

Object Oriented Programming of Application Admission of New High School Students

Yayuk Ike Meilani^{1)*}, Jaka Purnama²⁾

^{1,2)} Institut Teknologi dan Bisnis PalComTech, Palembang

¹⁾yayuk_ike@palcomtech.ac.id, ²⁾jaka_purnama@palcomtech.ac.id

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Abstract: Research was conducted at a high school in Palembang. New student admissions are still using on-site registration so that prospective students must go to school to register. The purpose of implementing object oriented applications in new admissions applications is to make the application lighter when used because objects are divided into classes. The use of oop applications in application development is useful for making applications easier. The application built can be used for dynamic and flexible new student registration media that can register anywhere and anytime. The concept model used in the application is MVC (Model, View, Controller). The method used is the waterfall method. The waterfall method is a development method used to develop information systems. This method consists of several phases starting from the phases of planning, analysis, design, implementation to system maintenance. With the development of an object-based new admissions application, it will make it easier to handle errors and bugs because of the structure of the program code used, searching for new student data is easier because there are search tools and reduces the buildup of existing files. By applying the oop concept to the program, it is hoped that it can help application development and make it easier to detect errors.

Keywords: object, class, application, mvc

INTRODUCTION

The application of information technology in building the operational activities of an educational institution in small and large matters, and also increasing to become a common need in facing the era of globalization (Maisura, 2022). The need for an information system in covering all activities in the field of education to adminilate data that is processed into information for specific purposes (Paat, 2022). Admission of new students is one of the activities that must be carried out by schools that are used to select selected prospective students according to the criteria determined by each school (Purnama, 2022).

At this time, object-oriented methods or known as Object Oriented Programming (OOP) are widely chosen because the old methodology poses many problems such as difficulties when transforming the results of one stage of development to the next, for example in the structured approach method (Rais, 2019). Object Oriented Programming or what is called OOP is an object-oriented programming method. The purpose of OOP is to facilitate program development by following the model that already exists in everyday life. Students can more easily understand programming logic materials with object-oriented work control (Ningrum, 2022).

This research was conducted in one of the high schools in Palembang. In the admission of new students in some schools, there are still those who have not used information technology as a supporting tool in the admission of new students. Some schools tend to still use conventional methods, namely by opening new student enrollment in schools and only relying on disseminating information from person to person, relying on brochures and pamphlet media. The data of prospective students who have registered will be recapitulated by the admissions officer and checked one by one from the existing files. The process of manually accepting new students makes it difficult for the school to see the number of participants who have registered, the number of participants who have been tested and interviewed and what majors are still lacking in interest.

In the era of globalization, computer technology plays a very important role in helping the process of accepting new students. The use of computer devices as supporting devices for data management and processing is very appropriate by considering computer devices in any information that is indispensable in management or office activities. The purpose of this study is to build an application that applies object-based programming that can help in the data processing process and how to make prospective new students during the registration process can be done easily and quickly, by utilizing information technology in the registration process, namely through

*name of corresponding author

the web address provided by the committee, so that prospective new students without having to register themselves at the school location.

LITERATURE REVIEW

The research that has been carried out by Mesra, et al entitled "Implementation of the New Student Admission Application for IDN Boarding School Junior High School" explained that the Admission of New Students in each school is the first step and is one of the most important because it is the entrance gate for prospective new students at the school and the school can get information on prospective new students through the prospective student's document documents which of course must be archived for the sake of future needs. The method used is the waterfali method where this method can help in the process of making applications and minimize errors based on the stages provided. The results of this study were a new student enrollment application and used a questionnaire in measuring satisfaction from the use of existing applications.

Similar research has also been carried out by Ripanti with the title "Cascading Principle on the Initial Design of the Circulation Model of Apparel Products with an Object-Oriented Analysis Design Approach". In this study, we discussed the design of a circulation model in the apparel industry by adopting the cascading principle with an objectoriented analysis and design (OOAD) approach. Object Oriented Analysis and Design (OOAD) is a software approach that has the function of modeling objects in interaction with application systems where the approach can be used in analysis and design processing. The result of this study is that the model l circulation of apparel products by adopting the principle of cascading with an object-oriented analysis and design approach has been formulated, where the initial stage produces the variables of apparel circulation carried out with a literature review approach (Reuse-Recycle-Dispose), with detailed conditions described in detail in the flow chart of the apparel circulation process.

