Ground Rules:

1. No talking while I’m talking but you talk to me (If you have question ask from me not from your neighbour)
2. No mobile phone – put your mobile phone inside your pocket or inside the bag
3. Leave your attitude outside the class and come inside the lecture hall otherwise it is hard to survive with me
4. Do not come late to the lecture – 8:35 lecture hall will be locked

Lets start the lecture:

Link to access the materials:

<https://drive.google.com/drive/folders/1mKYBN8ZnIcrIgnJF933iY1_wYEE0wLNb?usp=drive_link>

How you will be assessed:

1. Exam at the end of the semester – 50% (Jan)
   1. Weekly test which will be added to the final exam – MCQ during your tutorial
2. Lab based practical test – 50% (Dec)
   1. Which will be based your assignment

[oop@iit.ac.lk](mailto:oop@iit.ac.lk)

**Lecture 01: Classes and Objects**

Structured Programming that is what you studied in SD 1 => then when you moved to SD 2 you would gone into a transition of Structured to OOP

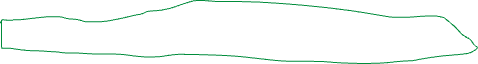
Here we are going look at OOP (Object Oriented Programming) in detail

OO Design Pattern



OO Design Principles

Object oriented principles – Encapsulation, Abstraction, Inheritance and Polymorphism



Class and Object

Circle and you need to write program to calculate area and circumference

How do you name the package in java? Reverse name of the domain name if your domain name is [www.gugsi.lk](http://www.gugsi.lk) then lk.gugsi

First version of the program to calculate area and circumference using structured programming:

package lk.gugsi.oop.week01;

import java.util.Scanner;

public class Circle {

public static void main(String[] args) {

Scanner input = new Scanner(System.***in***);

System.***out***.print("Enter the Radius : "); // that is a label will be displayed to the user while getting input

double radius = input.nextDouble();

double area = *getArea*(radius);

double cirF = *getCircumference*(radius);

System.***out***.println("The area is "+area);

System.***out***.println("The Circumference is "+cirF);

}

public static double getArea(double radius) {

return Math.***PI*** \* radius \* radius;

}

public static double getCircumference(double radius) {

return 2 \* Math.***PI*** \* radius;

}

}

When it comes to OOP the smallest independent unit of code is a class

Methods that are accessible to you (public)



Attributes that are not accessible to you (private)



What are private and public?

Access specifiers

1. private – accessible only within the class
2. public – as long you have access to the class the public members can be accessed from anywhere
3. protected – package + sub classes from outside the package
4. *default (not access specifier related keyword) – accessible only within the package*

Non access specifier

1. static
2. final
3. abstract

Circle and you need to write an OO program to calculate area and circumference

Design => Class Diagram

Draw a class diagram:

1. Name of the class
2. Attributes
3. Operations (Methods)

Name: Circle

Attributes:

radius: double

Methods:

getArea(): double

getCircumference(): double

getRadius(): double



setRadius(double): void

Circle(double):

Object creation



Circle objCircle = new Circle(50);



Class to the constructor