OO in PHP
-Framework,MVC,CMS
(From several books)

- Dalam prosedural prog → usually use lib (library)
- Lib → contains related function

  Ex: dbfunction.inc → grup function terkait pengelolaan database (whole)
- OO dlm PHP dikenalkan sebagai ”whole” about object (real world)

- PHP also support OO (object oriented) eventhough a simple OO → PHP keep simple, no need to make it so complex.
- OO in PHP is not like to turn to Java-like
- OO very important for big program → good for organizing
- Recall concept of OO (class, inheritance...).
- Pemahaman dasar tentang OOP plg penting, sebelum memulai

- OO bisa diartikan segala sesuatu yang bersifat modular. Modularisasi
- Object → gambaran di dunia nyata, ex: baju gaun. Class → representasi object dalam program, ex: desain baju gaun
- Class scr sederhana sbg the other non-scalar data type.
- Recall array (index and assosiatif), the complex data type as the prominent about class, all basic dari php

- PHP 5 start to create this way (OO), mengenalkan SPL (Standart PHP Library), berisi class yang siap digunakan

  Ex:

  - SQLite → class_lib dlm pengelolaan databases
  - libxml2 → class_lib API dlm pengelolaan XML doc

Class

- Class is a storage to store data and information of object, property or attributes of object as like as a variable
- In class not only for property but also a function. Function in a class show the process that used to in object
- *class classname{*

  //declare of property or/and function

  }

Ex:

```
class ClassCourse {
    //think about course in IE dept as object
    var $dept = "Informatics Engineering";
    var $code;
    var $name;
}
```

- Class Course in IE dept
- Has 3 variables-properties (dept, code and name), general attributes in object course
- Or

```
class ClassCourse1{
    //a general course not specific dept
    var $dept;
    var $code;
    var $name;
}
```

- U can think class as ”a factory knife” can cut uniformly or cut with various style and keep the core properties
- Sederhananya, class memproduksi banyak object

```
//Web_Programming is variable which has object as data type
$Web_Programming = new ClassCourse();
//means Web_Programming will has a property from ClassCourse
//dept: Informatics Engineering var code and name

$International_Bussiness = new ClassCourse1();
//International_Bussiness is var which has ClassCourse1 as data type
```

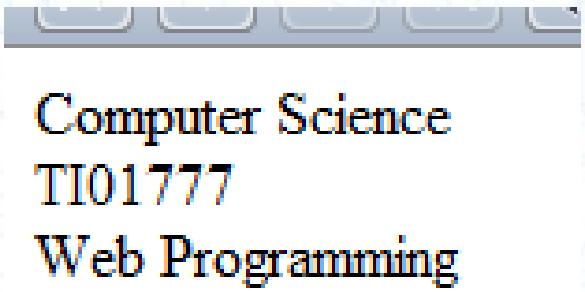
- Or define value of var
-

```php
//Web_Programming is variable which has object as data type
$Web_Programming = new ClassCourse();
//means Web_Programming will has a property from ClassCourse
//dept: Informatics Engineering var code and name
$Web_Programming->code = "TI01777";
$Web_Programming->name = "Web Programming";
echo $Web_Programming->dept."<br>";//value as the same as ClassCourse
echo $Web_Programming->code."<br>";
echo $Web_Programming->name."<br>";
```

Informatics Engineering
TI01777
Web Programming

- What about this one

```php
//Web_Programming is variable which has object as data type
$Web_Programming = new ClassCourse();
//means Web_Programming will has a property from ClassCourse
//dept: Informatics Engineering var code and name
$Web_Programming->code = "TI01777";
$Web_Programming->name = "Web Programming";
$Web_Programming->dept = "Computer Science";
echo $Web_Programming->dept."<br>";//will be filled by new value
echo $Web_Programming->code."<br>";
echo $Web_Programming->name."<br>";
```



- Class not only storage of properties but also functions/methods (process its own data)
- Ex: from prev class, modify

```
class ClassCourse1{
    //a general course not specific dept
    var $dept;
    var $code;
    var $name;

    function showCourse(){//easy ex
        echo "Department = ".$this->dept."<br>";
        echo "Course_code = ".$this->code."<br>";
        echo "Course_name = ".$this->name."<br>";
    }
```

- Use it as prev ex

```
$International_Bussiness = new ClassCourse1();
//International_Bussiness is var which has ClassCourse1 as data type
$International_Bussiness->dept = "Economics";
$International_Bussiness->code = "EM23009";
$International_Bussiness->name = "International Bussiness";
$International_Bussiness->showCourse();
```

