Data Structures

lecture 3

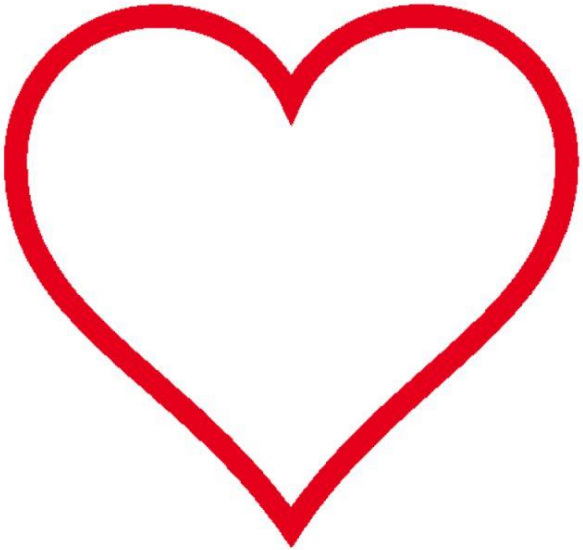
23-9-2022

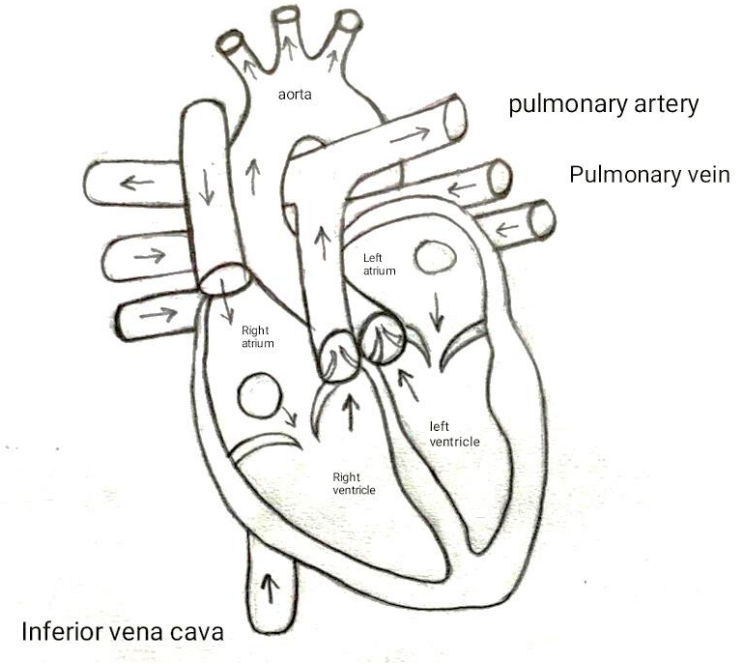
Unit 1: Basics of Data Structures

Abstraction

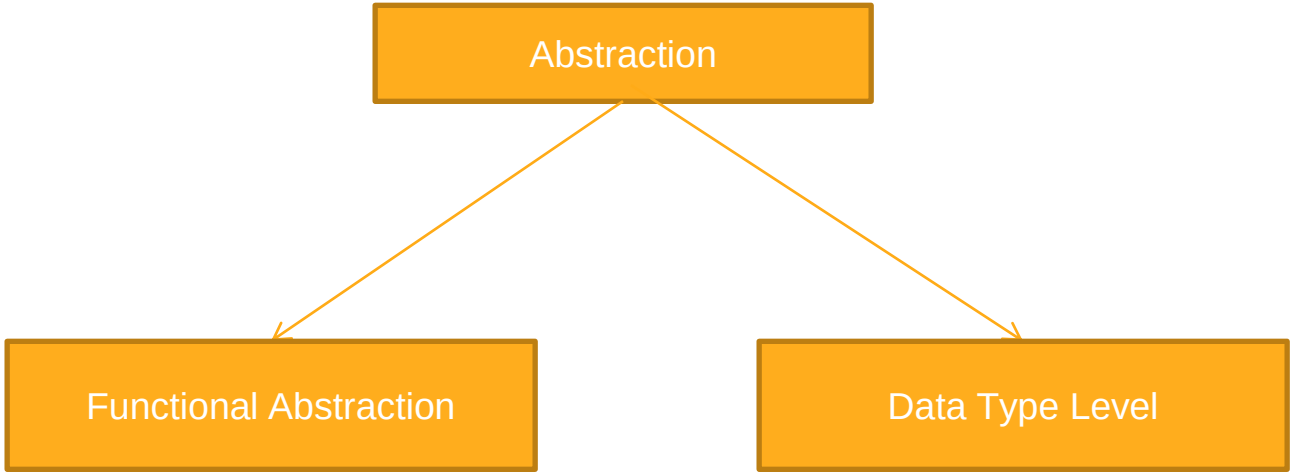
- **Abstract:** Something which focus on essential parts ignoring details.

- **Abstraction: something which is not in detail**




aorta
pulmonary artery
Pulmonary vein
Left atrium
Right atrium
left ventricle
Right ventricle
Inferior vena cava

Abstraction in Programming



Functional Abstraction

- Every function performs some task.
- How task is performed implementation details hidden.
- Deals with **what a function does**
- **Not how** it does.

Data Type Level Abstraction

Atomic Data

- consist single piece of information.
- cannot be subdivided into other meaningful pieces.
- **Example:**
  - Some integer 457

Composite Data

- Opposite to Atomic
- can be subdivided into other meaningful pieces.
- **Example:**
  - Vehicle no, Phone No.
  - MH 09 PQ 2647

Data Type Level Abstraction

- Tells **what data type is**
- **what operations** can be performed on that data type
- Example:
  - int (supports bitwise operator)
  - float (does not support bitwise operator)

Abstraction in Programming tells us

About **what** a can be done

NOT How it can be done

Abstract Data Type (ADT)

ADT = Functional Abstraction + Data Type Level Abstraction