OBJECT ORIENTED PROGRAMMING IN C++

BY CODE WITH HARRY

WHY OOPS?

Initial name of “C++” is “C with classes”

- C++ language was designed with the main intention of adding object-oriented features to C language.
- As the size of the program increases, readability, maintainability and bug-free nature of programs decreases.
- This was the major problem with languages like C which relied upon functions or procedures (hence the name procedural programming language)
- As a result, the possibility of not addressing the problem in an effective manner was high.
- Also, as data was almost neglected, data security was easily compromised.
- Using classes solves this problem by modelling program as a real world scenario

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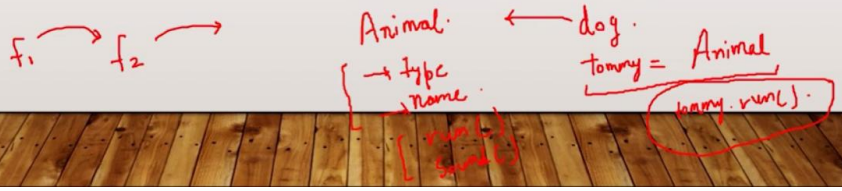

PROCEDURE ORIENTED PROGRAMMING

- Consists of writing a set of instructions for the computer to follow
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- Functions can either use local or global data
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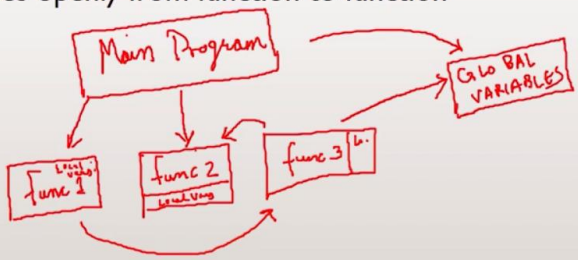

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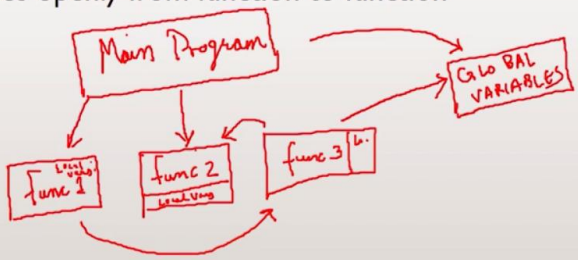

OOP

OBJECT ORIENTED PROGRAMMING

- Works on the concept of classes and objects
- A class is a template to create objects
- Treats data as a critical element
- Decomposes the problem in objects and builds data and functions around the objects

Animal

dog1 →

Cat1 → cat.sound='Meow'

Cat2

⋮

BASIC CONCEPTS IN OBJECT ORIENTED PROGRAMMING

Abstraction → Separation of concerns

- Classes – Basic template for creating objects.
- Objects – Basic run time entities.
- Data Abstraction & Encapsulation – Wrapping data and functions into single unit.
- Inheritance – Properties of one class can be inherited into others.
- Polymorphism – ability to take more than one forms.
- Dynamic Binding – code which will execute is not known until the program. runs.
- Message Passing – Object.message(Information) call format.

"Data binding" is also known as "Late binding"

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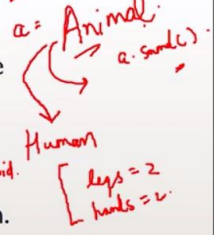

Volume (r, h) = Cyl.
lxbx = cuboid.

a = Thing b = Animal c = Human (child)

BENEFITS OF OBJECT ORIENTED PROGRAMMING

- Better code reusability using objects and Inheritance.
- Principle of data hiding helps build secure systems.
- Multiple objects can co-exist without any interference.
- Software complexity can be easily managed.