

Introduction into Object Oriented Programming

Chapter 1



Faculty of Information Technology

Agenda

Structured Programming

Object-Oriented Programming

Why Object-Oriented Programming

Object-Oriented Programming Features

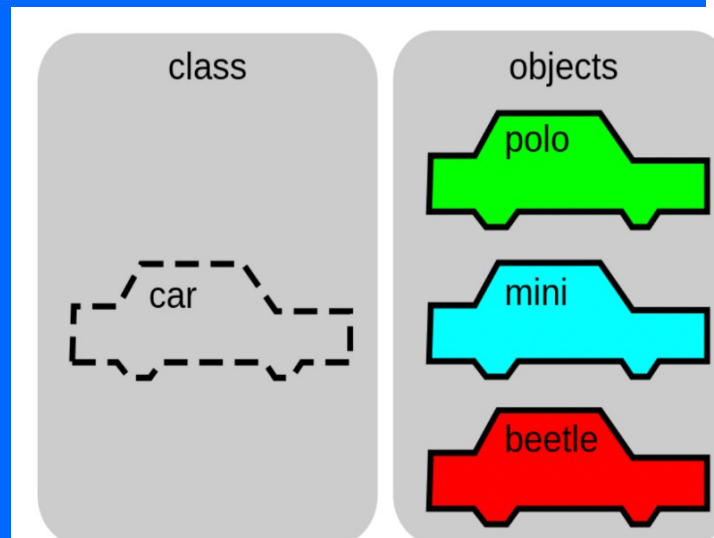
Course Syllabus



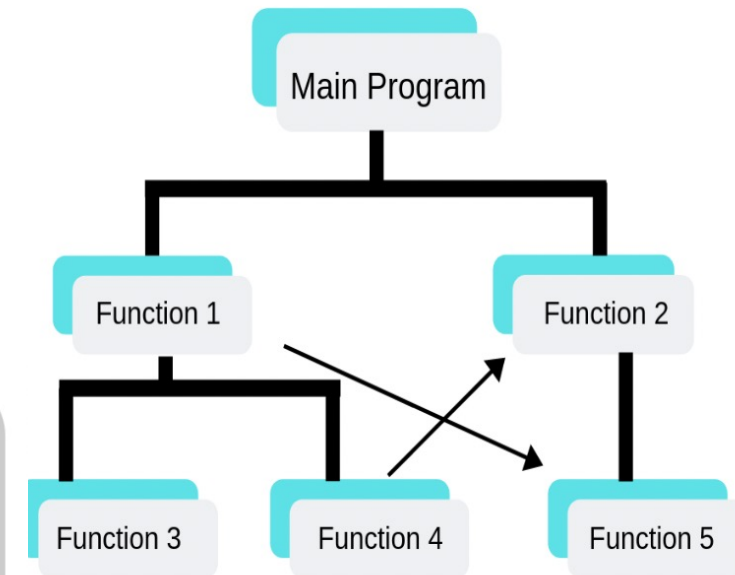
What is Structured Programming

- The structured programming allows developing a program using a set of modules or functions
- The object-oriented programming allows constructing a program using a set of objects and their interactions

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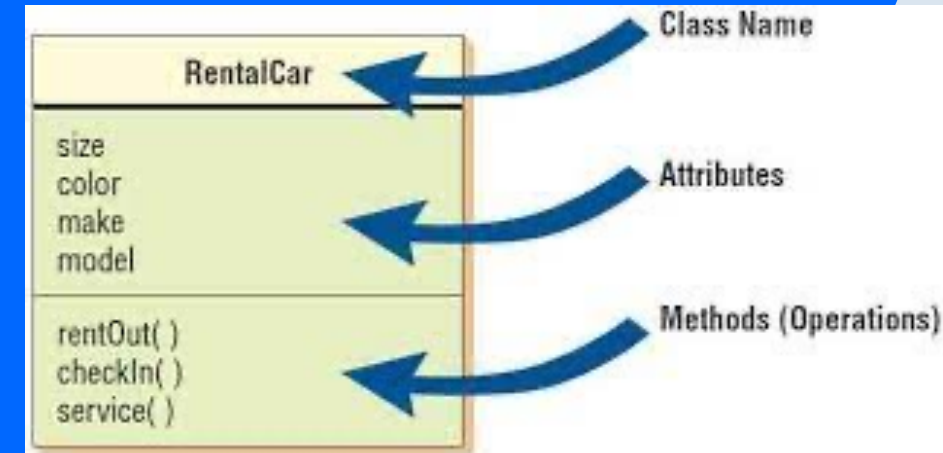
Structured Programming Language



