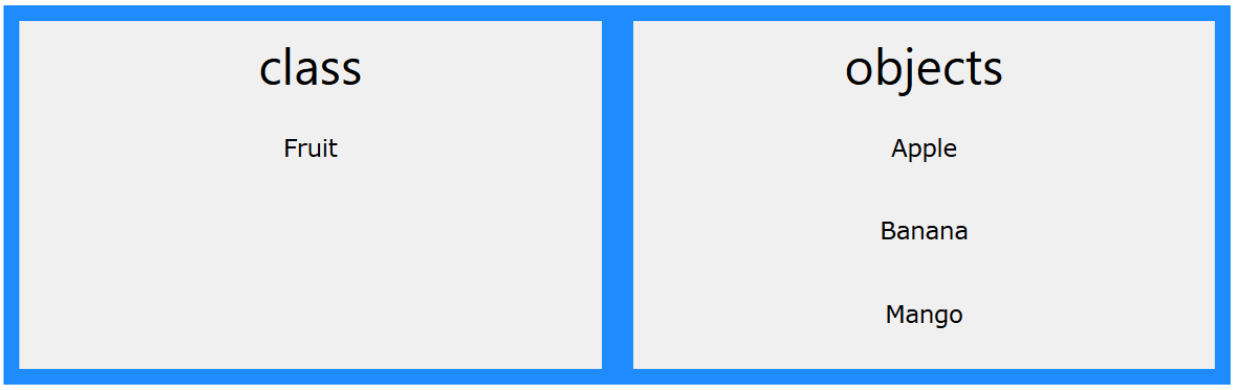
Java OOP report

- Object-Oriented Programming (OOP) helps reduce code repetition and improves the efficiency, organization, and readability of programs.
- **Class**: A blueprint or template used to create objects.
- **Object**: An instance of a class that contains data and behavior.



- Java is an object-oriented programming language, which means that everything in Java is centered around classes and objects.
- Declaring a class:

Main.java

Create a class named " Main " with a variable x:

```
public class Main {
  int x = 5;
}
```

-
- Object in class:

Create an object called " myObj " and print the value of x:

```
public class Main {
  int x = 5;

  public static void main(String[] args) {
    Main myObj = new Main();
    System.out.println(myObj.x);
  }
}
```

Try it Yourself »

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Method: function within a class, used to perform certain actions when called.
Creating a method:

Create a method named `myMethod()` in Main:

```
public class Main {
  static void myMethod() {
    System.out.println("Hello World!");
  }
}
```

Public vs static attributes & methods:
Public: can only be accessed by objects.
Static: can be accessed without creating an object of the class.

constructor sets initial values for objects.

Encapsulation means hiding the internal details of how an object works and only exposing what is necessary.
It uses the “private” keyword to hide an object, to access the object you will use get and set methods.
Eg:

```
private String _name;
void set_name(String name) {
   _name = name;
}

String get_name(){
   return _name;
}
```

Inheritance:

Inheritance lets you create a new class based on an existing class, so you don’t have to rewrite code. The new class reuses, extends, or modifies the behavior of the parent class.

Eg:

```
public class Teacher extends User{
   void verify(){
        System.out.println("Verifying through phone");
        set_verified(true);
   }
}
```

Abstraction:
An abstract class is a ‘base class’ meaning no objects will be part of the class but other classes will inherit from that class.
Polymorphism:
Polymorphism means that the same method name or object can behave differently depending on the context.
A method can behave differently depending on the object or class.
Below is a github link for where I practiced OOP.
https://github.com/Qais-Alraisi/TestingOOP

References:
https://www.w3schools.com/java/java_oop.asp
https://www.youtube.com/watch?v=Af3s3KsxStY
ChatGPT