**Object Oriented Programming**

Object Oriented Programming (OOP) is a programming model where programs are organized around objects and data rather than action and logic.  
  
OOP allows decomposition of a problem into a number of entities called objects and then builds data and functions around these objects.

Object-oriented programming has several advantages over procedural programming:

* OOP is faster and easier to execute
* OOP provides a clear structure for the programs
* OOP helps to keep the C# code DRY "Don't Repeat Yourself", and makes the code easier to maintain, modify and debug
* OOP makes it possible to create full reusable applications with less code and shorter development time

**OOP EXAMPLE CAR IS A CLASS AND FORD, MERC ARE OBJECTS**

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| --- | --- |
| **public** | The code is accessible for all classes |
| **private** | The code is only accessible within the same class |
| **protected** | The code is accessible within the same class, or in a class that is inherited from that class. |

**The Four Principles of Object-Oriented-Programming (OOP):**

Encapsulation: encapsulation is a method to hide the data in a single entity or unit along with a method to protect information from outside. is to make sure that "sensitive" data is hidden from users

Abstraction: is the process of hiding certain details and showing only essential information to the user.  
Abstraction can be achieved with either abstract classes or [interfaces](https://www.w3schools.com/cs/cs_interface.asp)

Inheritance;   Inheritance is the ability of one object to acquire some/all properties of another object

Derived Class (child) - the class that inherits from another class Base Class (parent) - the class being inherited from,

Polymorphism: means "many forms", and it occurs when we have many classes that are related to each other by inheritance. [**Inheritance**](https://www.w3schools.com/cs/cs_inheritance.asp) lets us inherit fields and methods from another class. **Polymorphism** uses those methods to perform different tasks

API

An API for a website is [code](https://whatis.techtarget.com/definition/code) that allows two software programs to communicate with each other. The API spells out the proper way for a developer to write a program requesting services from an operating system or other application.

Web API

Web API as the name suggests, is an API over the web which can be accessed using HTTP protocol. It is a concept and not a technology. We can build Web API using different technologies such as Java, .NET etc. For example, Twitter's [REST APIs](https://dev.twitter.com/rest/public) provide programmatic access to read and write data using which we can in

A **Web service** is a method of communication between two electronic devices over a network.  All **Web services** are **APIs** but all **APIs** are not **web services**.

RESTful API

A RESTful API is an architectural style for an application program interface ([API](https://searchapparchitecture.techtarget.com/definition/application-program-interface-API)) that uses HTTP requests to access and use data. That data can be used to GET, PUT, POST and DELETE data types, which refers to the reading, updating, creating and deleting of operations concerning resources.tegrate twitter's capabilities into our own application.

A RESTful API uses existing HTTP methodologies defined by the RFC 2616 protocol, such as:

* GET to retrieve a resource;
* PUT to change the state of or update a resource, which can be an object, file or block;
* POST to create that resource; and
* DELETE to remove it.

REST defines 6 architectural constraints which make any web service – a true RESTful API.

* Uniform interface.
* Client–server.
* Stateless.
* Cacheable.
* Layered system.
* Code on demand (optional)