```
<?php

class Master {
    public $conn = null;
    public $theme = null;

    public $public_routes = [];
    public $private_routes = [];

    public $json = false;

    public function __construct($theme, $theme) {
        $this->conn = $conn;
        $this->theme = $theme;

        $this->public_routes = [
            "/"=>"index.php",
            "/search"=>"search.php",

            "/search/(:n)"=>"search.php?p=$1",
            "/search/(:n)/(:any)"=>"search.php?p=$1&kw=$2",
            "/search/(:any)"=>"search.php?kw=$1",

            "/category/(:n)"=>"category.php?id=$1",
            "/category/(:n)/(:any)"=>"category.php?id=$1&p=$2",
            "/category/(:any)"=>"category.php?kw=$1",

            "/tag/(:n)"=>"tag.php?id=$1",
            "/tag/(:n)/(:any)"=>"tag.php?id=$1&p=$2",
            "/tag/(:any)"=>"tag.php?kw=$1",

            "/post/(:n)"=>"post.php?id=$1",
            "/post/(:n)/(:any)"=>"post.php?id=$1&p=$2",
            "/post/(:any)"=>"post.php?kw=$1",

            "/page/(:n)"=>"page.php?id=$1",
            "/page/(:n)/(:any)"=>"page.php?id=$1&p=$2",
            "/page/(:any)"=>"page.php?kw=$1",
        ];

        $this->private_routes = [
            "/dashboard"=>"dashboard.php",
            "/new-post"=>"new_post.php",
            "/edit-post/(:n)"=>"edit_post.php?id=$1",
            "/delete-post/(:n)"=>"delete_post.php?id=$1",
            "/posts"=>"posts.php",
            "/trash"=>"trash.php",
            "/new-page"=>"new_page.php",
            "/edit-page/(:n)"=>"edit_page.php?id=$1",
            "/delete-page/(:n)"=>"delete_page.php?id=$1",
            "/pages"=>"pages.php",
            "/new-category"=>"new_category.php",
            "/edit-category/(:n)"=>"edit_category.php?id=$1",
            "/delete-category/(:n)"=>"delete_category.php?id=$1",
            "/categories"=>"categories.php",
            "/new-tag"=>"new_tag.php",
            "/edit-tag/(:n)"=>"edit_tag.php?id=$1",
            "/delete-tag/(:n)"=>"delete_tag.php?id=$1",
            "/tags"=>"tags.php",
            "/media"=>"media.php",
            "/upload"=>"upload.php",
            "/settings"=>"settings.php",
            "/profile"=>"profile.php",
            "/logout"=>"logout.php",
        ];

        $this->handle();
    }

    public function handle() {
        $url = strtok($_SERVER['REQUEST_URI'], '?');

        $routes = array_merge(
            $this->public_routes,
            $this->private_routes
        );

        foreach ($routes as $pattern => $file) {
            $regex = preg_replace('/\(:n\)/', '([0-9]+)', $pattern);
            $regex = preg_replace('/\(:any\)/', '([^/]+)', $regex);
            $regex = "#^" . $regex . "$#";

            if (preg_match($regex, $url, $matches)) {
                array_shift($matches);
                $_GET['_route_params'] = $matches;
                $this->load_file($file);
                return;
            }
        }

        http_response_code(404);
        $this->load_file("404.php");
    }

    public function load_file($file, $path = "") {
        $master = $this;
        $theme = $this->theme;
        $conn = $this->conn;
        $path = $path ? $path : "/";
        $full = $this->theme_path($file);
        if (file_exists($full)) {
            require $full;
        } else {
            echo "Theme file not found: $file";
        }
    }

    public function theme_path($file = "") {
        return __DIR__ . "/../themes/" . $this->theme . "/" . ltrim($file, "/");
    }

    public function theme_url($file = "") {
        return "/themes/" . $this->theme . "/" . ltrim($file, "/");
    }

    public function media_url($file = "") {
        return "/media/" . ltrim($file, "/");
    }

    public function upload_path($file = "") {
        return __DIR__ . "/../media/" . ltrim($file, "/");
    }

    public function upload_url($file = "") {
        return "/media/" . ltrim($file, "/");
    }

    public function header() {
        $this->load_file("header.php");
    }

    public function footer() {
        $this->load_file("footer.php");
    }

    public function sidebar() {
        $this->load_file("sidebar.php");
    }

    public function menu() {
        $this->load_file("menu.php");
    }

    public function post_list($limit = 10, $offset = 0) {
        $stmt = $this->conn->prepare("SELECT * FROM posts ORDER BY id DESC LIMIT ? OFFSET ?");
        $stmt->bind_param("ii", $limit, $offset);
        $stmt->execute();
        return $stmt->get_result();
    }

    public function post($id) {
        $stmt = $this->conn->prepare("SELECT * FROM posts WHERE id = ?");
        $stmt->bind_param("i", $id);
