
Object-Oriented Analysis and Design using JAVA (20B12CS334)

B.Tech (CSE/IT) 5th SEM
2021-2022

Introduction to object and class

Introduction

What are objects?

- Real-world Objects
 - Things
 - Place
 - Person
 - Systems

Things

- Hyundai Creta
- Ferrari

Place

- India
- China

Person

- Ram
- Shyam

Systems

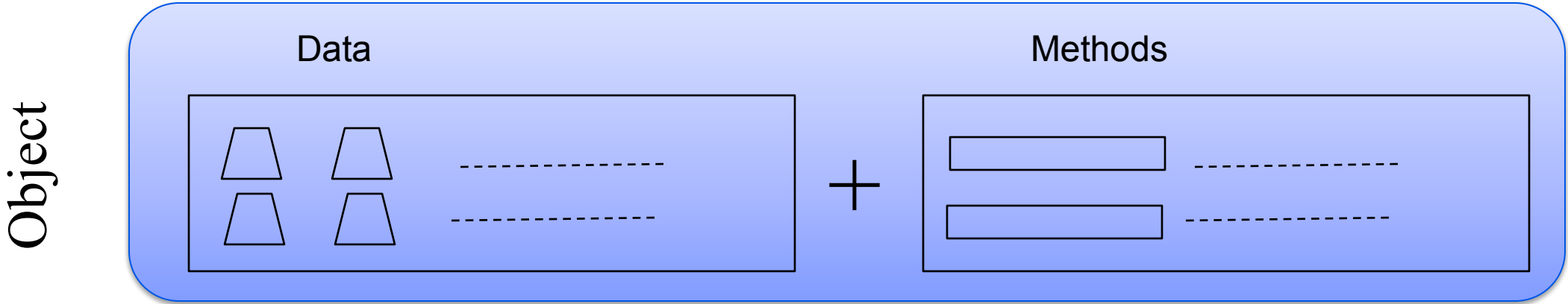
- Usha sewing machine
- Versateller ATM machine

Real-world objects

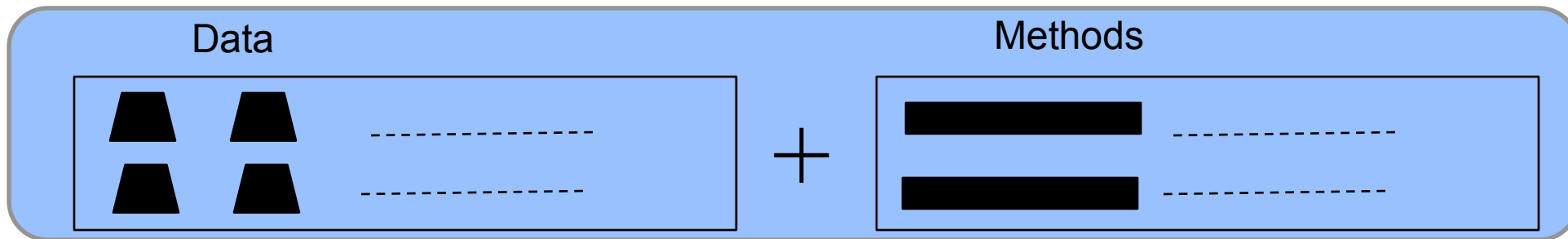
Objects	Attributes	Behavior
Hyundai Creta	Top speed	Accelerate
India	Population	Tax
Ram	Age	Walking
ATM Machine	Amount	Dispense cash

Software representation of real-world objects

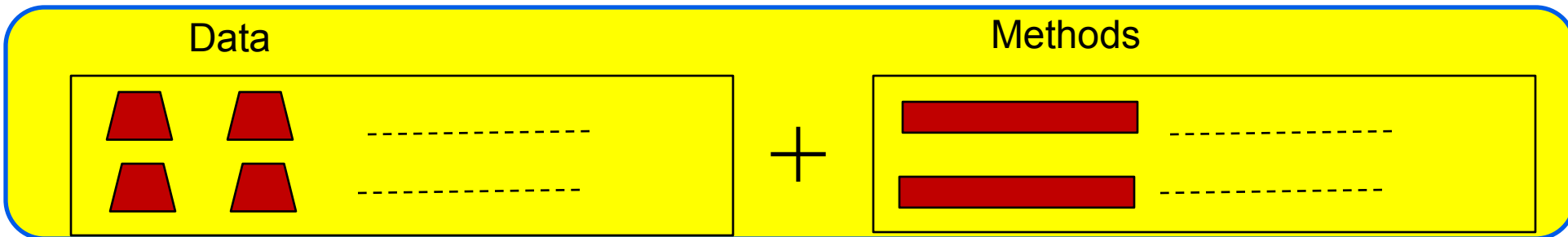
Objects	Attributes	Behavior
Hyundai Creta	Top speed	Accelerate
India	Population	Tax
Ram	Age	Height
ATM Machine	Amount	Dispense cash



