

LAPORAN PRAKTIKUM 6
PEMOGRAMAN BERORIENTASI OBYEK



Disusun Oleh :

Ahmad Donny Damanik
21091397008

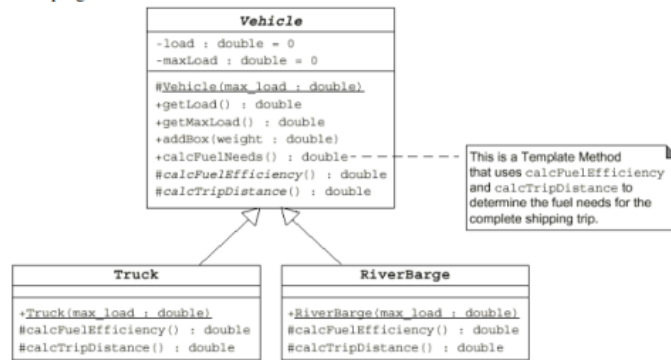
PROGRAM STUDI D4 MANAJEMEN INFORMATIKA

PROGRAM VOKASI

UNIVERSITAS NEGERI SURABAYA

2022

1. Buat program berdasarkan UML berikut



1.

Source Code

◆ PHP

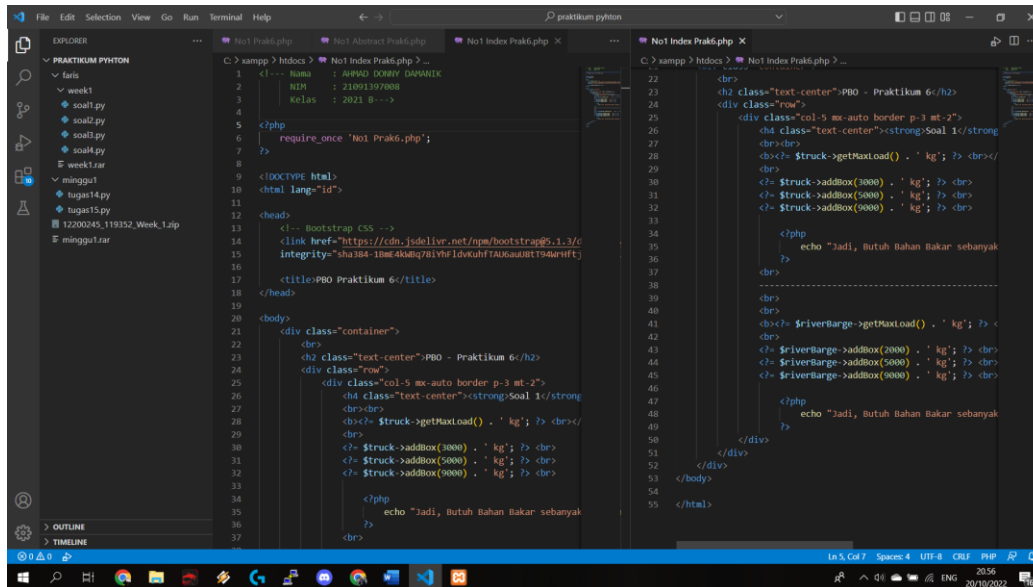
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Terminal Help
praktikum pyhton