Department = Economics
Course_code = EM23009
Course_name = International Bussiness

Another ex

```php
//Class_Student_lib.php
class Student{
    var $dept; var $nim; var $name; var $course;
    var $kkd1;  var $kkd2;  var $kkd3;  var $kkd4;

function marknumber(){
    $average = ($this->kkd1+$this->kkd2+$this->kkd3+$this->kkd4)/4;
    return $average;
}
function markletter(){
    if ($this->marknumber()>="85"){
        $letter = "A";
    }   if ($this->marknumber()<"85" and $this->marknumber()>="70"){
        $letter = "B";
    }   if ($this->marknumber()<"70" and $this->marknumber()>="69"){
        $letter = "C";
    }   if ($this->marknumber()<"69" and $this->marknumber()>="60"){
        $letter = "D";
    }   if ($this->marknumber()<"60"){
        $letter = "E";
    }   return $letter;
}
    function show(){
        echo "Department: ".$this->dept."<br>";
        echo "NIM: ".$this->nim."<br>";
        echo "Name: ".$this->name."<br>";
        echo "Course: ".$this->course."<br>";
        echo "Marknumber: ".$this->marknumber()."<br>";
        echo "Markletter: ".$this->markletter();
    }
```

- Dari contoh sebelumnya class yang telah dibuat dapat dikatakan sebagai sebuah modul.
- Lets name it Class_Student_lib.php
- Dan gunakan dengan modularisasi, include

```php
//Course.php
include 'Class_Student_lib.php';//include modul
```

Constructor

- Constructor for creating object

```php
//Course.php
include 'Class_Student_lib.php';//include modul

$if0001 = new Student(); //membuat object baru
$if0001->dept = "Informatika";
$if0001->nim = "IF001";
$if0001->name = "Raden Mas";
$if0001->course = "Web Programming";
$if0001->kkd1 = "88";
$if0001->kkd2 = "80";
$if0001->kkd3 = "78";
$if0001->kkd4 = "86";
$if0001->show();
```

Department: Informatika
NIM: IF001
Name: Raden Mas
Course: Web Programming
Marknumber: 83
Markletter: B

Encapsulation

- Simply, make boundary of the class, membuat aturan batasan akses
- Modifiers: Public, Private, Protected
- Default: public
- ”var” → public
- Public: have no access restrictions, meaning anyone can access them. Tidak ada pembatasan

- Private: only the same class can access. Hanya dalam class tersebut
- Protected: only the same class and classes derived from that class can access. Hanya dalam class tersebut dan class turunanny
- Gunanya: pembatasan pengaksesan class
- Both for properties and methods

- Modify Class_Student_lib.php

```php
class Student{
    var $dept; var $nim; var $name; var $course;
    var $kkd1;  var $kkd2;  var $kkd3;  var $kkd4; //all public
    private $univ;// private
```

```php
private function marknumber(){
    $average = ($this->kkd1+$this->kkd2+$this->kkd3+$this->kkd4)/4;
    return $average;
}
private function markletter(){
    if ($this->marknumber()>="85"){
        $letter = "A";
    }   if ($this->marknumber()<"85" and $this->marknumber()>="70"){
        $letter = "B";
    }   if ($this->marknumber()<"70" and $this->marknumber()>="69"){
        $letter = "C";
    }   if ($this->marknumber()<"69" and $this->marknumber()>="60"){
        $letter = "D";
    }   if ($this->marknumber()<"60"){
        $letter = "E";
    }   return $letter;
}
```

```
function show1(){
        echo "Universitas: ".$this->univ."<br>";
        echo "Department: ".$this->dept."<br>";
        echo "NIM: ".$this->nim."<br>";
    }
private function show2(){ //private methods
        echo "Department: ".$this->dept."<br>";
        echo "NIM: ".$this->nim."<br>";
        echo "Name: ".$this->name."<br>";
        echo "Course: ".$this->course."<br>";
        echo "Marknumber: ".$this->marknumber()."<br>";
        echo "Markletter: ".$this->markletter();
    }
```

Universitas:
Department: Informatika
NIM: IF001

Inheritance

- One of important concept in OO, modify prev ex

```
class Stud{ //reduce properties from Student
    var $dept;
    var $nim;
    var $name;
}
```

