Object Oriented Programming – SCJ2153

Procedural Programming vs Object Oriented Programming

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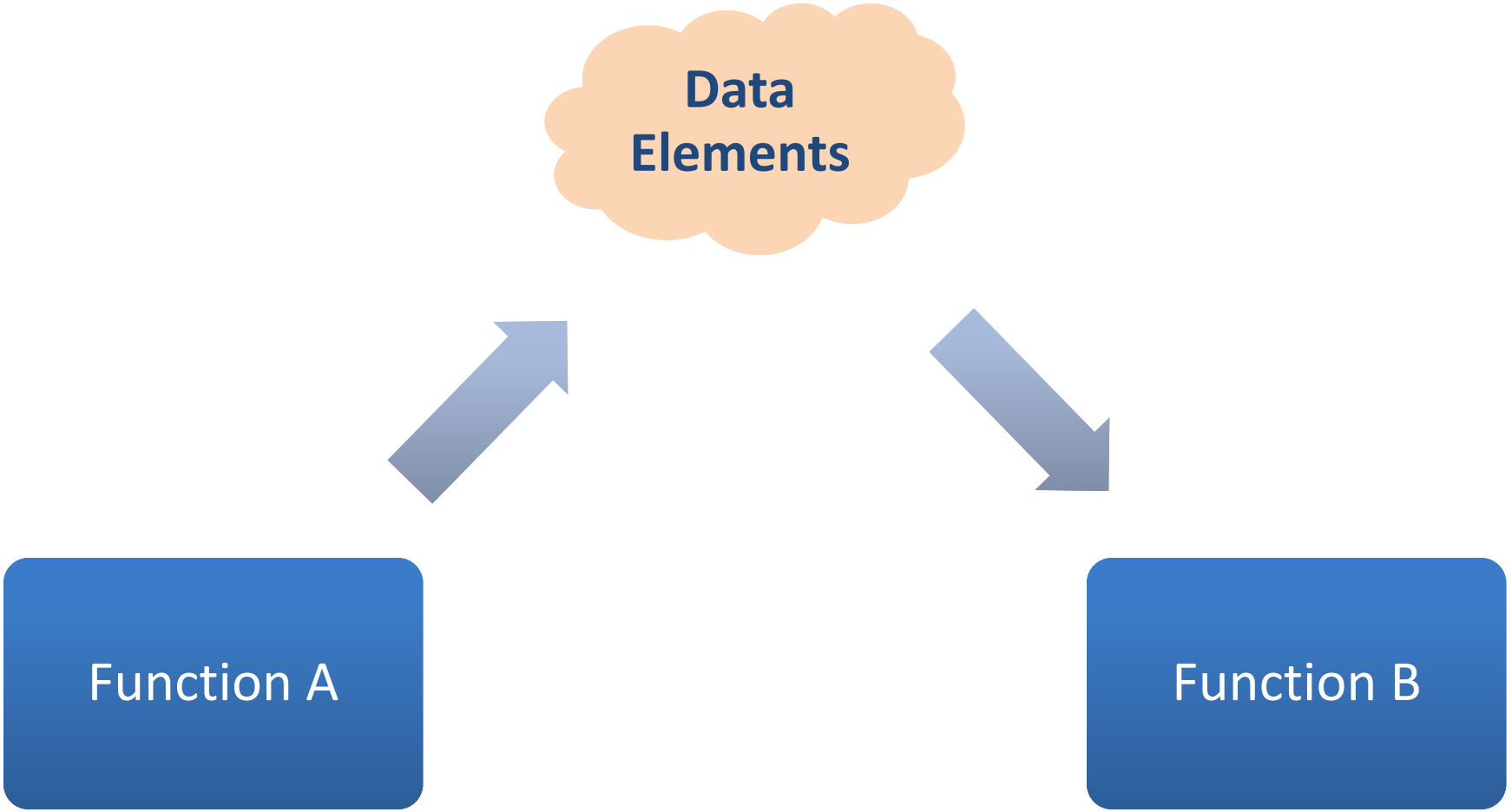
Procedural Programming

- Traditional programming languages were procedural.
  - C, Pascal, BASIC, Ada and COBOL
- Programming in procedural languages involves choosing data structures (appropriate ways to store data), designing algorithms, and translating algorithm into code.

Procedural Programming

- In procedural programming, data and operations on the data are separated.
- This methodology requires sending data to procedure/functions.

