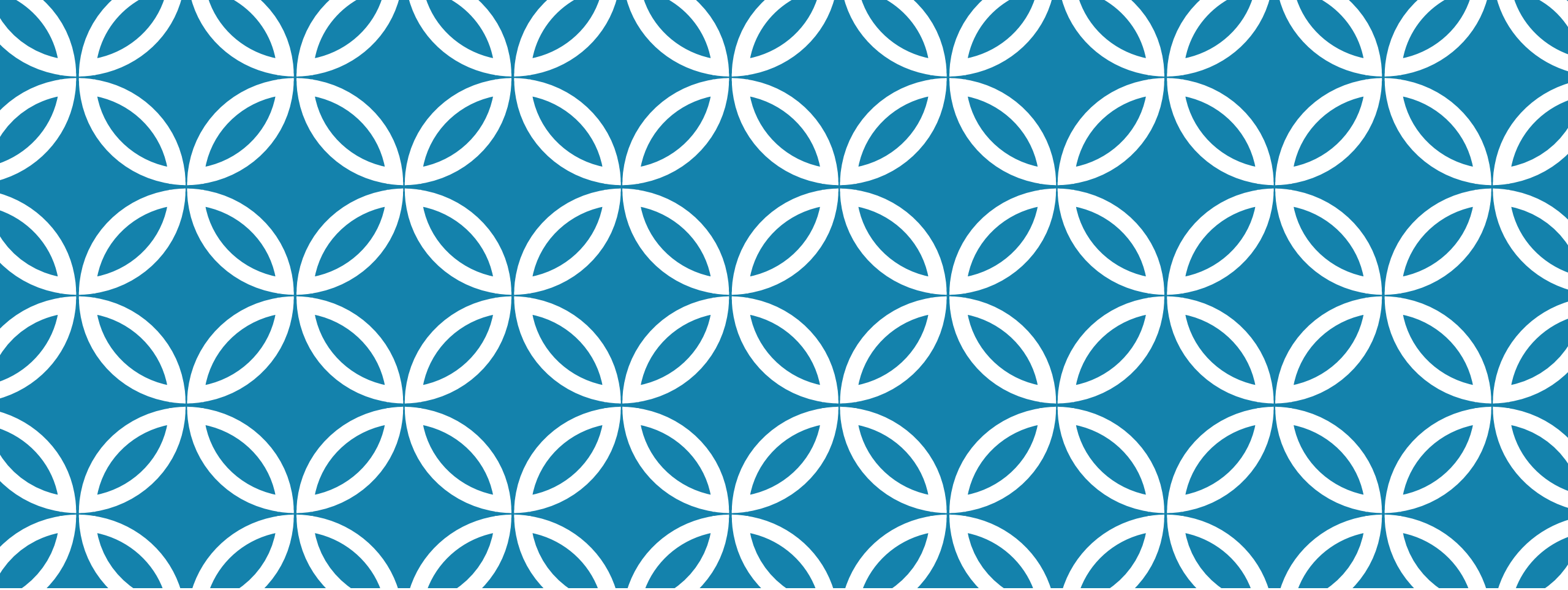

OBJECT ORIENTED PROGRAMMING WEEK-1

JAN 23-27, 2023

Instructor:

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- Publish material by Virtual University of Pakistan.
- Publish material by Deitel & Deitel.
- Publish material by Robert Lafore.

GOOGLE CLASSROOM LINK

Please Join Using the code:

BSE-2B

fdpipi2

BAI-2B

ezhgpg6

WHAT YOU HAVE DONE SO FAR !

- Introduction to Computer Programming (ITC):
  - How to think a program.
  - How to write a program.
  - Basic Programming structure.
  - Procedural paradigm.
  - Group of functions that interact with each other.

- Already have knowledge about the offered course.
- Need to strengthen our concepts.
- Try to implement what we know.

COMPUTER PROGRAMMING AS A COURSE

What we will study:

- Object Oriented Programming.
- How to think in a OOP way.
- How to map real world into a program
- Or, how to program a real world scenario.
- Aim :
  - Our aim is to lean the concepts of Object Oriented programming.
  - Try to digest them.
  - Implement in a program.
  - Tool: C++.

CONTENTS OF THE COURSE

- Object Oriented Programming.
- Classes & Objects.
- Overloading.
- Inheritance.
- Polymorphism.
- Generic Programming.
- Exception Handling.

BOOKS

Text Book:

1- Java How to program By Deitel & Deitel.

Reference Books:

1- Object Oriented Software Engineering By Jacobson.

GRADING POLICY

Assignments	10	at least four
Quiz	10	at least three
Midterm's	30	two (15 marks each)
Final	50	
Total	100	

—CHINESE PROVERB

Tell me and I forget.

Show me and I remember.

Let me do and I understand.