- Make inheritance, pewarisan
- class classname2 extends classname{

  //add properties or functions

  }

```php
class DataStud extends Stud{ //new class DataStud inheritance from Stud
    //means DataStud has all properties or functions from Stud
    //now, add properties or functions only belongs to DataStud
    var $gender;
    var $address;
    var $birthday;
    var $email;
    var $mobilephone;
    function age(){//simple ex calculate age
        list($y,$m,$d)= explode("-",$this->birthday);
        $yearage = $y;
        $today = date(Y);
        $ag = $today - $yearage;
        return $ag;
    }
    function show(){
        echo "NIM = ".$this->nim."<br>";
        echo "Name = ".$this->name."<br>";
        echo "Age = ".$this->age()."<br>";
        echo "Gender = ".$this->gender."<br>";
        echo "Address = ".$this->address."<br>";
        echo "Email = ".$this->email."<br>";
        echo "Mobilephone = ".$this->mobilephone."<br>";
    }
}
```

- Then use it

```
$DataStudent = new DataStud();
$DataStudent->nim = "EM1111";
$DataStudent->dept = "Economics";
$DataStudent->name = "Suryo";
$DataStudent->birthday = "1988-08-08";
$DataStudent->gender = "Male";
$DataStudent->address = "Surakarta";
$DataStudent->email = "suryo@suryo.net";
$DataStudent->mobilephone = "08111111111";
$DataStudent->show();
```

NIM = EM1111
Department = Economics
Name = Suryo
Age = 22
Gender = Male
Address = Surakarta
Email = suryo@suryo.net
Mobilephone = 08111111111

Another one

```
class MarkStud extends Stud{//Stud has dept nim name
    //add only belongs to MarkStud
    var $course;
    var $kkd1;var $kkd2; var $kkd3;var $kkd4;
    //use prev functions
    function marknumber(){
        $average = ($this->kkd1+$this->kkd2+$this->kkd3+$this->kkd4)/4;
        return $average;
    }
    function markletter(){
        if ($this->marknumber()>="85") {
            $letter = "A"."<br>";          }
        if ($this->marknumber()>="70" and $this->marknumber()<"84"){
            $letter = "B"."<br>";          }
        if ($this->marknumber()>="60" and $this->marknumber()<"69"){
            $letter = "C"."<br>";          }
        if ($this->marknumber()>="50" and $this->marknumber()<"59"){
            $letter = "D"."<br>";          }
        if ($this->marknumber()<="49"){
            $letter = "E"."<br>";          }
        return $letter;
    }
    function show(){
        echo "Department = ".$this->dept."<br>";
        echo "NIM = ".$this->nim."<br>";
        echo "Name = ".$this->name."<br>";
        echo "Course = ".$this->course."<br>";
        echo "Mark_number = ".$this->marknumber()."<br>";
        echo "Mark_letter = ".$this->markletter()."<br>";
```

```php
$Mark = new MarkStud();
$Mark->dept = "Economics";
$Mark->nim = "EM1111";
$Mark->name = "Suryo";
$Mark->course = "Management";
$Mark->kkd1 = "80";
$Mark->kkd2 = "68";
$Mark->kkd3 = "72";
$Mark->kkd4 = "70";
$Mark->show();
```

Department = Economics
NIM = EM1111
Name = Suryo
Course = Management
Mark_number = 72.5
Mark_letter = B

- U can also do like this

```
//inheritance from prev inheritance
class MarkwithLabWork extends MarkStud{
    //MarkwithLabWork --> MarkStud --> Stud
    //a kind of level of inheritance
    //MarkwithLabWork has all properties and function from its parents
    var $lab;
    function marknumber(){//same func name with MarkStud but different content
        //it will change the same func of MarkStud
        $average = ((($this->kkd1+$this->kkd2+$this->kkd3+$this->kkd4)/4)*2)+$this->lab)/3;
        return $average;
    }
}
```

```
$Mark2 = new MarkwithLabWork();
$Mark2->dept = "Economics";
$Mark2->nim = "EM1111";
$Mark2->name = "Suryo";
$Mark2->course = "Management";
$Mark2->kkd1 = "80";
$Mark2->kkd2 = "80";
$Mark2->kkd3 = "72";
$Mark2->kkd4 = "70";
$Mark2->lab = "99";
$Mark2->show();
```

Department = Economics
NIM = EM1111
Name = Suryo
Course = Management
Mark_number = 83.3333333333
Mark_letter = B

- Modify with form, ex:

```
<form action="ClassF.php" method="post">
<h2>Data of Student</h2>
<table>
<tr>
<td>NIM : </td>
```

Data of Student

NIM : EM1111
Name : Raden Mas Suryo
Gender : Male
Birthday : 1988-09-09 format yyyy-mm-dd
Submit