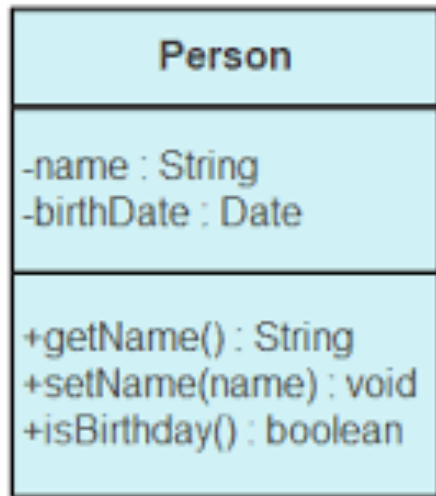
What is Object Oriented Programming

- A class is the blueprint or template for its objects.
 - Described through Name, Attributes and Methods.
- Objects are instances of a class.
- Each object has state, behavior and identity.
- You send **messages** to an object by making **method calls**

Class
Attributes
Methods



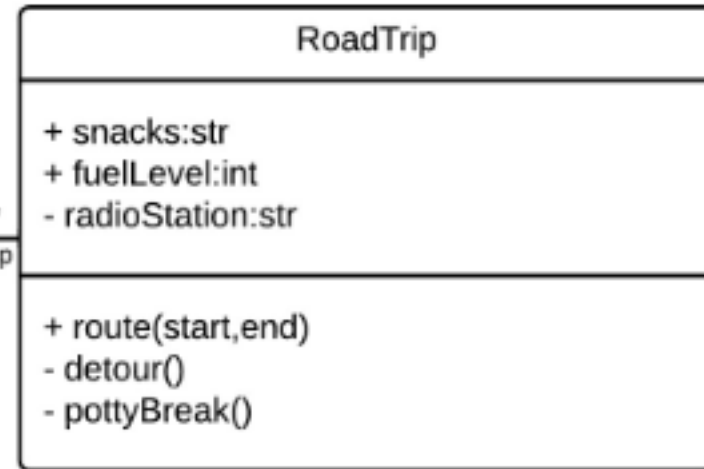
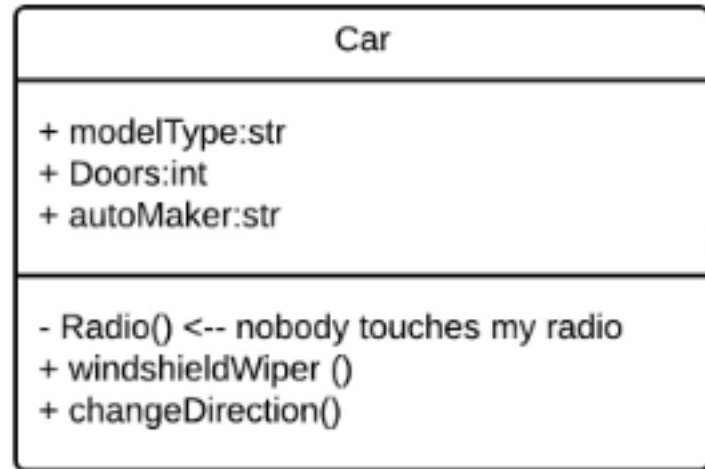
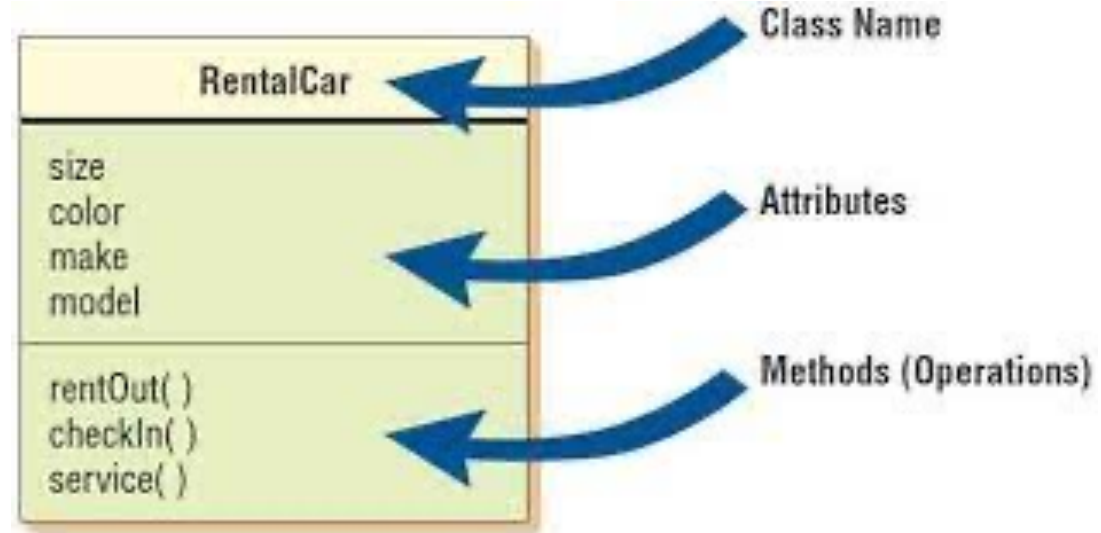
Class Examples