        $stmt->execute();
        return $stmt->get_result()->fetch_assoc();
    }

    public function page_list() {
        $stmt = $this->conn->prepare("SELECT * FROM pages ORDER BY id DESC");
        $stmt->execute();
        return $stmt->get_result();
    }

    public function page($id) {
        $stmt = $this->conn->prepare("SELECT * FROM pages WHERE id = ?");
        $stmt->bind_param("i", $id);
        $stmt->execute();
        return $stmt->get_result()->fetch_assoc();
    }

    public function category_list() {
        $stmt = $this->conn->prepare("SELECT * FROM categories ORDER BY name ASC");
        $stmt->execute();
        return $stmt->get_result();
    }

    public function tag_list() {
        $stmt = $this->conn->prepare("SELECT * FROM tags ORDER BY name ASC");
        $stmt->execute();
        return $stmt->get_result();
    }

    public function media_list() {
        $stmt = $this->conn->prepare("SELECT * FROM media ORDER BY id DESC");
        $stmt->execute();
        return $stmt->get_result();
    }

    public function setting($key) {
        $stmt = $this->conn->prepare("SELECT value FROM settings WHERE key = ?");
        $stmt->bind_param("s", $key);
        $stmt->execute();
        $row = $stmt->get_result()->fetch_assoc();
        return $row['value'] ?? null;
    }

    public function user() {
        if (!isset($_SESSION['user_id'])) return null;
        $stmt = $this->conn->prepare("SELECT * FROM users WHERE id = ?");
        $stmt->bind_param("i", $_SESSION['user_id']);
        $stmt->execute();
        return $stmt->get_result()->fetch_assoc();
    }

    public function is_logged_in() {
        return isset($_SESSION['user_id']);
    }

    public function redirect($url) {
        header("Location: $url");
        exit;
    }

    public function e($str) {
        return htmlspecialchars($str, ENT_QUOTES, 'UTF-8');
    }

    public function excerpt($text, $length = 150) {
        $text = strip_navigation($text);
        return mb_strlen($text) > $length ? mb_substr($text, 0, $length) . "..." : $text;
    }

    public function time_ago($datetime) {
        $time = strtotime($datetime);
        $diff = time() - $time;
        if ($diff < 60) return "just now";
        if ($diff < 3600) return floor($diff/60) . " minutes ago";
        if ($diff < 86400) return floor($diff/3600) . " hours ago";
        if ($diff < 2592000) return floor($diff/86400) . " days ago";
        return date("M d, Y", $time);
    }

    public function pagination($total, $per_page, $current) {
        $pages = ceil($total / $per_page);
        $html = "";
        for ($i = 1; $i <= $pages; $i++) {
            $active = $i == $current ? "active" : "";
            $html .= "<a class='page $active' href='?page=$i'>$i</a>";
        }
        return $html;
    }

    public function flash($key, $message = null) {
        if ($message) {
            $_SESSION['flash'][$key] = $message;
        } else {
            $msg = $_SESSION['flash'][$key] ?? null;
            unset($_SESSION['flash'][$key]);
            return $msg;
        }
    }

    public function csrf_token() {
        if (!isset($_SESSION['csrf'])) {
            $_SESSION['csrf'] = bin2hex(random_bytes(32));
        }
        return $_SESSION['csrf'];
    }

    public function csrf_field() {
        return "<input type='hidden' name='csrf' value='" . $this->csrf_token() . "'>";
    }

    public function verify_csrf() {
        if ($_POST['csrf'] !== $_SESSION['csrf']) {
            die("Invalid CSRF token");
        }
    }

    public function old($key) {
        return $_POST[$key] ?? "";
    }

    public function asset($file) {
        return $this->theme_url("assets/" . $file);
    }

    public function render($view, $data = []) {
        extract($data);
        include $this->theme_path("views/" . $view . ".php");
    }

    public function partial($name, $data = []) {
        extract($data);
        include $this->theme_path("partials/" . $name . ".php");
    }

    public function component($name, $data = []) {
        extract($data);
        include $this->theme_path("components/" . $name . ".php");
    }

    public function layout($name, $data = []) {
        extract($data);
        include $this->theme_path("layouts/" . $name . ".php");
    }

    public function slug($text) {
        $text = strtolower($text);
        $text = preg_replace('/[^a-z0-9]+/', '-', $text);
        return trim($text, '-');
    }

    public function unique_slug($table, $slug) {
        $original = $slug;
        $i = 1;
        while (true) {
            $stmt = $this->conn->prepare("SELECT id FROM $table WHERE slug = ?");
