

Object Oriented Concepts

Lecture 03
Introduction to Classes

Learning Outcomes

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

Object Oriented Programming

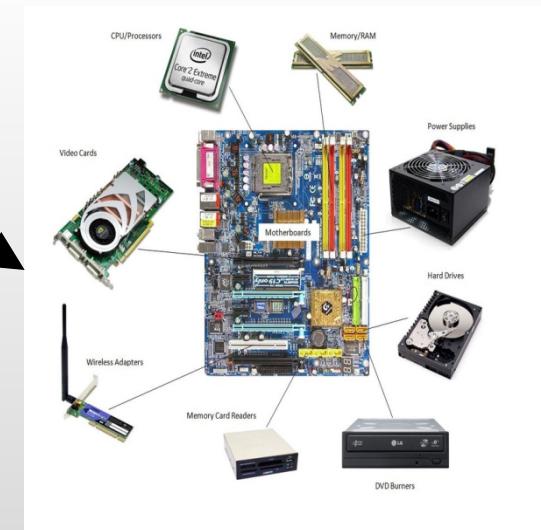
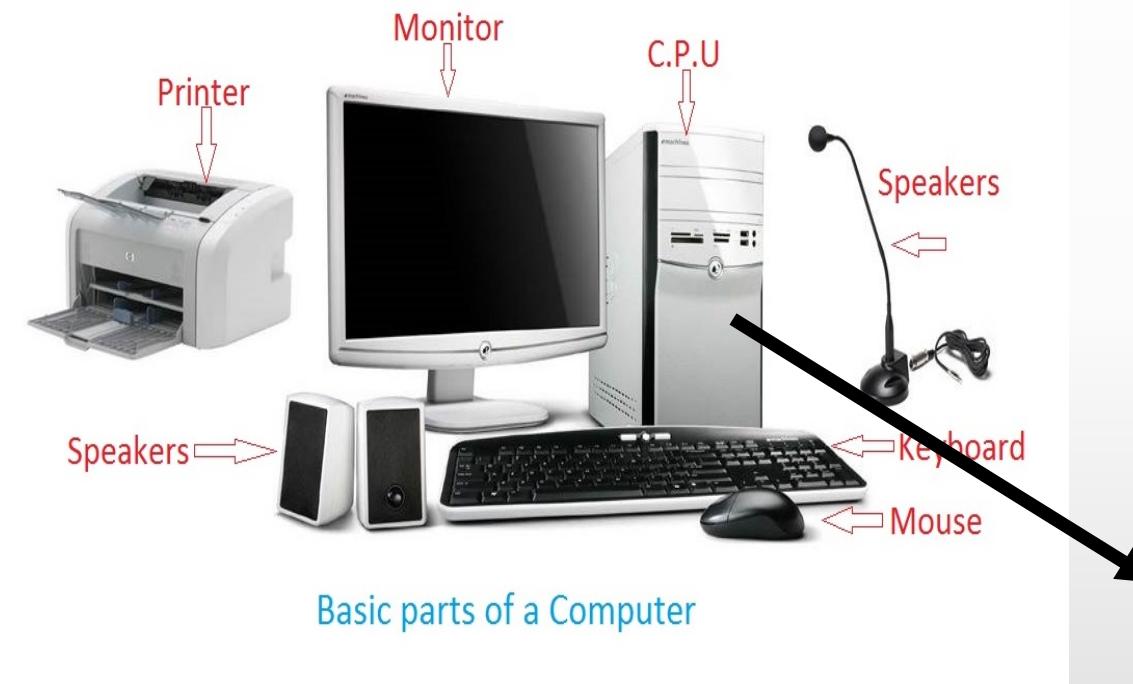
- Object Oriented Programming is a method of implementation in which programs are organized as a collection of objects which cooperate to solve a problem.
- Allows to solve more complex problems easily.



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.

