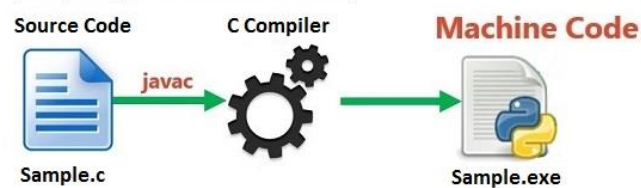


Wondering how a Java Program Executes???

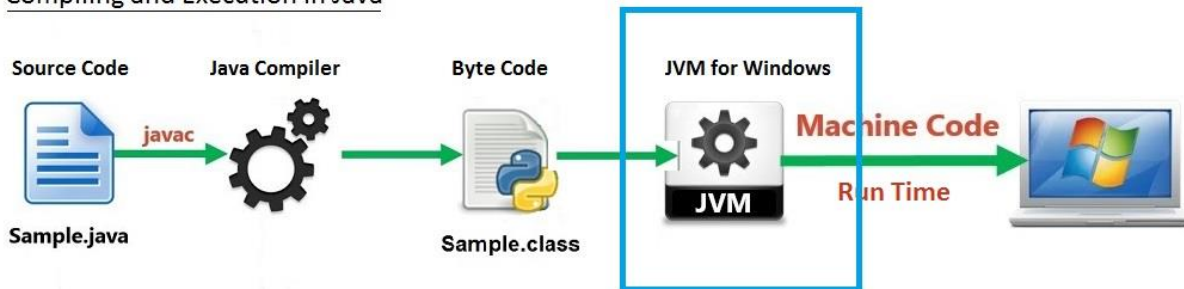
We'll see how it executes but first let's get to know how a C program executes. And then we'll compare it with how java program executes.



Compiling and Execution in C



Compiling and Execution in Java



From the above diagram we can see that **C executes faster than Java** as it has less steps to execute. In java we have extra step that is **Compiler converts the source file to byte code (This is where platform independency is achieved)**. Then **JVM converts byte code to machine language** and is fed to processor to get output.

Applications

Applications are of two types:

- Embedded applications
- Portable applications

Embedded applications:

An **embedded application** is software that is **placed permanently inside some kind of device to perform a very specific set of functions**. The program instructions for **embedded** systems are called **firmware**, or **embedded software**, and are stored in **read-only memory**, or **flash memory chips**.

For embedded applications Speed is very important factor.

EMBEDDED EXAMPLES



Portable applications:



A **portable application (portable app)**, sometimes also called **standalone**, is a **program designed to read and write its configuration settings** into an accessible folder in the computer, usually in the folder where the portable application can be found. This makes it easier to transfer the program with the user's preferences and data

between different computers. **A program that doesn't have any configuration options can also be a portable application.**

