirements modeling:** Requirements might be documented in various forms, such as natural-language documents, use cases, user stories, or process specifications.
- **Review and retrospective:** Team members reflect on what happened in the iteration and identifies actions for improvement going forward.

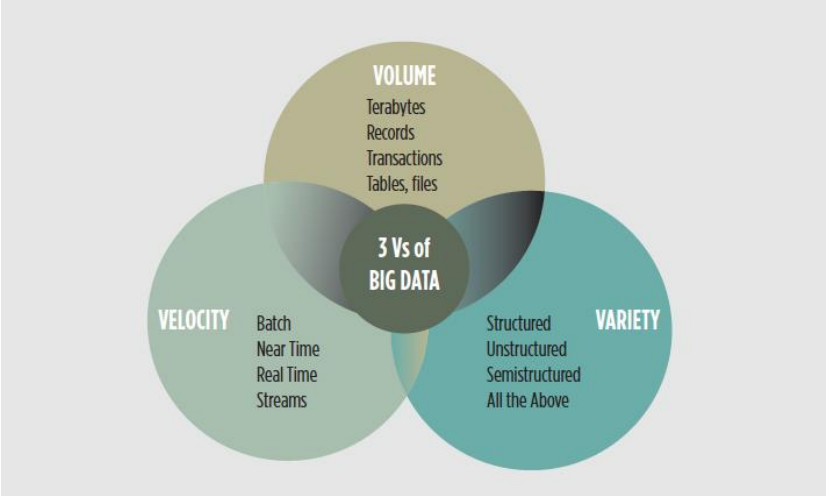
2. Discuss about 3Vs of data and the ways to data is consumed in big data.

Big data is the rapid extension of unstructured, semi-structured, and structured data generated from Internet connected devices. The insights that are delivered from big data analytics services will help marketers to target campaigns more strategically, help healthcare professionals notice epidemics, and help environmentalists understand future sustainability.

Big data analytics can be a difficult concept to grasp onto, especially with the vast varieties and amounts of data today. To make sense of the concept, experts broke it down into 3 simple segments.

The 3Vs of big data:

- Variety,
- Velocity
- Volume.



VOLUME

Volume is the V most associated with big data because, well, volume can be big. What we are talking about here is quantities of data that reach almost incomprehensible proportions. For example, Facebook stores photographs. That statement doesn't begin to boggle the mind until you start to realize that Facebook has more users than China has people. Each of those users has stored a whole lot of photographs. Facebook is storing roughly 250 billion images. So, in the world of big data, when we start talking about volume, we are talking about insanely large amounts of data. As we move forward, we are going to have more and more huge collections. For example, as we add connected sensors to pretty much everything, all that telemetry data will add up.

VELOCITY

Velocity is the measure of how fast the data is coming in. Facebook has to handle a tsunami of photographs every day. It has to ingest it all, process it, file it, and somehow, later, be able to retrieve it. Facebook users upload more than 900 million photos a day. A day. So that 250 billion number from last year will seem like a drop in the bucket in a few months. Here's another velocity example: packet analysis for cybersecurity. The Internet sends a vastamount of information across the world every second. For an enterprise IT team, a portion of that flood has to travel through firewalls into a corporate network. Unfortunately, due to the rise in cyberattacks, cybercrime, and cyberespionage, sinister payloads can be hidden in that flow of data passing through the firewall. To prevent compromise, that flow of data has to be investigated and analyzed for anomalies, patterns of behavior that are red flags. This is getting harder as more and more data is protected using encryption. At the very same time, bad guys are hiding their malware payloads inside encrypted packets.

VARIETY

Data was once collected from one place and delivered in one format. Once taking the shape of database files - such as, excel, csv and access - it is now being presented in non-traditional forms, like video, text, pdf, and graphics on social media, as well as via tech such as wearable devices. Photographs, sensor data, tweets, encryptedpackets, and so on are of different varieties. Each of these are very different from each other. This data isn't the old rows and columns and database joins. It's very different from application to application, and much of it is unstructured. That means it doesn't easily fit into fields on a spreadsheet or a database application. Take, for example, e-mail messages. A legal discovery process might require sifting through thousands to millions of e-mail messages in a collection. Not one of those messages is going to be exactly like another. Each one will consist of a sender's e-mail address, a destination, plus a time stamp. Each message will have human-written text and possibly attachments. Photos and videos and audio recordings and e-mail messages and documents and books and presentations and tweets and ECG strips are all data, but they're generally unstructured, and incredibly varied. All that data diversity makes up the variety vector of big data.

Managing the Three V's

It would take a library of books to describe all the various methods that big data practitioners use to process the three Vs. For now, though, your big takeaway should be this: once you start talking about data in terms that go beyond basic buckets, once you start talking about epic quantities, insane flow, and wide assortment, you're talking about big data. One final thought: there are now ways to sift through all that insanity and glean insights that can be applied to solving problems, discerning patterns, and identifying opportunities. Thatprocess is called analytics, and that's why, when you hear big data discussed, you often hear the term analytics applied in the same sentence. The three Vs describe the data to be analyzed. Analytics is the process of deriving value from that data. Taken together, there is the potential for amazing insight or worrisome oversight. Like every other great power, big data comes with great promise and great responsibility

3. **Explain about Customer Journey Map.**

Customer Journey Map: A customer journey map is a visual depiction of the stages customers go through when interacting with a company -- from buying products online to accessing customer service on the phone to airing grievances on social media.

The main benefits of building a customer journey map include the following:

Extracts insightful information. Creating a customer journey map can provide insight for all levels in an organization -- from a sales rep who needs to figure out the best ways to interact with potential customers to managers looking for insight on which outlets customers use most. A customer journey map, for instance, can show that a certain department lacks the resources or tools needed to follow up with clients after a sale.

Predicts consumer behavior. A customer journey map helps companies assess the current state as well as the future state of the customer's journey. As clients move through the different stages of the sales funnel, journey maps can forecast their behavior and predict the likelihood that a certain prospect converts. Companies can decide how to effectively facilitate and expedite the sales process for potential consumers by having a thorough understanding of the target demographic.

Detects gaps and loopholes. A customer journey map can effectively identify loopholes in processes and break down silos between departments. It can also highlight and identify gaps in the customer experience including the following:

- Gaps between devices, when a user moves from one device to another.
- Gaps between departments, where the user might get frustrated.
- Gaps between channels, where the experience of going from social media to the website could be better.

Shows customer progress through the sales. One of the main benefits of a customer journey map is that it provides clear information on how customers move through the sales funnel. Maximizing the efficiency of that path means more sales at a quicker pace.

Helps businesses understand the customer's experience. Understanding what the customer is experiencing in real time is vital for sales and marketing, as it enables the organization to walk in the customer's shoes. Businesses can improve customer experience by mapping out the client's path, which includes both the pain points as well as positive customer interactions with the product.

Steps of Customer Journey Map:

There are several steps to map customer journeys effectively.

- **Focus on customer perspective**. The journey map needs to focus on how a customer experiences interactions, not how the company perceives those experiences.
- **Account for customer segments**. Acknowledge that different customer segments experience products, brands and services differently.
- **Create research maps**. Tools such as customer analytics should be used to develop maps to best reflect constituencies and their likely behavior.

- **Ensure that maps reflect all touchpoints**. Maps must show all potential communication points -- including email, text, websites and social media platforms -- through which customers want to connect with companies. Maps must also reflect different sequences in which customers take different paths.