NIM = EM1111
Name = Raden Mas Suryo
Gender = Male
Age = 22

- Protected modifier in inheritance, modify...

```
class Student{
    var $dept; var $nim; var $name; var $course;
    var $kkd1;  var $kkd2;  var $kkd3;  var $kkd4; //all public
    private $univ;// private
    protected $city = "Surakarta"; //protected
```

```
class Student_Solo extends Student { // get inheritance from class Student
    function show(){
        echo "Universitas: ".$this->univ."<br>";
        echo "Kota: ".$this->city."<br>";
        echo "Department: ".$this->dept."<br>";
        echo "NIM: ".$this->nim."<br>";
        echo "Name: ".$this->name."<br>";
        echo "Course: ".$this->course."<br>";
        echo "Marknumber: ".$this->marknumber()."<br>";
        echo "Markletter: ".$this->markletter();
    }
```

```php
include 'Class_Student2_lib.php';//include modul

$if0001 = new Student_Solo(); //membuat object baru
$if0001->dept = "Informatika";
$if0001->nim = "IF001";
$if0001->name = "Raden Mas";
$if0001->course = "Web Programming";
$if0001->kkd1 = "88";
$if0001->kkd2 = "80";
$if0001->kkd3 = "78";
$if0001->kkd4 = "86";
$if0001->show();
```

Universitas:
Kota: Surakarta
Department: Informatika
NIM: IF001
Name: Raden Mas
Course: Web Programming
Marknumber: 83
Markletter: B

- Sometimes (when using inheritance,) anda ingin customize methods dasar dari core class
- Lakukan ”override” atas methods core
- Ex: function show1 di class Student will be ”override”

```
function show1(){ //in class Student
        echo "Universitas: ".$this->univ."<br>";
        echo "Department: ".$this->dept."<br>";
        echo "NIM: ".$this->nim."<br>";
    }
```

```php
class Stu extends Student{
    protected function show1(){ //override, notice show1 here
                                //different within Student
        echo "Universitas: ".$this->univ."<br>";
        echo "Department: ".$this->dept."<br>";
        echo "NIM: ".$this->nim."<br>";
        echo "Name: ".$this->name."<br>";
        echo "Course: ".$this->course."<br>";
        echo "Marknumber: ".$this->marknumber()."<br>";
        echo "Markletter: ".$this->markletter();

    }
}
```

Memulai pendekatan OO

- Definisikan problem utama, kemudian ke sub problem sampai batas yg terkecil yg diinginkan → spesific task, but keep it simple
- Create simple analysis
  - Object didefiniskan problem real world
  - Buat relasi antar object
  - Buat class yg mungkin (sekaligus properties dan methods)
  - Perbaiki kebiasaan Naming, comment → help to organize big task

- Then U can make Ur own class to manage database, to make connection, or to make validation, a template for website, etc
- OO in PHP make it more dynamic and easier to manage and program
- All U need only improve from the basic and make modularization of Ur OO idea

Ex:

- Problem input
- Subproblem/task → objek yang mungkin ada
  - Form
  - Generate captcha code
  - Validasi input

Ex:

- Problem Database MySQL → berulang penggunaannya
- Sub problem/task → object yg mungkin
  - Connection
  - Database
  - Table
  - Query