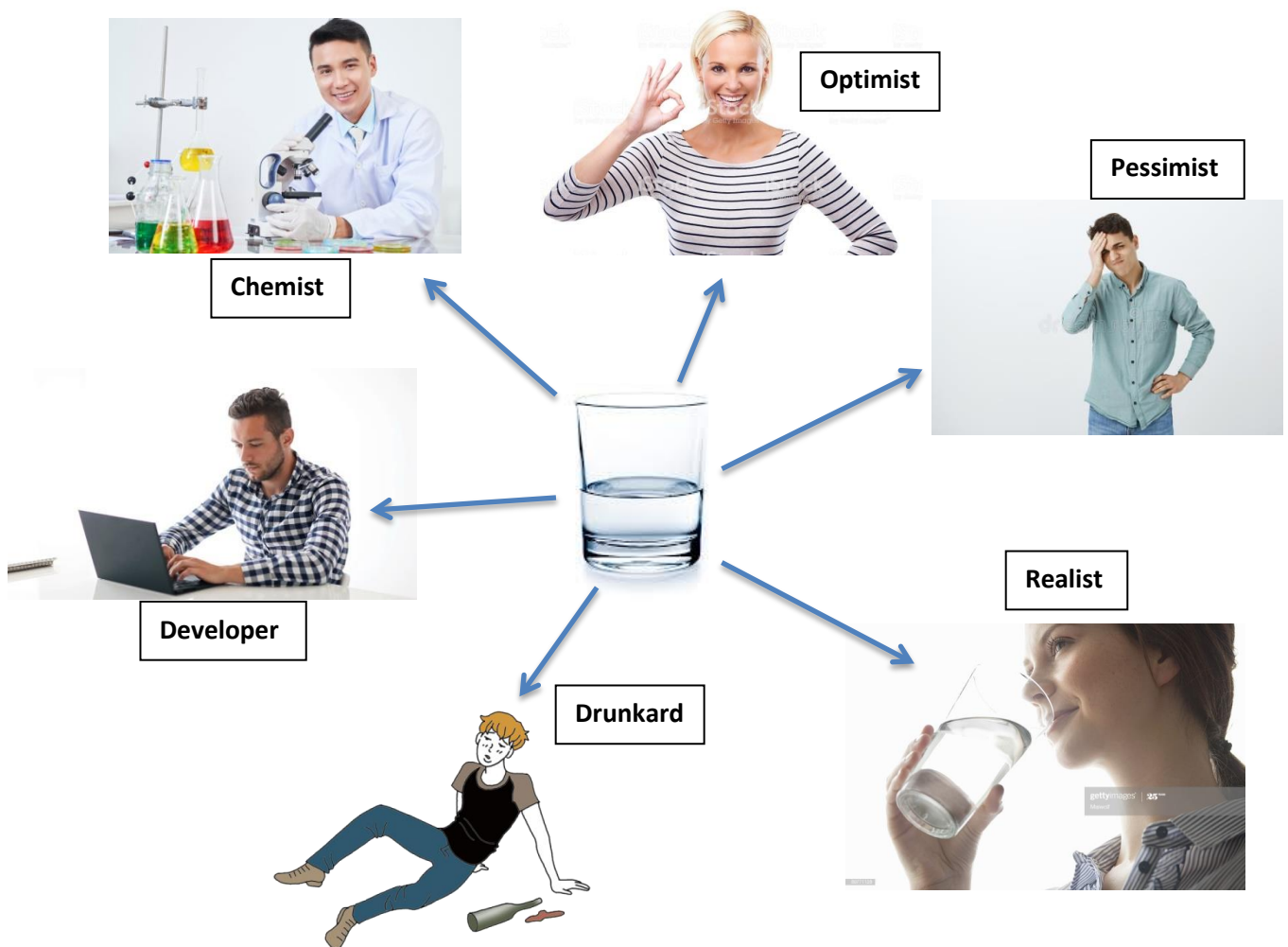
Portable applications can be stored on any **data storage device**, or in other words **these applications are platform independent.**

Object Orientation

Before going ahead with the **object orientation**. Let's get to know **what is orientation?**

Orientation → Perspective → Way of looking at something

Let us take an example of glass of water and try to understand in better way:



A chemist will see the glass of water as liquid + gas, an optimistic person will look at it as half full glass, a pessimistic person will see it as half empty glass, a realist will see it as glass of water, a drunkard will see it as maybe..alcohol??? but a **developer will view it as an object**.

Object Orientation is the way of looking at this world as a collection of objects. In this world no object is completely useless. All objects are in constant interaction with each other. No object exists in isolation.

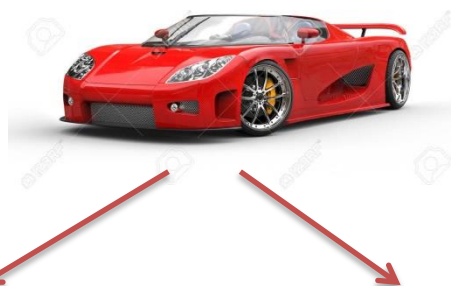


A programming language, system or software methodology that is built on the concepts of objects is called as Object Oriented Programming (OOP) language.

Key Points

- Every object belongs to a type. Where type does not exist but the objects of the type exist in reality.
- Every object has two parts:
 1. “has” part refers to the **properties/state of an object**. To take care of **has** part in Java we make use of **Data types**.
 2. “does” part refers to the **behaviour of an object**. To take care of **does** part in java we use of **methods or functions**.

Let's see the same with example



State/properties:

- Name
- Cost
- mileage

Behaviours:

- start()
- accelerate()
- stop()

```

class Car
{
    String name; //has part or state
    int cost;
    int mileage;

    void start() // behaviour or does part
    {
        //body of method
    }
    void accelerate()
    {
        //body of method
    }
    void stop()
    {
        //body of method
    }
}

```



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Number of objects created in the example here is 0. Because to create object we always have to call JVM by using the keyword **new**.

Let's see how to create an object in java:

```

Car c1 = new Car(); //object1 creation
Car c2 = new Car(); //object2 creation

c1.start(); //object1 calling start()
c1.accelerate(); //object1 calling accelerate()
c1.stop(); //object1 calling stop()

c2.start(); //object2 calling start()
c2.accelerate(); //object2 calling accelerate()
c2.stop(); //object2 calling stop()

```

In the above example you can see that multiple objects have been created which is perfectly possible in java.