The research was also conducted by Tommy, et al entitled "Development of Android-Based New Student Admission Applications with Push Notifications at STMIK Atma Luhur" explaining that To get new students, Private Universities (PTS) and the public carry out an activity called New Student Admissions (PMB) regularly at a period. The result of this study is that the push notification feature on the application allows the PMB committee to know and process as soon as possible if there is a new camaba registration so that there is no need to check whether there is a new camaba registration regularly. In addition, camaba can immediately get notification if the registration is responded to by the PMB committee or there is a change in the briefing schedule.

METHOD

The development method used is the waterfall development method is a general methodology which is used to develop information systems. SDLC consists of several phases starting from the planning, analysis, design, implementation to system maintenance phases (Wahid, 2020). The waterfall model was introduced by Winston Royce around 1970 so that it is often considered old-fashioned, but it is the most widely used model in Software Engineering (SE) and is most in demand because the existing stages are easy to understand (Sasmito, 2017). According to Pricilia (2021), this waterfall model has stages starting from analysis, design, coding, testing, and support" which is seen in figure 1.

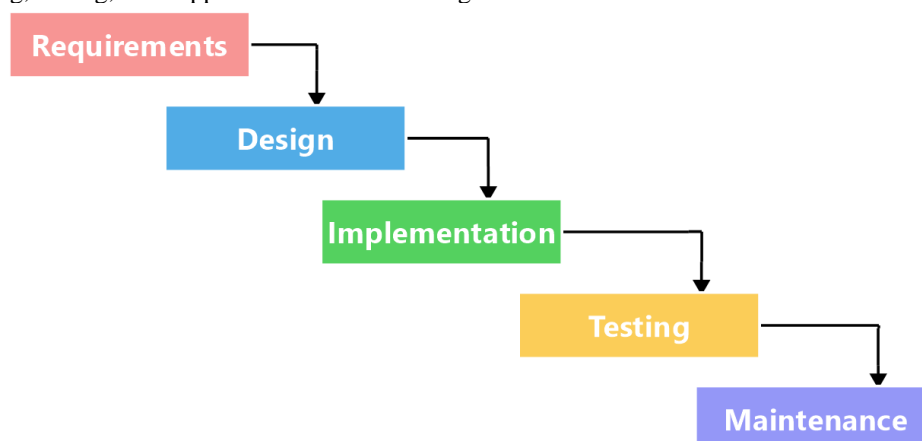


Fig 1. Waterfall Method

1. Requirement System

This stage is the stage where the developer communicates with the user aiming to understand the software to be built according to the existing process. At this stage, data collection uses an interview and observation system where interviews are conducted by conducting questions and answers to the officers receiving new

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student registration. Then after the interview, an observation was made of how the admission process for new students

2. Design

After getting information about the admission process for new students, a simulation of the program will be made and what hardware will be used..

3. Coding

This stage implements program simulations into the programming language used. System developers will start building a new admissions application. In this study, the programming language used is the Laravel framework PHP and the database uses MySQL.

This stage implements the program simulation into the programming language used. The system developer will start building a new student admissions application.

4. Testing

This stage performs testing of applications that have been built. Testing is carried out in order for the system to fully meet the required system requirements. The tests carried out in this study tested how the application built was in accordance with user needs both from the process and the buttons used were understood and understood by users.

The programming technique used uses OOP (Object Oriented Programming). OOP (Object Oriented Programming) is an object-oriented programming method. The purpose of OOP was created to facilitate program development by following the model that already exists in everyday life (Retnoningsih, 2017). The code writing concepts used are inheritance, encapsulation and polymorphism and use the model design of the MVC (Model, View and Controller) as shown in Figure 2.

