

Understanding APIs and Javadoc (Student Handout)

1. What is an API?

An API (Application Programming Interface) is a contract that defines how one piece of software can interact with another. In Java, an API consists of the public classes, methods, and fields that other code can use without seeing the internal implementation.

Example: When I write `LocalDate.now()`, I'm using the Java API for the LocalDate class.

2. The people-lib API

The people-lib library is a small Java API containing three classes: Person, Student, and Staff. These demonstrate key object-oriented principles like abstraction, encapsulation, inheritance, and polymorphism.

Each class exposes public methods (getters, setters, constructors, and helper methods) that can be used by another project, such as a main application.

3. API Summary

Class	Description	Key Public Methods
Person	Base class that holds core person data and provides validation.	getName(), setName(), getAddress(), setAddress(), calculateAge(), getSummary(), toString()
Student	Extends Person with a programme field representing the student's course.	getProgramme(), setProgramme(), toString()
Staff	Extends Person with role and schoolName fields for staff details.	getRole(), setRole(), getSchoolName(), setSchoolName(), toString()

4. Example Usage

```
import week4.*;
import java.time.LocalDate;

public class Main {
    public static void main(String[] args) {
        Person student = new Student("Ava", LocalDate.of(2005,3,14), 2024, "Dublin", "TU850
BSc CS");
        Person staff = new Staff("Dr. Byrne", LocalDate.of(1980,7,2), 2010, "Tallaght",
```

```
"Lecturer", "Computing");
    System.out.println(student.getSummary());
    System.out.println(staff.getSummary());
}
}
```

Output:

Ava (20 yrs), started in 2024

Dr. Byrne (45 yrs), started in 2010

5. Summary

An API is how a program exposes its functionality for others to use. The Javadoc provides the documentation explaining how to use that API. The people-lib library is a small, well-documented example of creating and sharing an API in Java.