← Name

← Attributes

← Operations

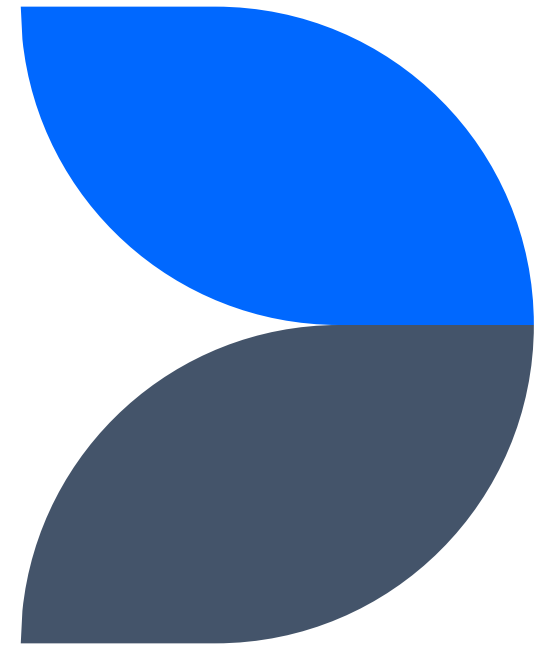


assignedCar 0..1

0..* getRoadTrip

Why Object-Oriented Programming ?

Question and Answer !



Object Oriented Programming Features

1 - Encapsulation: (Hiding Information , Wrapper)

- You don't allow data to flow freely in your system.
- Wrap data and functions into single unit → Class.
- The reason for encapsulation:
 - Putting restrictions so components of an object are not accessed easily.
 - Binding data with method.
- Promoting security.
- We will implement this thorough getters and setters.
- Data protection : public, private, protected.



Object Oriented Programming Features

2 - Abstraction: (Isolation)

- Show essential features and hide details of implementation in background.