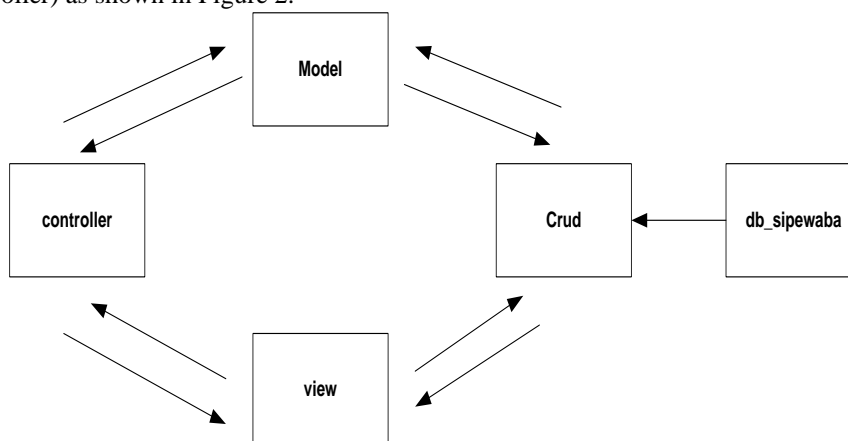


Fig 2. Object-Oriented Programming Model in Sipewaba Applications

The object-oriented programming concept model that will be applied to the new student admission application will depend on each other. The controller in the application serves as the provider of variables that will be displayed in the view page, providing error notifications, working on inputted and validated logic processes and calling other models for access.

RESULT

3. Requirement System

Needs analysis is done by interview and observation. The first stage is done by way of interviews. Researchers conducted interviews with the Head of School Administration, Mr. Drs. Suryono by asking and answering how the process of admitting new students was done before so that the results of this interview were used to find out what needs and processes were needed. After conducting interviews, the researcher made observations by directly observing the process of accepting new student registration, namely by directly observing the process from the start. The school administration staff explained the school specifications, filled out new student registration forms, and recorded the names of prospective students who were recorded in one of the applications. microsoft up to the selection stage and the final stage of the new student admissions process.

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4. Design

Build an application process flow using Microsoft Visio with the foundation of the interview directives that have been conducted. Design a process flow using a flowchart. The running process flow is shown in figure 3.

