

## API(Application Program Interface):

In Java, API stands for **Application Programming Interface**. It represents a set of predefined classes, interfaces, and methods that provide a way for developers to interact with and utilize functionalities within the Java platform or external systems.

### REAL TIME SCENARIO:

**MakeMyTrip** is a travel booking platform powered by multiple **real-time APIs** that connect to airlines, hotels, and other transport providers. It aggregates live data, lets users book instantly, and handles payments and confirmations — all through seamless API communication.

### How APIs Work in MakeMyTrip

- **Real-time** **APIs:**  
Airlines and hotels expose APIs that provide live data on seat/room availability and prices. MMT calls these APIs to get instant results. For example, when you search for a flight, MMT's backend sends a request to the airline's API to get available flights.
- **Booking** **APIs:**  
When you book, MMT sends a booking request with passenger info, payment, etc., to the airline/hotel's booking API, and waits for confirmation.
- **Payment** **APIs:**  
MMT uses payment gateway APIs (like Razorpay, Paytm, Stripe) to securely process your payment.

- **UserNotificationAPIs:**

SMS, email, and push notification APIs keep users updated on their booking status.

Java is a full-fledged and powerful language that can be used in many ways. It comes in

Three editions:

- **Java Standard Edition (Java SE)** to develop **client-side applications**. The applications can run standalone or as applets running from a Web browser.

- **Java Enterprise Edition (Java EE)** to develop **server-side applications**, such as Java servlets, Java Server Pages (JSP), and Java Server Faces (JSF).

- **Java Micro Edition (Java ME)** to develop **applications for mobile devices**, such as cell phones.

## **JDK AND IDE**

The JDK consists of a set of separate programs, each invoked from a command line, for developing and testing Java programs. Instead of using the JDK, you can use a Java development tool (e.g., NetBeans, Eclipse, and TextPad)—software that provides an **integrated development environment (IDE)** for developing Java programs quickly. Editing, compiling, building, debugging, and online help are integrated in one graphical user interface. You simply enter source code in one window or open an existing file in a window, and then click a button or menu item or press a function key to compile and run the program.

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## What is an IDE?

An **IDE** is a software application that provides comprehensive facilities to programmers for software development. **It combines several tools into a single interface** to make coding easier, faster, and more efficient.

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## Core Functionalities of an IDE

### 1. Code Editor

- A powerful text editor designed for writing source code.
- Features like syntax highlighting, code completion, indentation, and error detection.

### 2. Compiler/Interpreter Integration

- Allows you to compile or run your code directly from the IDE without switching to the command line.

### 3. Debugger

- Helps you test and debug your code by running it step-by-step, setting breakpoints, and inspecting variables.

### 4. Build Automation Tools

- Automate tasks like compiling code, packaging binaries, running tests, etc.

### 5. Version Control Integration

- Integrate with systems like Git, allowing you to commit, push, pull code changes without leaving the IDE.

### 6. Project Management

- Organize files and folders related to your software project. Manage dependencies and configurations.

## **7. Code Navigation and Refactoring**

- Easily navigate between files, functions, classes.
- Rename variables, extract methods safely across the codebase

## **Examples of Popular IDEs**

- **Visual Studio Code (VS Code)** — Lightweight, extensible, supports many languages.
- **IntelliJ IDEA** — Popular for Java development.
- **PyCharm** — Specialized for Python.
- **Eclipse** — Open-source, mainly Java.
- **Android Studio** — For Android app development.
- **Xcode** — For macOS/iOS development.