CSIT1050- Object Oriented Concepts

Lecture 03 – Object Oriented Concepts

Learning Outcomes

- At the end of the Lecture students should be able to
  - Understand Abstraction
  - Understand, describe and identify Objects and Classes

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Object Oriented Programming

- Object Oriented Programming is a method of implementation in which programs are organized as a collection of objects which cooperate to solve a problem.
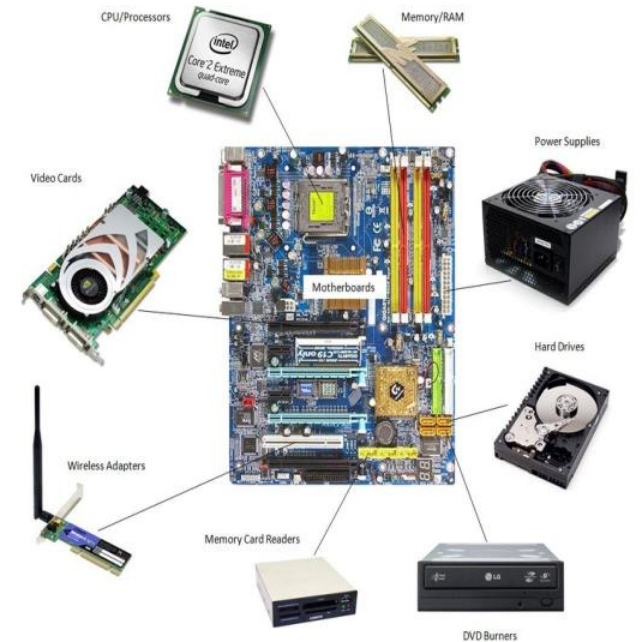- Allows to solve more complex problems easily.

Object Oriented Programming

- A complex system is developed using smaller sub systems.

- Sub systems are independent units containing their own data and functions.

- Can reuse these independent units to solve many different problems.

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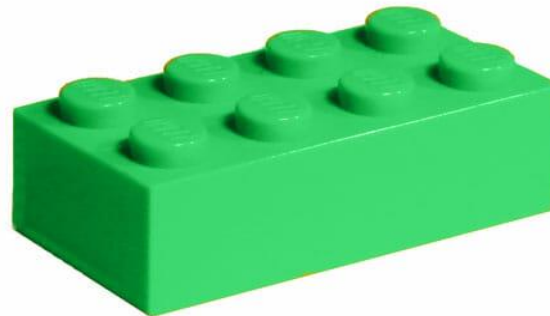
A Computer System

Basic parts of a Computer

Object – General Meaning

object

noun
/ˈɒbdʒɛkt,ˈɒbdʒɪkt/ 🔊

1. a material thing that can be seen and touched.
   "he was dragging a large object"
   synonyms: thing, article, item, piece, device, gadget, entity, body
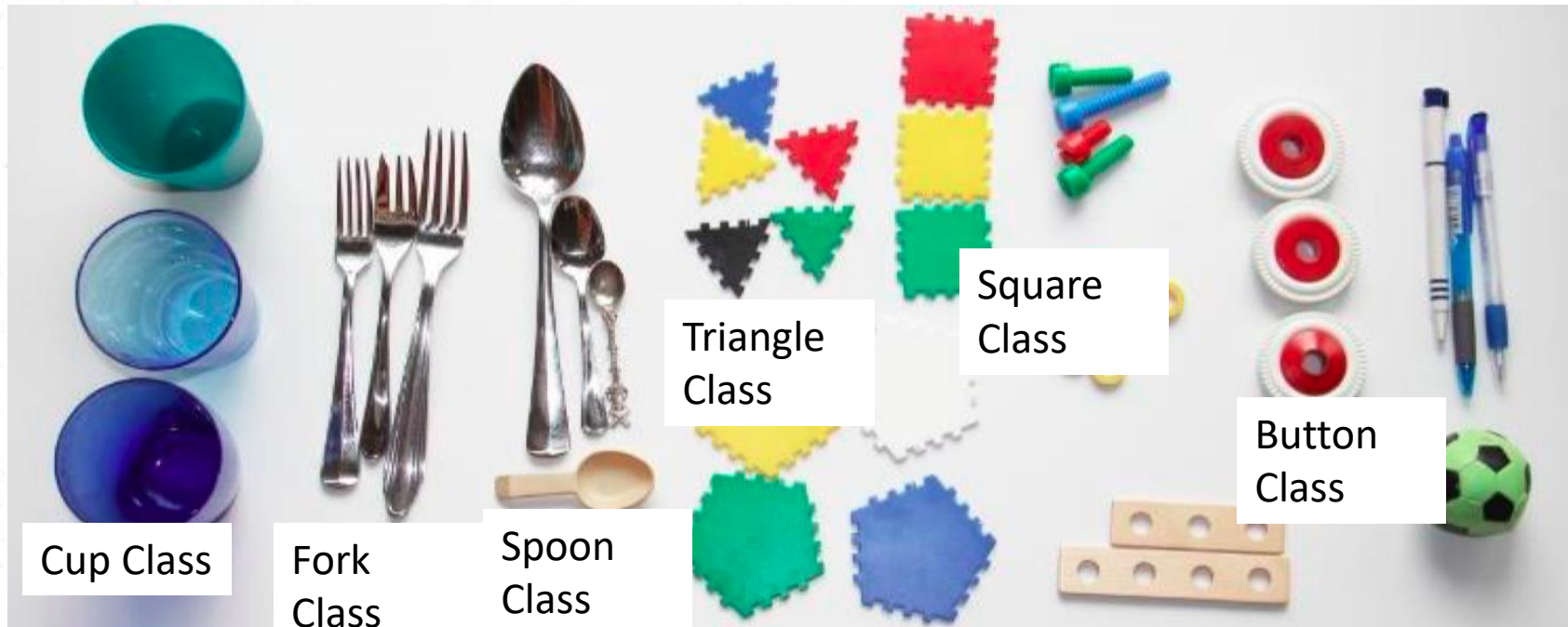
Oxford Dictionary