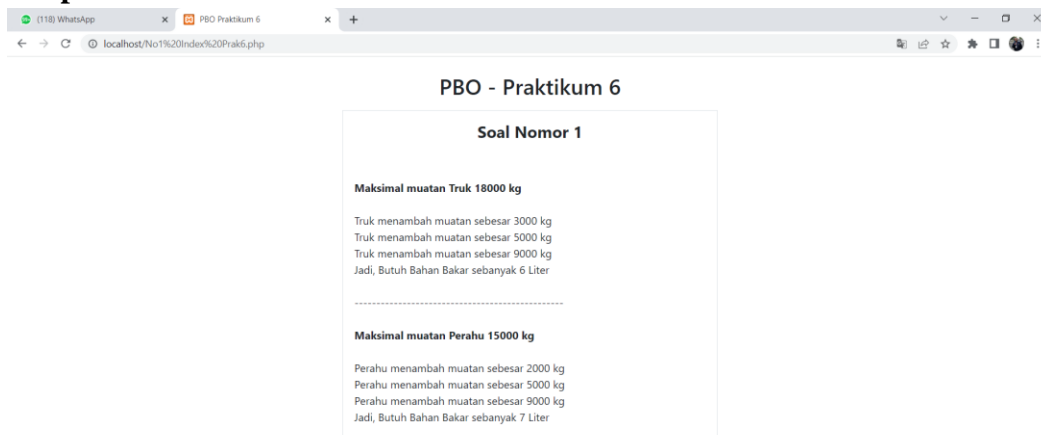
No1 Prak6.php x No1 Abstract Prak6.php No1 Index Prak6.php No1 Prak6.php x
C: > xampp > htdocs > No1 Prak6.php > Truck > _construct
1 <!-- Nama : AHMAD DONNY DAMANIK
2 NIM : 21091397008
3 Kelas : 2021 B-->
4
5 <?php
6
7 require_once 'No1 Abstract Prak6.php';
8
9 class Truck extends Vehicle {
10     public function __construct($maxLoad, $name)
11     {
12         $this->maxLoad = $maxLoad;
13         $this->name = $name;
14     }
15
16     public function calcFuelNeeds()
17     {
18         $fuel = $this->calcFuelEfficiency();
19         $strip = $this->calcTripDistance();
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21         return ceil($fuel / $strip);
22     }
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```

◆ Index PHP



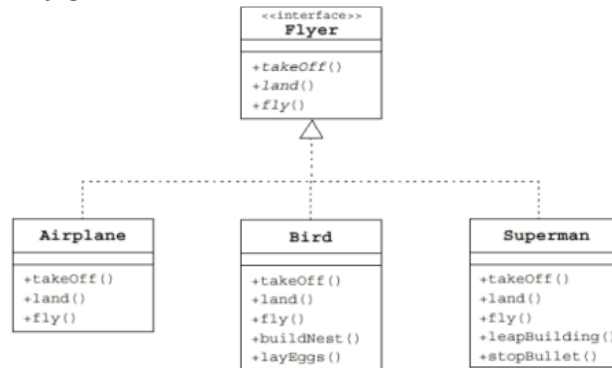
◆ Output



◆ Analisa

Implementasi dari Abstract method di letakkan pada class Vehicle sebagai parent class dan diakses oleh child classnya yaitu class Truk, dan class RiverBarge, method calcFuelNeeds digunakan untuk menghitung bahan bakar yang digunakan. yang akan mengembalikan nilai yang dihasilkan dari pembagian 2 method yaitu calcFuelEfficiency dan calcTripDistance

2. Buat program berdasarkan UML berikut



2.