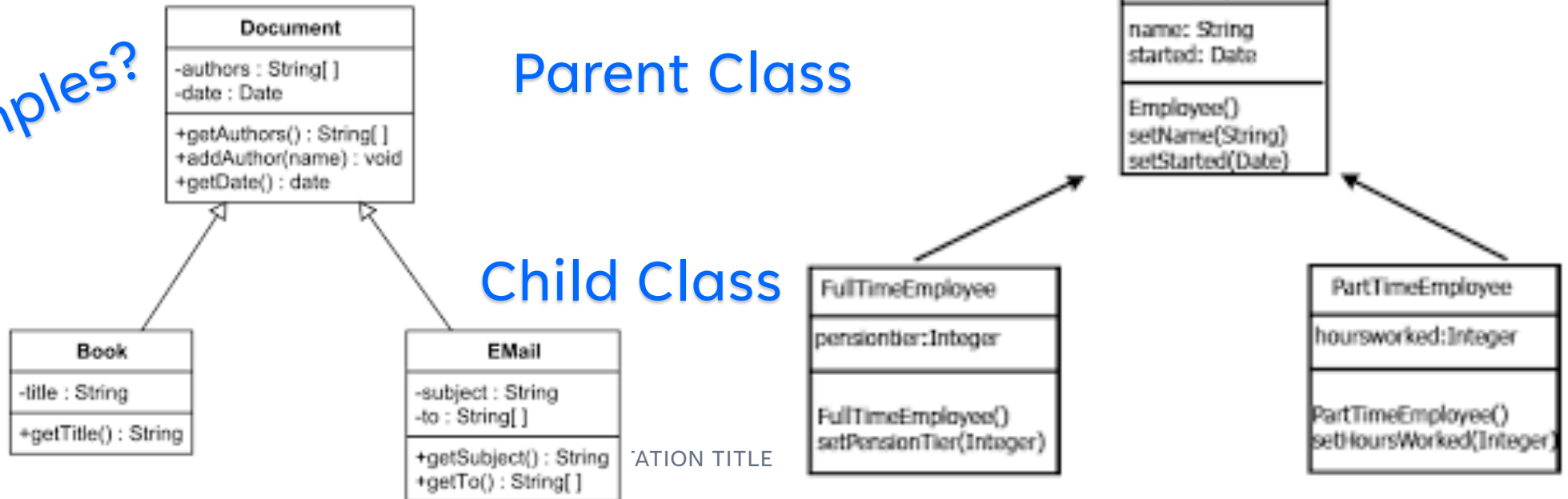
Object Oriented Programming Features

3 - Inheritance: (Reuse)

- When one object requires the properties (attributes and methods) of another object.
- The reason for inheritance:
 - To avoid code duplication. Then easier to add extra attributes/methods



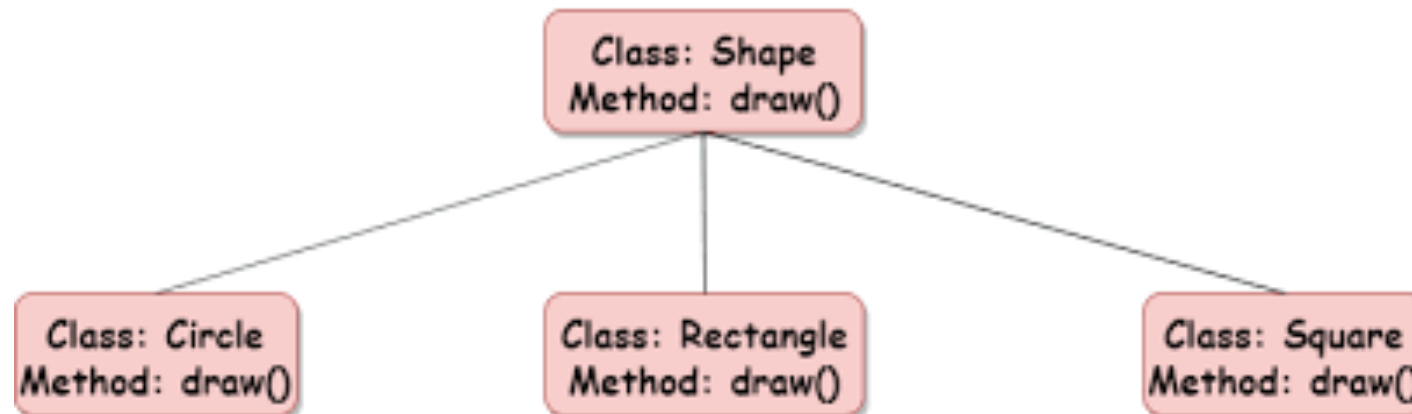
More examples?