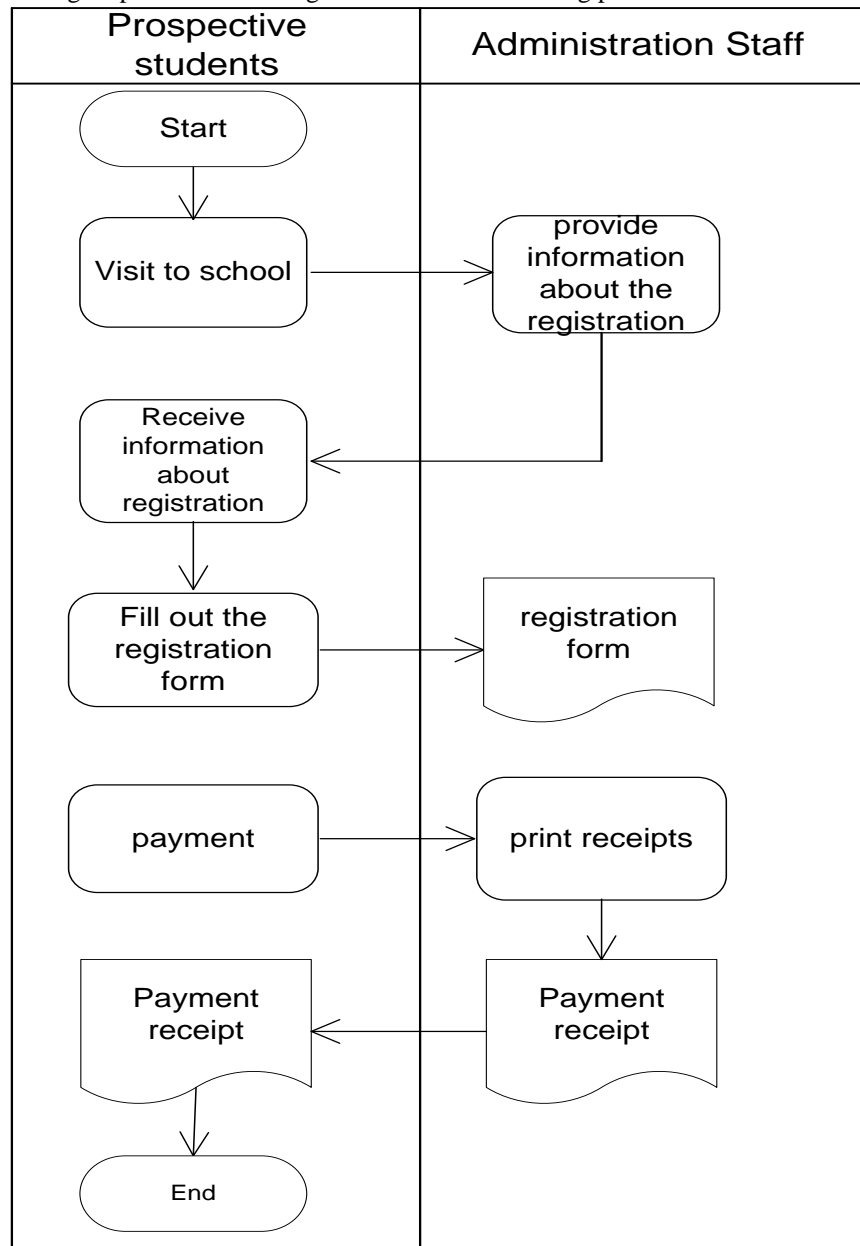


Fig 3. Process flow

5. Coding

New student admissions applications are built using the application of oop in web promination. All coding commands are written based on existing functions. The programming models used are controllers, models, views and cruds taken from the built database. Controllers are used to classify files that can hold data that will connect between models and views. The program code for the controller will be visible in figure 4.

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```
HomeController.php (C++ source, ASCII text)

<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

class HomeController extends Controller
{
    /**
     * Create a new controller instance.
     *
     * @return void
     */
    public function __construct()
    {
        $this->middleware('auth');
    }

    /**
     * Show the application dashboard.
     *
     * @return \Illuminate\Contracts\Support\Renderable
     */
    public function index()
    {
        return view('home');
    }
}
```

Fig 4. Controller program code in sipewaba application

Crud is used to process data to the database. Crud is implemented into an adm file.php in the sipewaba application. In adm files.php can perform the process of saving, changing and deleting. The program code for crud will be visible in figure 5.

```
adm.php (C++ source, ASCII text, with very long lines)

<?php if ( ! defined('BASEPATH')) exit('No direct script access allowed');
date_default_timezone_set('Asia/Jakarta');

class Adm extends CI_Controller {
    function __construct() {
        parent::__construct();
        $this->db->query("SET time_zone='+7:00'");
        $waktu_sql = $this->db->query("SELECT NOW() AS waktu")->row_array();
        $this->waktu_sql = $waktu_sql['waktu'];
        $this->opsi = array("a","b","c","d","e");
    }

    public function get_server_time() {
        $now = new DateTime();
        $dt = $now->format("H j, V His O");
        }($dt);
    }

    public function cek_aktif() {
        if ($this->session->userdata('admin_valid') == false && $this->session->userdata('admin_id') == "") {
            redirect('adm/login');
        }
    }

    public function index() {
        $this->cek_aktif();

        $a['sess_level'] = $this->session->userdata('admin_level');
        $a['sess_user'] = $this->session->userdata('admin_user');
        $a['sess_konid'] = $this->session->userdata('admin_konid');

        $a['p'] = "v_main";