A Computer System



Object – General Meaning

object

noun

/'ɒbjəkt, 'ɒbjɪkt/ 

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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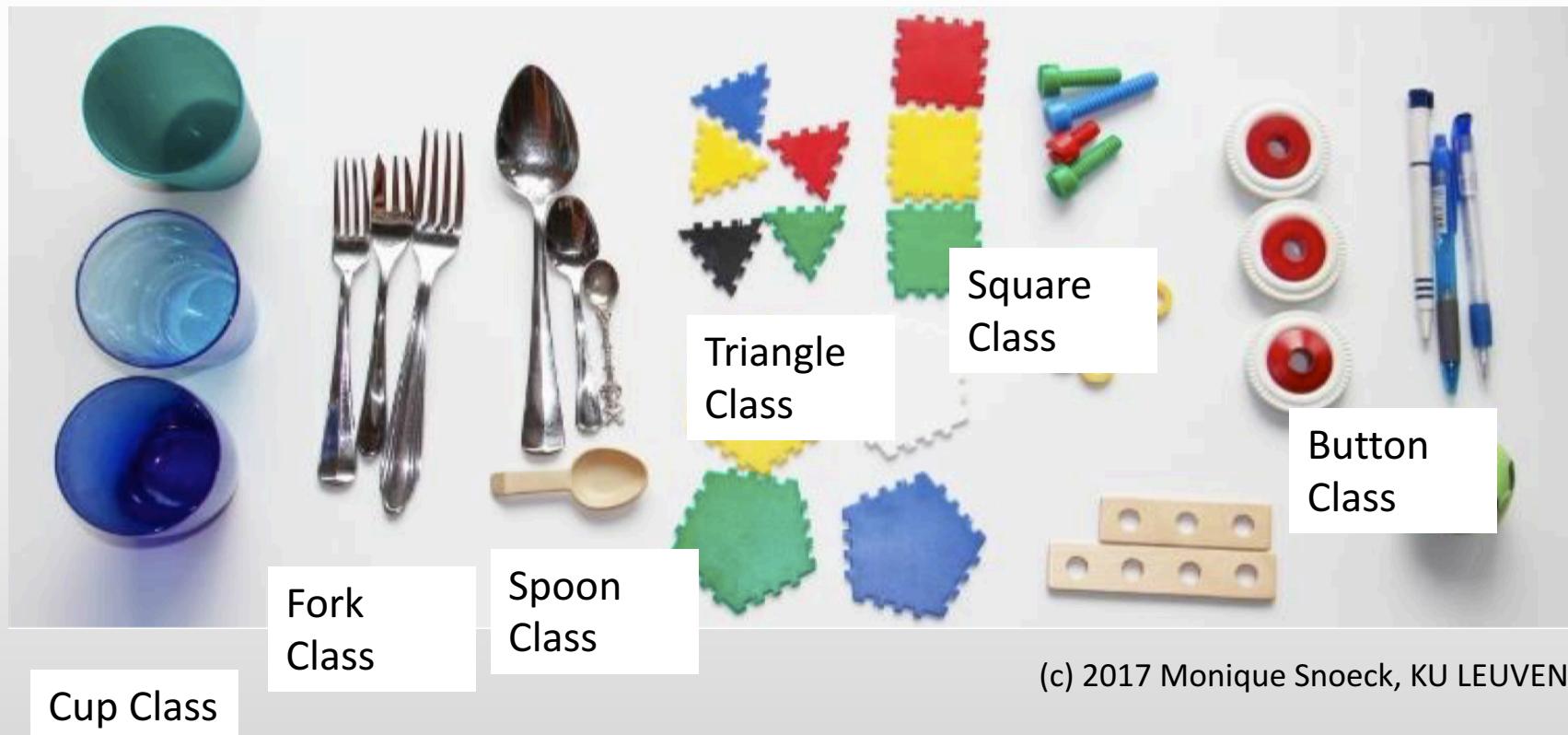
Grouping related things together



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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.



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 – Identify Objects, Classes

- Dr. Pradeepa
- IWT
- Amali
- OOC
- Prof. Chandimal
- Mihiran
- SPM
- Dr. Malitha
- Heshani

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 ?