Objects in the Real World

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Grouping related things together

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Classes

We can classify objects into concepts. To do this we focus on the essential properties of an Object.
Classes are Concepts.

Cup Class   Fork Class   Spoon Class   Triangle Class   Square Class   Button Class

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Abstraction

- Distinguish between different Objects
- Classify Objects into Concepts
- Focus on the common properties

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Abstraction

- Distinguish between different Objects
- Classify Objects into Concepts
- Focus on the common properties

Dog Class

Cat Class

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Activity 1 – Indentify Objects and Classes

- Dr. Pradeepa
- IWT
- Dushantha
- OOC
- Prof. Chandimal
- Lalani
- SPM
- Dr. Malitha
- Theja

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Activity 1 – Indentify Objects, Classes

Lecturer	Subject	Student
Dr. Pradeepa	IWT	Dushantha
Prof. Chandimal	OOC	Lalani
Dr. Malitha	SPM	Theja

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Properties

- A class has a set of properties (attributes).
  - i.e. What do we need to store to describe a student?

- Activity - 2
  - What are the properties of a Student?
    - i.e.
      - Name
      - Age
      ...
      ..

Activity - 3

- Payroll system
  Class: Employee
  What are the properties needed ?

Employee number

Designation

Marital status

Age

Loan Installment

OT Hours

Basic Salary

OT Rate

Height

Name

Allowance

weight

Bonus

Number of children

Address

Hobbies

Insurance payment

Favourite Movie

Activity 3

- What are the necessary properties of an employee for a Payroll system of Company ?
- What are the necessary properties of an employee for a Insurance scheme system of Company ?

Payroll System	Insurance scheme information system
Employee Number	Employee Number
Name	Name
Designation	Age
Basic Salary	Basic Salary
Allowance	Height
Bonus	Weight
OT Hours	Marital Status
OT Rate	Number of Children
Loan Installment	
Insurance Payment	

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Abstraction

- Abstraction is the process of removing characteristics from 'something' in order to reduce it to a set of essential characteristics that is needed for the particular system.