Source Code

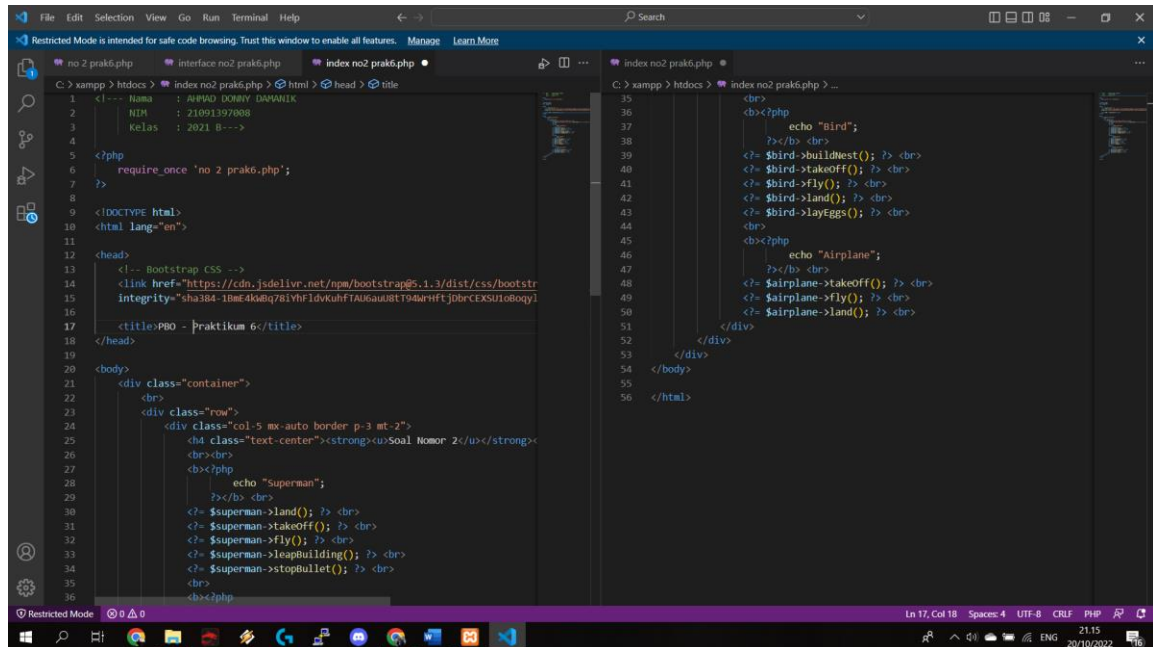
◆ PHP

```
no 2 prak6.php • no 2 prak6.php • no 2 prak6.php •
C:\xampp\htdocs> no 2 prak6.php > ...
1 <!-- Nama : AHMAD DONNY DAMANIK
2 NIM : 21091397008
3 Kelas : 2021 B-->
4
5 <?php
6
7 require_once 'interface no2 prak6.php';
8
9 class Airplane implements Flyer {
10     public function takeOff() {
11         return 'Pesawat lepas landas..';
12     }
13
14     public function land() {
15         return 'Pesawat mendarat';
16     }
17
18     public function fly() {
19         return 'Pesawat dalam perjalanan';
20     }
21 }
22
23 class Bird implements Flyer {
24     public function takeOff() {
25         return 'Burung mencari makan';
26     }
27
28     public function land() {
29         return 'Burung kembali pulang';
30     }
31
32     public function fly() {
33         return 'Burung terbang';
34     }
35
36     public function buildNest() {
37
38     }
39
40     public function layEggs() {
41         return 'Burung bertelur';
42     }
43 }
44
45 class Superman implements Flyer {
46     public function takeOff() {
47         return 'Superman mengejar Batman';
48     }
49
50     public function land() {
51         return 'Superman melawan Batman';
52     }
53
54     public function fly() {
55         return 'Superman melancarkan pukulan';
56     }
57
58     public function leapBuilding() {
59         return 'Batman terpenjat menabrak bangunan pencakar langit';
60     }
61
62     public function stopBullet() {
63         return 'Polisi menembaki superman namun ditangkis';
64     }
65 }
66
67 $airplane = new Airplane;
68 $bird = new Bird;
69 $superman = new Superman;
```