Object Oriented Programming Features

4 - Polymorphism (Different Behaviour)

- It means one name with different forms.



Example Create Class Student

```
Public class student
```

```
{
```

```
public String name;
```

```
public int year;
```

```
Public void printHello()
```

```
{
```

```
System.out.println("Hello Student "+ name );
```

```
}
```

```
}
```

Where is the Object here ?

What is missing here ?

Can you think of Class Car ?

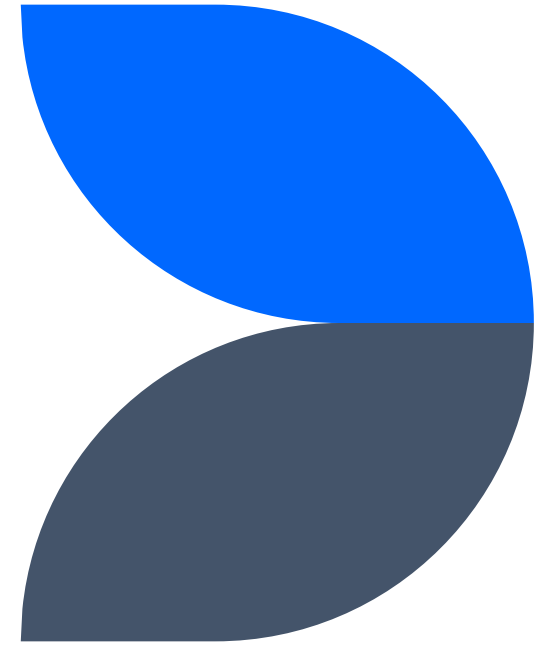
Let's go through syllabus

16 Studying Weeks

3 Quizzes

1 Mid Exam

1 Final Exam

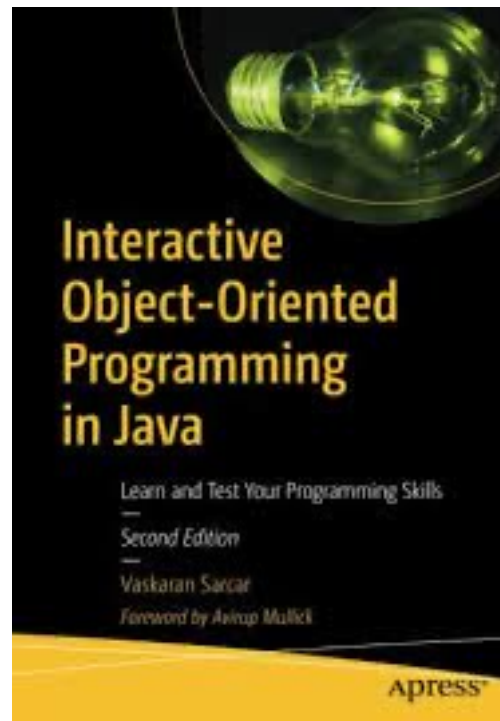


Bad programmers worry about
the code. Good programmers
worry about data structures and
their relationships.

Linus Torvalds

”

Thank you



This material was prepared from the Book:
Interactive Object-Oriented Programming
in Java- 2nd Edition
Vaskaran Sarcar