WEEK ONE, CLASS ONE

- Introduction to the Generation of Languages
- Introduction to Software Development
- Introduction to Programming Paradigms

WHAT ARE THE TYPES OF PROGRAMMING LANGUAGES

First Generation Languages

Second Generation Languages

Third Generation Languages

Fourth Generation Languages

Fifth Generation Languages

SOFTWARE

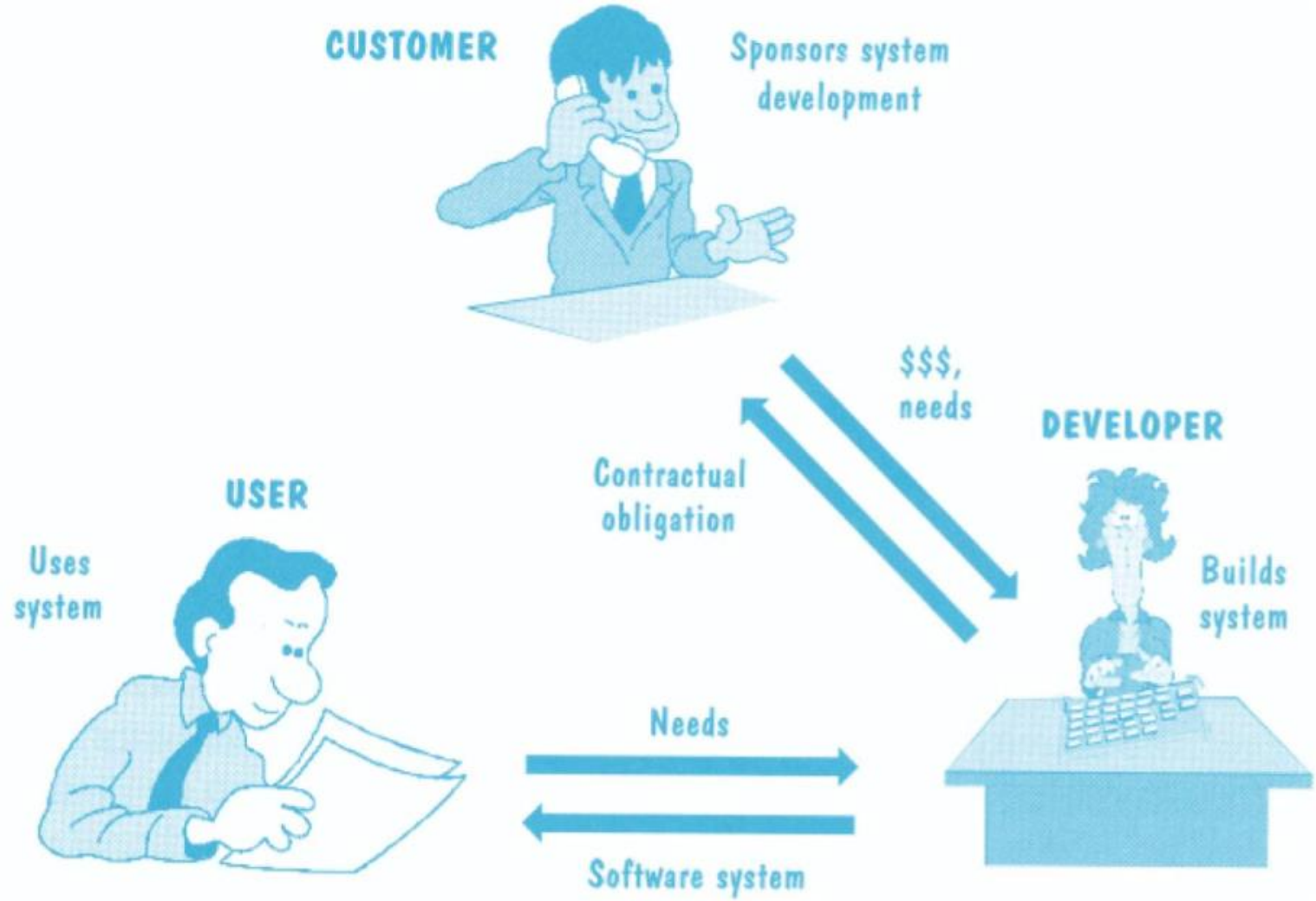
► Computer Software is the product that software engineers design and build.

► It encompasses –programs that execute within a computer of any size and architecture,

– documents that encompass hard-copy and virtual forms,

– data that combine numbers and text but also includes representations of pictorial, video and audio information.