        $this->load->view('aaa', $a);
    }
}

/* == ADMIN == */
```

Fig 5. Crud program code in sipewaba application

Then the model is used to handle data from objects into the application. The model is implemented into the user file.php where classes, objects, encapsulation, inheritance, polomorphism are used in it. The program code for the model will be visible in figure 6.

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```
User.php (C++ source, ASCII text)

<?php

namespace App\Models;

use Illuminate\Contracts\Auth\MustVerifyEmail;
use Illuminate\Database\Eloquent\Factories\HasFactory;
use Illuminate\Foundation\Auth\User as Authenticatable;
use Illuminate\Notifications\Notifiable;

class User extends Authenticatable
{
    use HasFactory, Notifiable;

    /**
     * The attributes that are mass assignable.
     *
     * @var array
     */
    protected $fillable = [
        'name',
        'email',
        'password',
    ];

    /**
     * The attributes that should be hidden for arrays.
     *
     * @var array
     */
    protected $hidden = [
        'password',
        'remember_token',
    ];

    /**
     * The attributes that should be cast to native types.
     *
     */
}
```

Fig 6. Model program code in sipewaba application

Furthermore, views are more widely used to display the output of the application. The program code for the view will be visible in figure 7.

```
home.blade.php (HTML document, ASCII text)

@extends('layouts.app')

@section('content')
<div class="container">
<nav aria-label="breadcrumb">
<ol class="breadcrumb">
<li class="breadcrumb-item"><a href="/home">Dashboard</a></li>
<li class="breadcrumb-item"></li>
</ol>
</nav>
</div>

<section class="content">
<div class="container-fluid">
<!-- Small boxes (Stat box) -->
<div class="row">
<div class="col-lg-4 col-6">
<!-- small box -->
<div class="small-box bg-warning">
<div class="inner">
<h3>100</h3>

<p>Siswa Belum Diverifikasi</p>
</div>
<div class="icon">
<i class="ion ion-android-alert"></i>
</div>
<a href="#" class="small-box-footer">&nbsp;</a>
</div>
</div>
<!-- ./col -->
<div class="col-lg-4 col-6">
<!-- small box -->
<div class="small-box bg-success">
<div class="inner">
<h3>25</h3>

```

Fig 7. Program code view in sipewaba application

Every model, controller, or crud is created with the PHP class programming language and comes with namespace. View files are used to display what data has been inputted obtained from the database through the model file. The view also serves as an edit and delete service provider which will be handled directly by the controller and will be continued by the model, crud and database.

DISCUSSIONS

After the oop concept is implemented into the application, the following main view that has been generated is seen in figure 8.

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Fig 8. Dashboard Sipewaba

Then on the registration menu you will see the fields provided to be filled in according to the data requested on the form. Prospective students can fill out the registration form according to the existing data. The data taken is data from the KK (Family Card), parents' ID cards, and diploma data. Prospective students must fill in all the fields on the first page and then they can proceed to the next page to continue filling in the data until it is complete. The next button will not work if the important fields are not filled correctly. The registration form will be seen in figure 9.

Fig 9. Interface form pendaftaran

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Then the data that has been entered as registration data will be checked and validated by the admin whether the files and data filled in are qualified to become new students. Form validation will be shown in Figure 10.

Fig 10. Form Validation

4. Testing

The purpose of testing is so that the system that has been built can be used by users. Testing is done using blackbox testing. The researcher chose blackbox testing because the tests were carried out based on the interface of the software, then this test showed that menu functions and other tools could operate properly and the output was produced correctly. Blackbox testing is shown in table 1.

Table 1. Blackbox Testing Sipewaba Application

No	Test Scenarios	Testing	Expected results	Test results	Conclusion
1.	App login	Log in using your registered email and password	Login data successfully logged in	successfully	Appropriate
2.	Completeness button on the admin user	Click the check button	Exit data that has been inputted by prospective students	successfully	Appropriate
3.	Reject button	Decline button to decline registration on the grounds that it is incomplete	Buttons can be used	successfully	Appropriate
4.	Accept button	Accept button to accept completed registrations	Buttons can be used	successfully	Appropriate
5.	Registration form	Registration input by prospective students	Can be used	successfully	Appropriate

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The tests carried out prove that all the functions present in the application work properly according to user requests. The fields on the registration form are in accordance with the registration form at the school.

CONCLUSION

Object Oriented Programming can be implemented into the creation of a new student admission application called sipewaba using the PHP programming language and MySQLi database. The application of oop in writing program code because it uses classes individually so that there are several components that can be combined into one unit. The concept of encapsulation applied to user files.php makes it easier to change objects without having to change existing data.

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