Tech Carrel

LIBRARY:

A library is a collection of pre-written code and functionalities that can be used to perform specific tasks. Developers use libraries by invoking their functions or methods to achieve desired actions. Libraries are independent and can be utilized in various projects without enforcing a particular structure or architecture.

API (APPLICATION PROGRAMMING INTERFACE)

An API is an interface that allows different software systems or components to communicate with each other. **APIs define the protocols and methods that applications can use to request and exchange data or services.** APIs abstract the underlying implementation, providing a standardized way to interact with a system, service, or platform.

FRAMEWORK

A framework is a pre-defined structure that provides guidelines and dictates the overall architecture of an application. Unlike a library, which is a collection of functions and tools, *a framework imposes a specific flow of control and often includes essential components, design patterns, and libraries.* Developers work within the structure and guidelines set by the framework, filling in the specific implementation details as needed.

Aspect	Library	(Application Programming Interface)	Framework
Definition	Collection of pre-written code	Interface for interaction with software	Pre-defined structure with guidelines
Purpose	Provides reusable functions or tools	Defines how different software components interact	Offers a structured approach to building applications
Usage	Developers use specific functions	Developers use protocols and methods	Developers follow the provided architecture and guidelines
Dependency	Can be used independently	Depends on external implementation details	Comprehensive and includes necessary components
Flexibility	More flexible as it's modular	Less flexible due to predefined functionality	Provides a specific structure and flow
Example	React.js	Google Maps API (Accessing map data)	Django(python) , Angular (JavaScript application framework)

A library provides pre-built functionalities that developers can use and integrate into their code, an API defines the rules for communication between software components, and a framework sets the overall structure and guidelines for building an application. Libraries are more flexible and independent, APIs facilitate communication, and frameworks offer a structured approach to development.