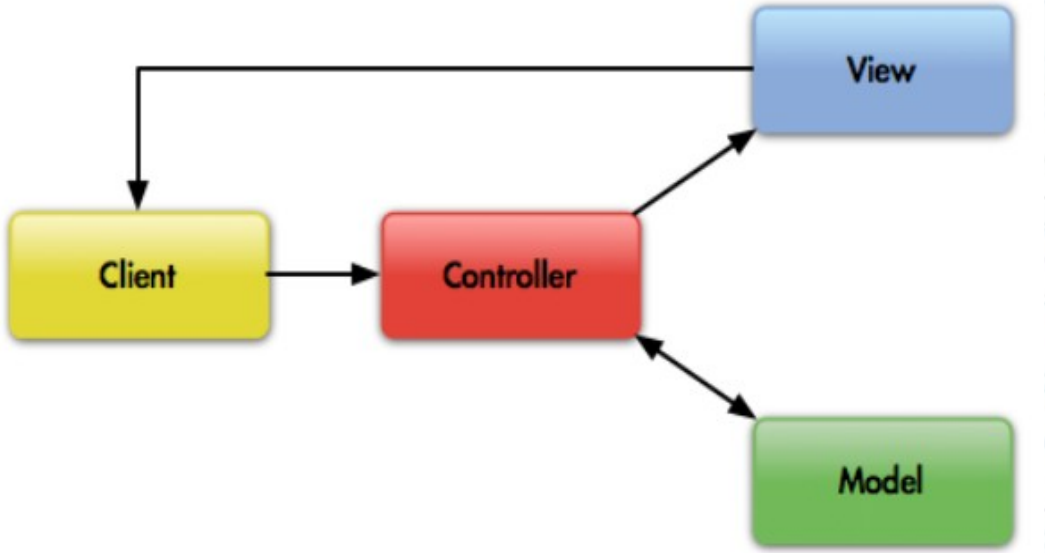
Framework

What is it?

- High level OO, simply web based S/W
- Adalah paket S/W yg berisi code untuk fungsi umum/general, di mana user dapat melakukan customization (specialization, overriden etc)
- Web Framework adalah s/w yg di desain scr umum untuk Web applications and Web services
- Menggunakan konsep MVC

MVC

- Model- View – Controller → konsep dasar yg sering digunakan di framework atau bentuk modularisasi yg lain
- Model →data, proses (Database, Web Services ...)
- View →penyajian Model ke dalam bentuk interaksi dengan user (Layout..)
- Controller → mengatur input dan respon antara Model dan View (http, html, xml, json, ajax...)


View
Client
Controller
Model

- A lot, web framework based on PHP
  - Zend (mature one)
  - Symfony
  - CakePHP
  - Spring
  - Django
  - etc

- Easy to use, easy to learn, easy to modify
- All U need,
  - invest time to read the manual,
  - the packet their have
  - using oo – skill to customize the framework

Ex:

- Zend Framework has a bunch core PHP Applications
- Ex:
  - Database access (Zend_DB)
  - Google Data API's (Zend_Gdata)
  - OpenID (Zend_OpenId)
  - etc
- All U need is configure, know the basic of PHP and OO concept in PHP to learn and use it

CMS (Content Management System)

- CMS more about concept than product
- Tepatnya Web CMS
- Besar kecilnya relatif dengan its aim
- Used to for Large Scale Website
- Ex:
  - Moodle → for e-learning
  - Drupal → general website
  - Etc
- Must be dynamic, a bit complex
- Much modularization, OO

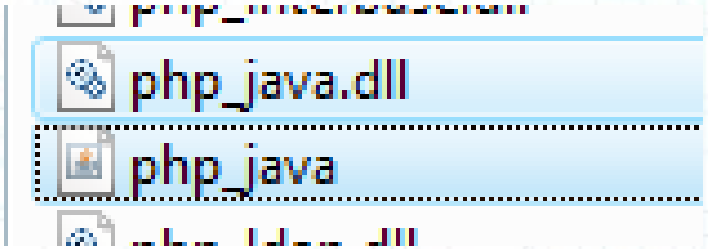
- Categories:
  - Authoring, penanganan user pengisi content
  - Workflow, pengaturan alur dari authoring ke publishing
  - Storage, pengiriman atau penyimpanan ke storage
  - Publishing, penyajian di webpage
- Core features:
  - User management
  - User Interface
  - Application
  - Data Source
  - Deployment

- Simple Ex: CMS Homepage Article
  - Installation
  - Log in Admin
  - Initiatiation of database/ data file
  - Interface Management article (list article, add,edit,delete-op)
  - Admin interface to add content of article (author, date/time, title, category, body article, etc)

Using Java in PHP

- Java memeliki banyak kelebihan, atau dapat melakukan hal lebih baik dari PHP
- PHP has to be the wide range of extensions available for the language
- PHP+ Java → menggunakan Java (Java very powerfull in lib) untuk support aplikasi web bases (PHP)

- By default PHP isnt ready working with Java
- Only need to add configuration (depend on the platform), *.nix or windows
- Assumption in windows, U have installed properly java and take a look in PHP directory, make sure that U have php_java.dll and php_jar.dll.
-



- Then repaire the configuration. Open PHP.INI under PHP directory
- Make all [Java] section enabled and correct
-

```
[Java]
java.class.path = C:\xampp\php\ext\php_java.jar
java.home = C:\Program Files\Java\jdk1.6.0_11\bin
java.library = C:\Program Files\Java\jre1.6.0_04\bin\client\jvm.dll
java.library.path = C:\xampp\php\ext
```

- After those steps, Java will be ready as a class for PHP
- Usually as library → API
- And could access Java from PHP Scripts, as like as PHPlib or PHP Class.