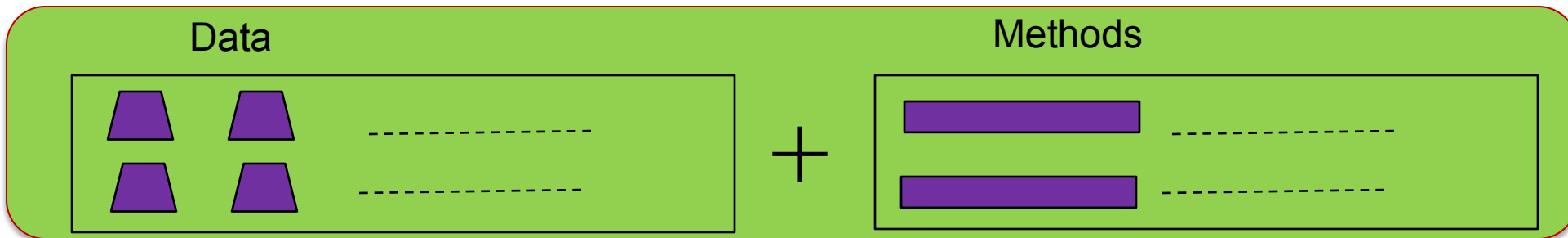
Hyundai
Creta



India



Ram



An object is a concept, abstraction, or thing with sharp boundaries and meaning for an application .An object is something that has

State

- one of the possible conditions in which an object may exist,
- represents over time the cumulative results of its behavior.

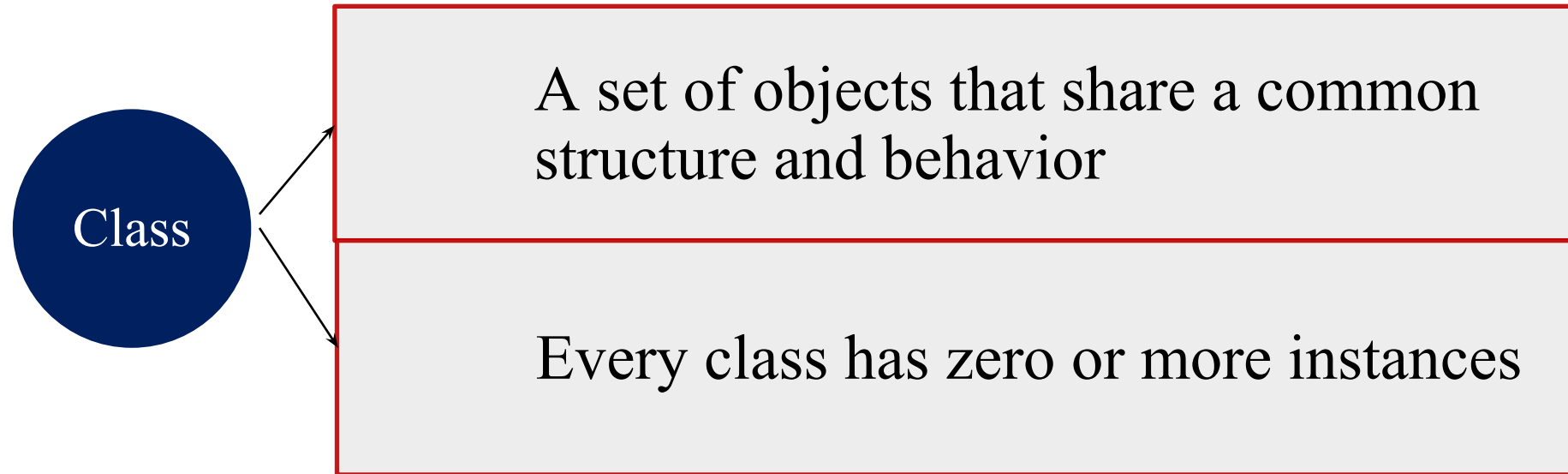
Behavior

- determines how an object acts and reacts to requests from other objects.

Identity-

- distinguishes it from other similar objects, even if its state is identical to that of another object.

What is a class?



Examples of class

Giraffe



Dog



Cat



Lions



A class is an abstraction
in that it

- Emphasizes relevant characteristics
- suppresses other characteristics

Classes are templates
used to

- Manufacture objects (instances)
- (Note that instance is a synonym of object)

Objects are similar

- All cars are similar (belong class Car)
- difference between a generic concept and a particular instance (a Ferrari)

A More Formal Definition of class

- A class is a description of a group of objects with common properties (attributes), behavior (operations), relationships, and semantics
- Related to others by characteristics

Interpretation/Representation of Objects & Classes

	Interpretation in the real world	Representation in the computer program
Object	An object represents anything in the real world that can be distinctly identified	An object has a unique identity, a state, and behaviors
Class	A class represents a set of objects with similar characteristics and behaviors. These objects are called instance of the class	A class characterizes the structure of states and behaviors that are shared by all its instances

References

- The object-oriented thought process-Developer's library By Matt Weisfeld- fourth edition-Addison-Wesley-2013.
- Head First Object-Oriented Analysis and Design- by Brett D. McLaughlin (Author), David West (Author), Gary Pollice-2011

Thank You