            $stmt->bind_param("s", $slug);
            $stmt->execute();
            if ($stmt->get_result()->num_rows == 0) {
                return $slug;
            }
            $slug = $original . "-" . $i;
            $i++;
        }
    }

    public function upload($file) {
        $name = time() . "_" . basename($file['name']);
        $target = $this->upload_path($name);
        move_uploaded_file($file['tmp_name'], $target);
        return $name;
    }

    public function delete_file($file) {
        $path = $this->upload_path($file);
        if (file_exists($path)) {
            unlink($path);
        }
    }

    public function image_resize($file, $w, $h) {
        $src = $this->upload_path($file);
        $info = getimagesize($src);
        $mime = $info['mime'];
        switch ($mime) {
            case 'image/jpeg': $image = imagecreatefromjpeg($src); break;
            case 'image/png': $image = imagecreatefrompng($src); break;
            case 'image/gif': $image = imagecreatefromgif($src); break;
            default: return;
        }
        $resized = imagescale($image, $w, $h);
        imagejpeg($resized, $src);
    }

    public function thumbnail($file) {
        return $this->image_resize($file, 300, 300);
    }

    public function seo_title($title) {
        return $title . " | " . $this->setting("site_name");
    }

    public function meta_description($text) {
        return $this->excerpt($text, 160);
    }

    public function canonical($url) {
        return "<link rel='canonical' href='$url'>";
    }

    public function og_tags($title, $desc, $image) {
        return "
        <meta property='og:title' content='$title'>
        <meta property='og:description' content='$desc'>
        <meta property='og:image' content='$image'>
        ";
    }

    public function twitter_tags($title, $desc, $image) {
        return "
        <meta name='twitter:card' content='summary_large_image'>
        <meta name='twitter:title' content='$title'>
        <meta name='twitter:description' content='$desc'>
        <meta name='twitter:image' content='$image'>
        ";
    }

    public function schema_post($post) {
        return "
        <script type='application/ld+json'>
        {
            \"@context\": \"https://schema.org\",
            \"@type\": \"BlogPosting\",
            \"headline\": \"{$post['title']}\",
            \"datePublished\": \"{$post['created_at']}\"
        }
        </script>
        ";
    }

    public function schema_website() {
        return "
        <script type='application/ld+json'>
        {
            \"@context\": \"https://schema.org\",
            \"@type\": \"WebSite\",
            \"name\": \"{$this->setting('site_name')}\"
        }
        </script>
        ";
    }

    public function sitemap() {
        $posts = $this->post_list(1000, 0);
        $xml = "<?xml version='1.0' encoding='UTF-8'?>";
        $xml .= "<urlset xmlns='http://www.sitemaps.org/schemas/sitemap/0.9'>";
        while ($p = $posts->fetch_assoc()) {
            $xml .= "<url><loc>/post/{$p['id']}</loc></url>";
        }
        $xml .= "</urlset>";
        file_put_contents(__DIR__ . "/../sitemap.xml", $xml);
    }

    public function robots() {
        $content = "User-agent: *\nAllow: /\nSitemap: /sitemap.xml";
        file_put_contents(__DIR__ . "/../robots.txt", $content);
    }

    public function cache_get($key) {
        $file = __DIR__ . "/../cache/" . md5($key);
        if (file_exists($file)) {
            return unserialize(file_get_contents($file));
        }
        return null;
    }

    public function cache_set($key, $value) {
        $file = __DIR__ . "/../cache/" . md5($key);
        file_put_contents($file, serialize($value));
    }

    public function cache_clear() {
        $files = glob(__DIR__ . "/../cache/*");
        foreach ($files as $f) {
            unlink($f);
        }
    }

    public function log($message) {
        $file = __DIR__ . "/../logs/app.log";
        $time = date("Y-m-d H:i:s");
        file_put_contents($file, "[$time] $message\n", FILE_APPEND);
    }

    public function error_log($message) {
        $file = __DIR__ . "/../logs/error.log";
        $time = date("Y-m-d H:i:s");
        file_put_contents($file, "[$time] $message\n", FILE_APPEND);
    }

    public function debug($data) {
        echo "<pre>";
        print_r($data);
        echo "</pre>";
    }

    public function dump($data) {
        var_dump($data);
        exit;
    }

    public function __destruct() {
        if ($this->conn) {
            $this->conn->close();
        }
    }
}
```