Customer-User-Developer



CHARACTERISTICS REPRESENT A PURE APPROACH TO OBJECT-ORIENTED PROGRAMMING

1-Everything is an object

2-A program is a bunch of objects telling each other what to do by sending message

3-Each object has its own memory made up of other objects

4-Every object has a type

5-All objects of a particular type can receive the same messages

WEEK ONE, CLASS TWO

- Introduction to OO paradigm
- Principles of Object Oriented Paradigm

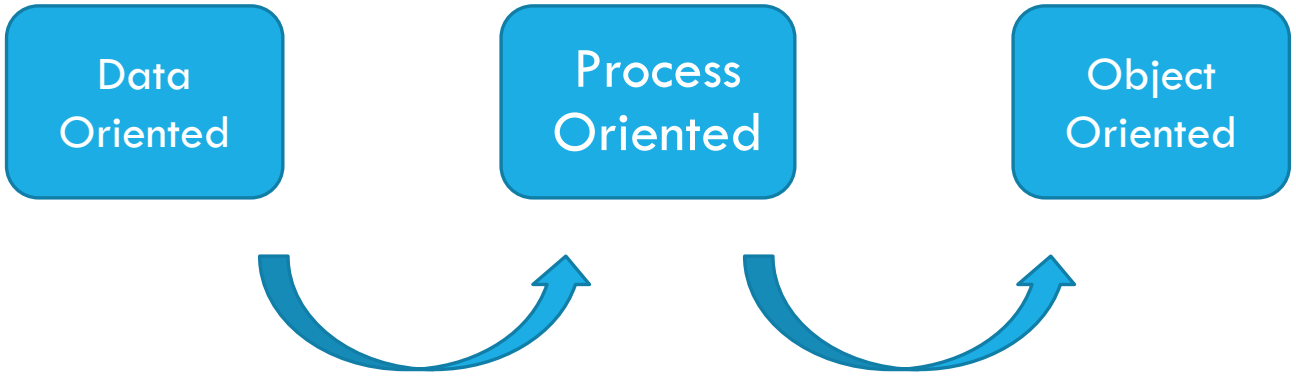
PROGRAMMING PARADIGMS

1- Sequential

2- Procedural

3- Object Oriented

PROGRAMMING PARADIGMS



Think in term of data that we needed

Think in term of Process that we needed

Think in term of Object that is involved

WHAT IS OBJECT ORIENTATION

- A technique for system modeling.
- OO model consists of several interacting objects.

WHAT IS A MODEL?

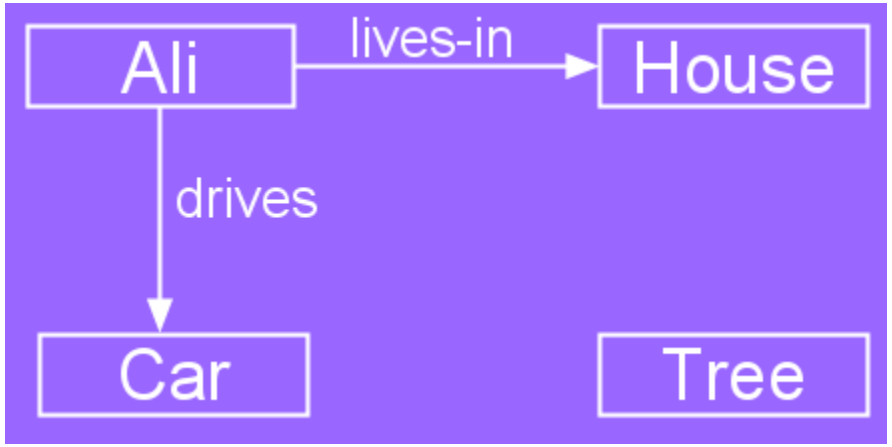
- abstraction of something.
- Purpose is to understand the product before developing it.

EXAMPLE – OO MODEL

EXAMPLE – OO MODEL

Objects

- Person i.e Name: Ali
- House
- Car
- Tree



Interactions

- Ali lives in the house
- Ali drives the car

OBJECT-ORIENTATION - ADVANTAGES

- People think in terms of objects
- OO models map to reality

Therefore, OO models are:

- easy to develop
- easy to understand

FIVE PRINCIPLES OF OO PARADIGM

1- Abstraction: To have the relevant information.

2- Encapsulation: To hide information inside the object.

3- Polymorphism: To have many shapes / behaviors.

4- Inheritance: To create a new object with an existing one (To adopt features from others)

5- Reusability: Ability to use an object again and again if needed.

WEEK ONE, CLASS THREE

- Introduction to Object

WHAT IS AN OBJECT?

An object is:

- It can be anything for which we want to save Information
- Something tangible (Ali, Car)
- Something that can be captured intellectually (Time, date)

An object has:

- State / attributes / properties / data
- Well-defined behavior / methods / functions
- Unique identity

ALI AS AN OBJECT

Attributes:

- Name
- age

Behavior (operations)

- Walks
- Eats

Identity

- His name

CAR AS AN OBJECT

State (attributes)

- Color
- Model

Behavior (operations)

- Accelerate
- Start Car
- Change Gear

Identity

- Its registration number

VISUALIZING AN OBJECT