**Data Security**

**Introduction -** Data security is collection of technologies and ethics that work to defend data from an intentional or unintentional data destruction, change in data, data revealing. It maintains data integrity, availability, confidentiality. It’s protecting an organization’s data from unauthorized access, use, exposure, trouble. To Implement data security in an organization we need to make some serious policies in a productive manner.

**Analysis on Data Security -** Many organizations invest a big part of their money to secure their data because of the increasing number of cyber-attacks daily and it is also very important. Most of all businesses today use different techniques of data security. Data openings can outcome in judicial proceeding cases and huge fines. Implementation of data security is performed by various methods that consists different range of tools or technologies. Some basic steps for data protection physical security, reasonable controls, only approved people access etc. At present days many companies provide data protection aspects some of these are free but mostly high in cost. Awareness about data security is also a big part of nations also so most of all secondary schools start teaching about data security that is really a great step towards the security of every citizen. Data security is consisting in IT sector that has many jobs opening because the fewer peoples have knowledge in computer science and IT field so data security also provides many jobs for good earnings. Some causes that can break integrity and confidentiality of data are –

* Use of untrusted tools and services: At developing phase, software developer uses different tools, services, api and libraires that increase speed of production of software but developer have responsibility to check that tools and libraries are secured or not. If these tools and services are not safe but used in software then software has more chances to break confidentiality, integrity and data lose.
* Not validate user input: Validation on input field is really important part in websites and software at present days because many attackers trying to get access of database, stole some authorized persons login details etc., by inserting different queries.
* Software bugs: Developers leave some bugs in software that can be unintentionally or intentionally in the software.

**Data Encryption -** The method of converting normal text messages into (non-readable) Cipher text is called Encryption. Just its opposite process is known as Decryption, In which data decoding from non-readable text message back to plain text message. Whenever we want to establish secure communication between multiple user we can use many methods like end-to-end encryption is good method from one of these methods in which sender have to convert normal text message to cipher text message then send to the receiver at other end where receiver convert cipher text message to normal text message. In End-to-End Encryption model server do not decrypt data its original form will be only visible to sender and receiver end. Encryption is one of the most fundamental data security best practices, until now it is frequently ignored. For encrypt or decrypt data we can use different type of key algorithms and hash functions etc.

**Advantages and disadvantages of data encryption –**

**Advantages:**

1. Data encryption makes information secure and flexible.
2. Requires no maintenance password for end-user.
3. It ensures that data cannot be breached or easily hacked.
4. End-To-End Encryption confirms that no one can see original data without use of the decode key not even administrator.

**Disadvantages:**

1. Data encryption implantation is hard. It requires lots of effort at first implementation.
2. It slows down performance of overall database when data transmitted between multiple devices.
3. It is costly process because encrypted data size is bigger than normal data so it requires more space in system.
4. Both symmetric encryption and asymmetric encryption is based on public and private keys if any one of these keys are lost then it has chances of data lose.