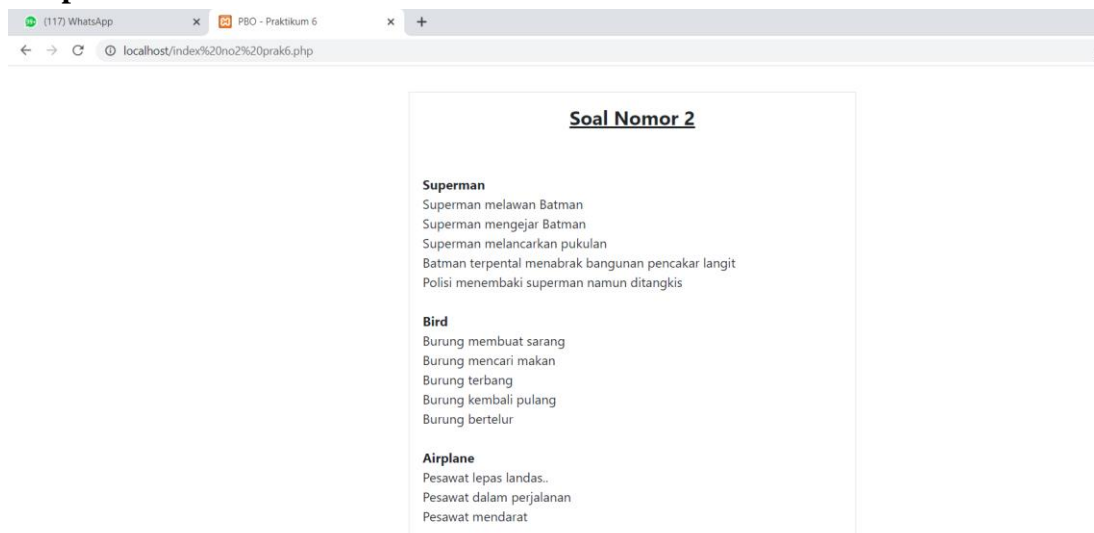
◆ Interface PHP

```
terminal Help
Trust this window to enable all features. Manage Learn More
no 2 prak6.php • interface no2 prak6.php • index no2 prak6.php
C:\xampp\htdocs> interface no2 prak6.php > ...
1 <!-- Nama : AHMAD DONNY DAMANIK
2 NIM : 21091397008
3 Kelas : 2021 B-->
4
5 <?php
6
7 interface Flyer {
8     public function takeOff();
9     public function land();
10    public function fly();
11 }
12
13 interface Sailer {
14     public function dock();
15     public function cruise();
16 }
```

◆ Index PHP



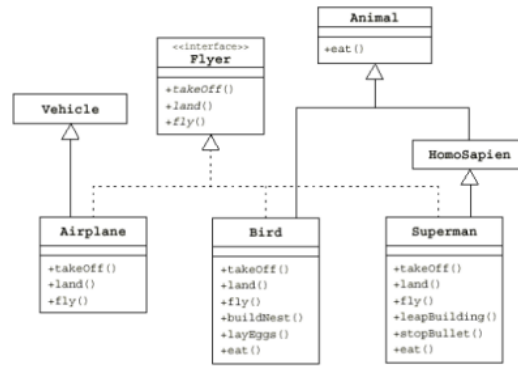
◆ Output



◆ Analisa

Implementasi Polymorphism dengan penggunaan Interface Flyer sehingga semua class yang Implements dari interface Flyer harus memiliki method takeoff, land, dan fly.

3. Buat program berdasarkan UML berikut



3.

Source Code

◆ Interface PHP

```

C:\> Users > FAMILY > Downloads > interface no 3 prak6.php > Sailer
1  <!-- Nama : AHMAD DONNY DAMANIK
2      NIM : 21091397008
3      Kelas : 2021 B-->
4
5  <?php
6
7  interface Flyer {
8      public function takeOff();
9      public function land();
10     public function fly();
11 }
12
13 interface Sailer {
14     public function dock();
15     public function cruise();
16 }