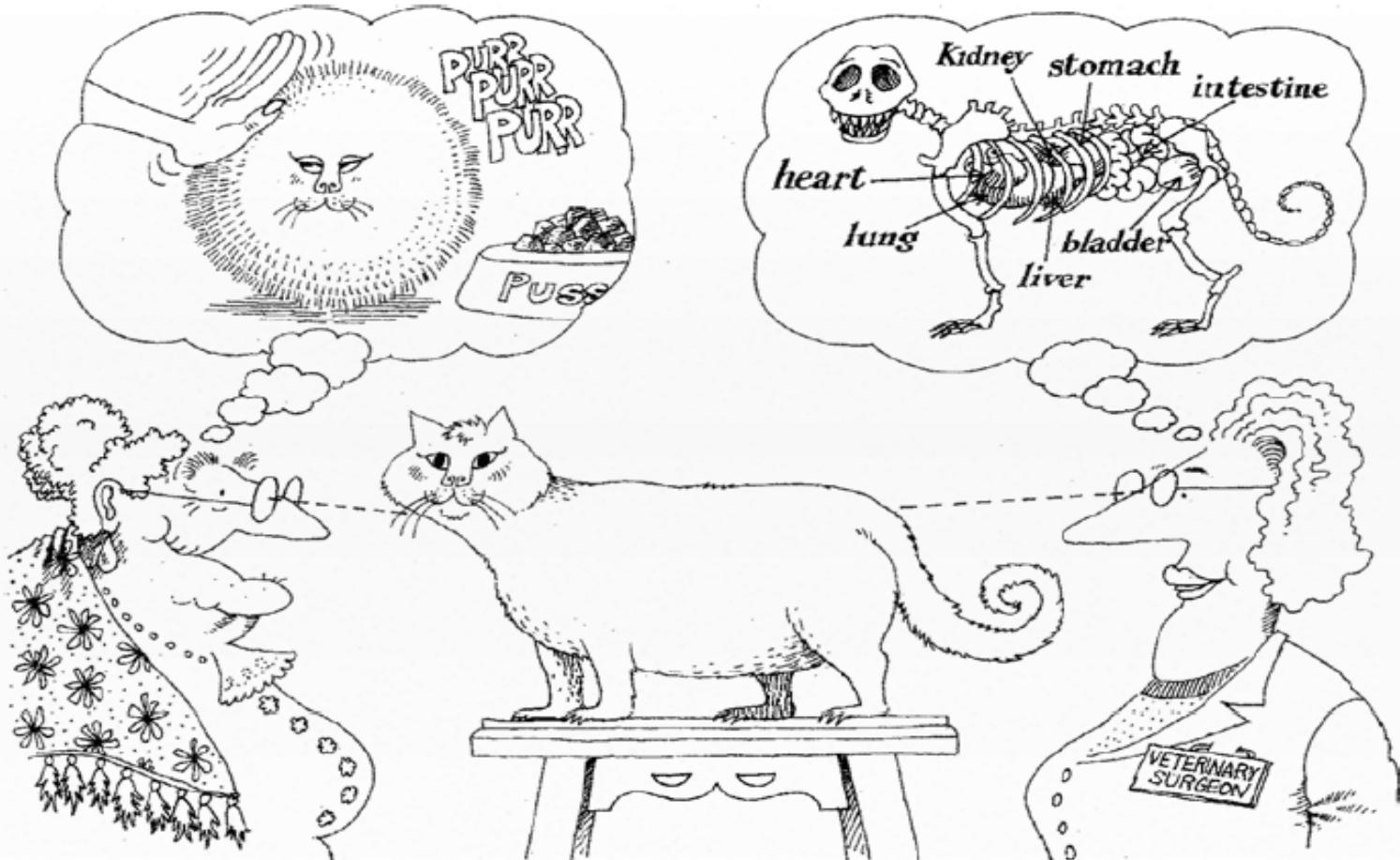


Employee number	Marital status	Age	Designation
OT Hours			Loan Installment
OT Rate	Basic Salary	Height	Name
Address	weight	Bonus	Allowance
	Hobbies	Insurance payment	Number of children
			Favourite Movie

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.

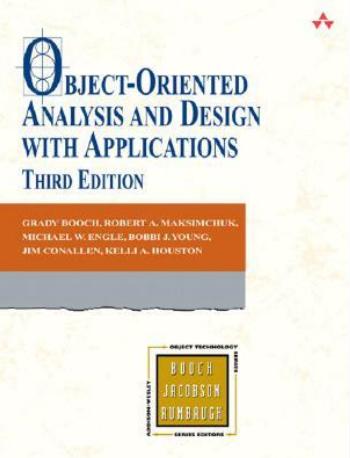
Abstraction

- 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)

Activity 4 – Objects/Classes

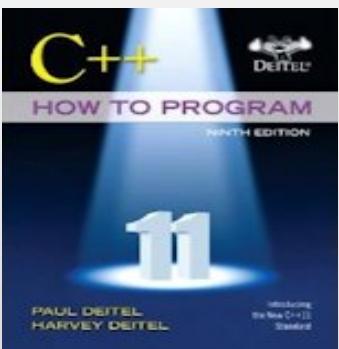


Reference



Chapter 02 & 03

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



Chapter 03

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