Abstraction
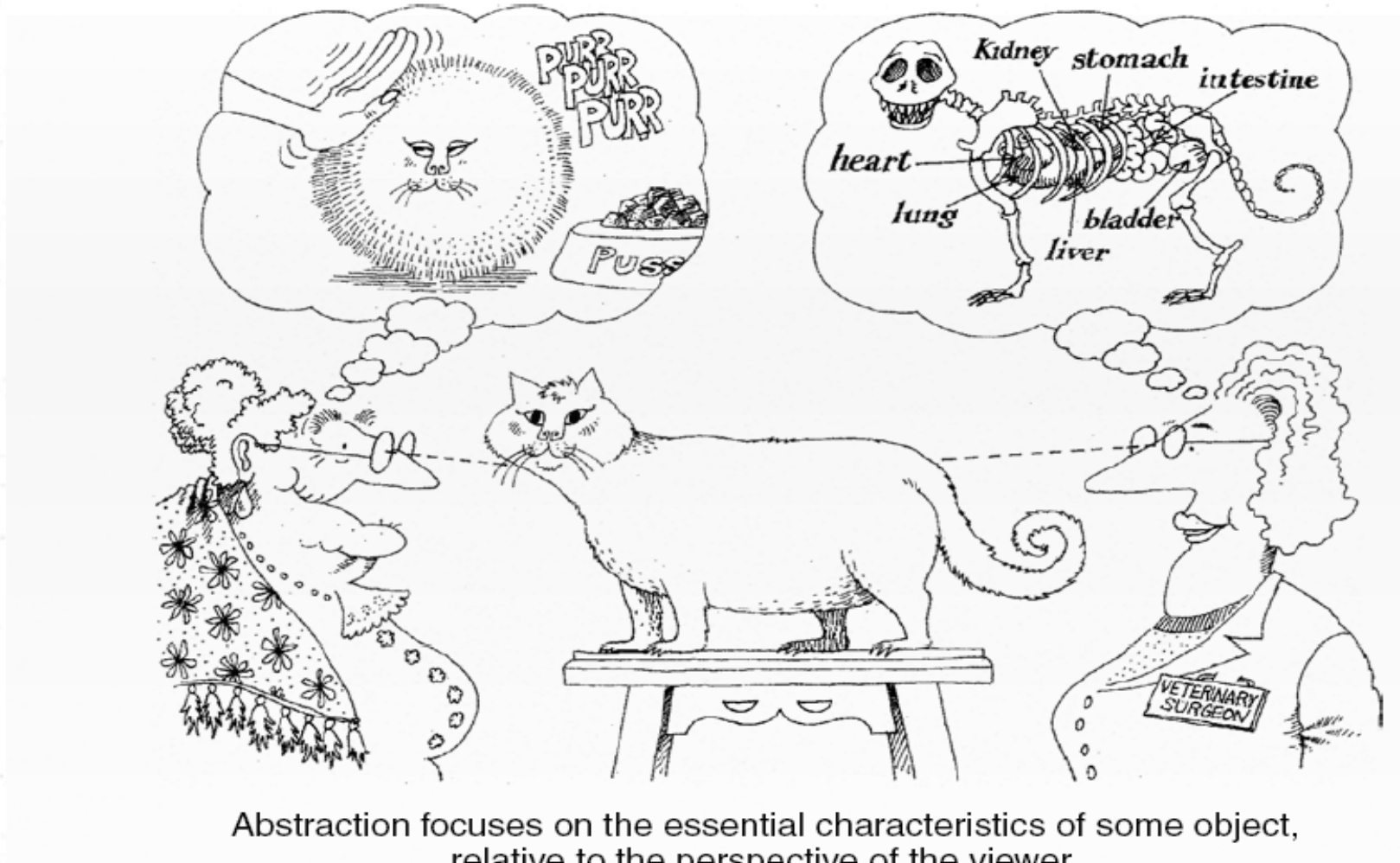
Abstraction focuses on the essential characteristics of some object, relative to the perspective of the viewer.

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Abstraction

- An abstraction denotes the essential characteristics of an object that distinguish it from all other kinds of objects and thus provide crisply defined conceptual boundaries, relative to perspective of the viewer.

(Reference : Grady Booch, eta (2008), Object Oriented Analysis and Design with Applications 3rd Edition, pg 44)
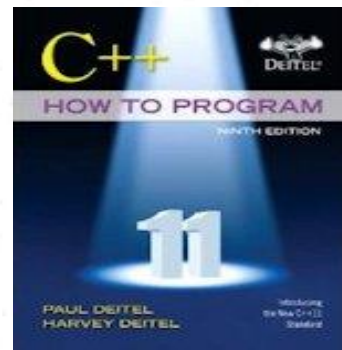
Reference
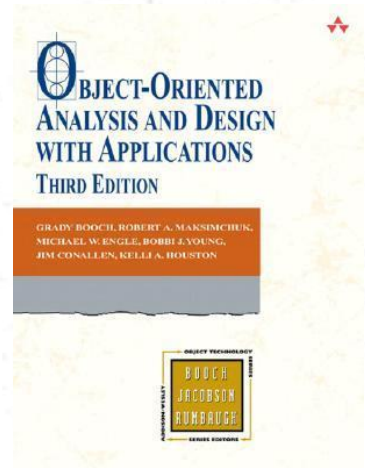
Chapter 01 & 02

Grady Booch (2008), Object-Oriented Analysis and
Design with Application,
3rd Edition

Chapter 03

Deitel & Deitel's (2016), C++ How to Program,
9th Edition

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