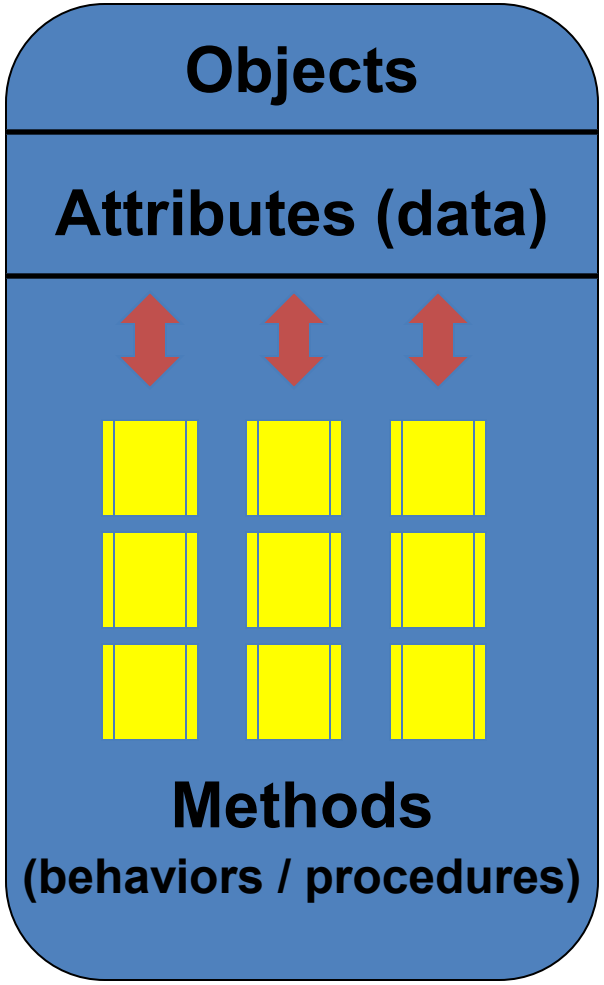
Procedural Programming



Object-Oriented Programming

- Object-oriented programming is centered on creating **objects** rather than procedures/ functions.
- Objects are a melding of **data** and **procedures** that manipulate that data.
- Data in an object are known as ***attributes***.
- Procedures/functions in an object are known as ***methods***.

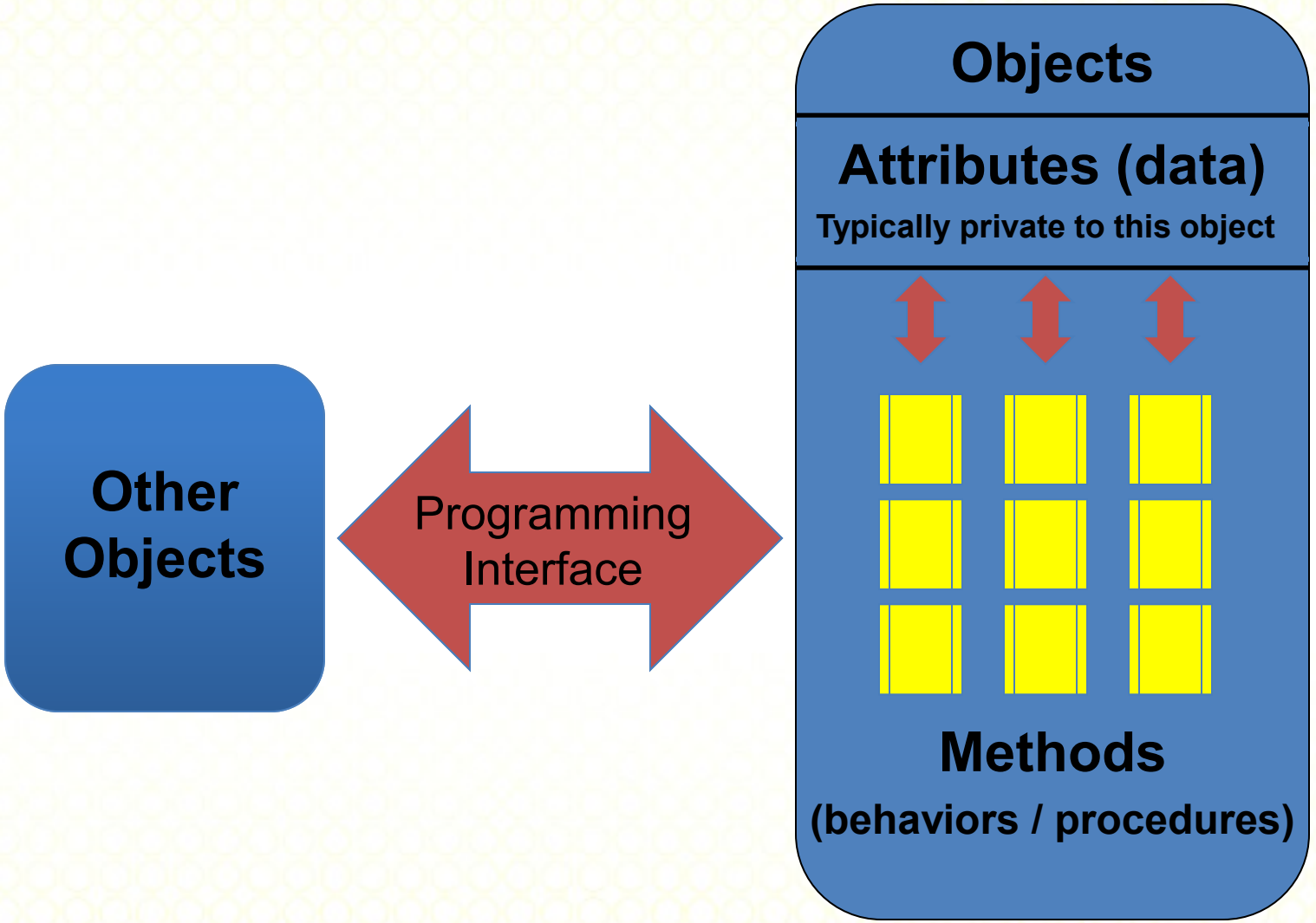
Object-Oriented Programming



Object-Oriented Programming

- Object-oriented programming combines data and behavior (or method). This is called ***encapsulation***.
- ***Data hiding*** is the ability of an object to hide data from other objects in the program.
- Only an object's **methods** should be able to directly manipulate its **attributes**.
- Other objects are allowed to manipulate an object's attributes via the object's methods.
- This indirect access is known as a ***programming interface***.

Object-Oriented Programming



Benefits of Object-oriented programming

- Save development time (and cost) by reusing code
  - once an object class is created it can be used in other applications
- Easier debugging
  - classes can be tested independently
  - reused objects have already been tested

Object-Oriented Programming Languages

- Pure OO Languages

  Smalltalk, Eiffel, Actor, Java

- Hybrid OO Languages

  C++, Objective-C, Object-Pascal