```

◆ PHP

```

File Edit Selection View Go Run Terminal Help
Restricted Mode is intended for safe code browsing. Trust this window to enable all features. Manage Learn More

no 3 prak6.php X interface no 3 prak6.php abstrac no 3 prak6.php index no 3 prak6.php ... no 3 prak6.php X

C:\> Users > FAMILY > Downloads > no 3 prak6.php > ...
1  <!-- Nama : AHMAD DONNY DAMANIK
2      NIM : 21091397008
3      Kelas : 2021 B-->
4
5  <?php
6
7  require_once 'abstrac no 3 prak6.php';
8  require_once 'interface no 3 prak6.php';
9
10 class Animal
11 {
12     protected $name;
13
14     public function __construct($name)
15     {
16         $this->name = $name;
17     }
18
19     public function eat()
20     {
21         return $this->name . ' sedang makan';
22     }
23 }
24
25 class HomoSapien extends Animal {}
26
27 class Airplane2 extends Vehicle implements Flyer
28 {
29     public function __construct($maxload, $name)
30     {
31         $this->maxload = $maxload;
32         $this->name = $name;
33     }
34
35     public function takeOff()
36
37     {
38         return $this->name lepas landas';
39     }
40
41     public function land()
42     {
43         return $this->name mendarat';
44     }
45
46     public function fly()
47     {
48         return $this->name dalam perjalanan';
49     }
50
51     public function calcFuelNeeds()
52     {
53         $fuel = $this->calcFuelEfficiency();
54         $strip = $this->calcTripDistance();
55
56         return ceil($fuel / $strip);
57     }
58 }
59
60
61 class Superman2 extends HomoSapien implements Flyer
62 {
63     public function takeOff()
64     {
65         return $this->name
66     }
67
68     public function land()
69     {
70         return $this->name
71     }

```

◆ Abstract PHP

The screenshot displays a Windows 10 desktop with a code editor open, showing two PHP files. The left pane, titled 'abstrac no 3 prabk.php', contains the following code:

```

1  <!-- Nama : AYOUD LOREY DAPAMEK
2  | NIM : 2101010000
3  | kelas : 2021 B-->
4
5  </php>
6
7  abstract class Vehicle {
8      private $load = 0;
9      protected $maxload = 0, $name;
10
11      protected function __construct($maxload, $name) {
12          $this->$maxload = $maxload;
13          $this->$name = $name;
14      }
15
16      public function getload() {
17          return $this->$load;
18      }
19
20      public function getmaxload() {
21          echo "Maksimal muatan : " . $this->$name . " ";
22          return $this->$maxload;
23      }
24
25      public function addload($weight) {
26          if ($this->$load <= $this->$maxload) {
27              echo "This->$name menambah muatan sebesar $weight chr";
28              echo "Muatan telah penuh tidak bisa menambah lagi";
29          } else {
30              $this->$load += $weight;
31              echo "This->$name menambah muatan sebesar $weight";
32          }
33      }
34
35      abstract public function calfuelneeds();
36
37      protected function calcfuelefficiency() {

```

The right pane, titled 'index no 3 prabk.php', contains the following code:

```

33  }
34
35      abstract public function calfuelneeds();
36
37      protected function calcfuelefficiency() {
38          $range = 5000000;
39          $range /= $this->$load;
40          return $range;
41      }
42
43      protected function caltripDistance() {
44          return 500;
45      }
46  }

```

The status bar at the bottom of the code editor shows 'Ln 3, Col 27' and the date '20/10/2022'.

◆ Index PHP

The image shows a dual-pane IDE with the following content:

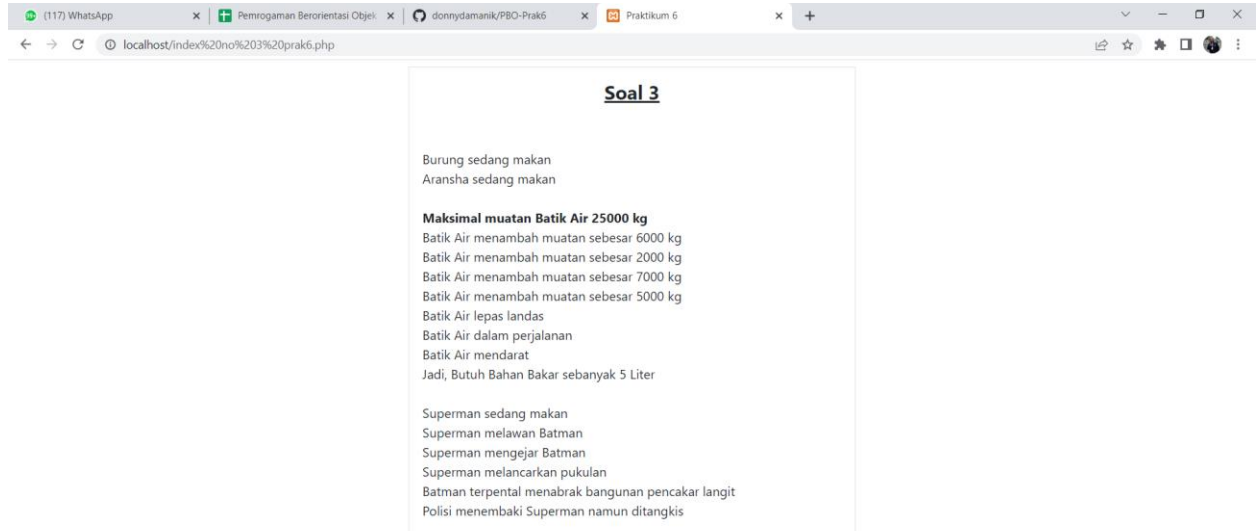
Left Pane (index no 3 prak6.php):

```
1 <!-- Nama : AHMAD DONIRY DAMAHITK
2 NIM : 21091397008
3 Kelas : 2021 B-->
4
5 <?php
6     require_once 'no 3 prak6.php';
7 ?>
8
9 <DOCTYPE html>
10 <html lang="id">
11
12 <head>
13     <!-- Bootstrap CSS -->
14     <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap
15 integrity="sha384-1B4kIHE64kEYPPozvBQigp8620776" crossorigin="anonymous">
16
17     <title>Praktikum 6</title>
18 </head>
19 <body>
20     <div class="container">
21         <div class="row">
22             <div class="col-5 mx-auto border p-3 mt-2">
23                 <h4 class="text-center"><strong><u>Soal 3</u></strong></h4>
24                 <br>
25                 <?=$burung->eat(); ?> <br>
26                 <?=$manusia->eat(); ?> <br>
27                 <br>
28                 <br>
29                 <?=$airplane2->getMaxload() . ' kg'; ?> <br></b>
30                 <?=$airplane2->addBox(6000) . ' kg'; ?> <br>
31                 <?=$airplane2->addBox(2000) . ' kg'; ?> <br>
32                 <?=$airplane2->addBox(7000) . ' kg'; ?> <br>
33                 <?=$airplane2->addBox(5000) . ' kg'; ?> <br>
34                 <?=$airplane2->takeOff(); ?> <br>
35                 <?=$airplane2->fly(); ?> <br>
36                 <?=$airplane2->land(); ?> <br>
37                 <br>
38             </div>
39         </div>
40     </div>
41 </body>
42 </html>
```

Right Pane (index no 3 prak6.php):

```
37
38
39     <?php
40         echo "Jadi, Butuh Bahan Bakar sebanyak " . $airplane2
41         <br>
42         <?=$superman2->eat(); ?> <br>
43         <?=$superman2->land(); ?> <br>
44         <?=$superman2->takeOff(); ?> <br>
45         <?=$superman2->fly(); ?> <br>
46         <?=$superman2->leapBuilding(); ?> <br>
47         <?=$superman2->stopBullet(); ?> <br>
48     </div>
49 </div>
50 </body>
51 </div>
52 </div>
53 </html>
```

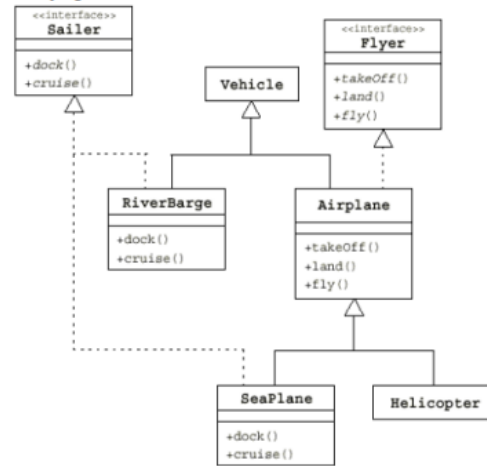
◆ Output



◆ Analisa

Terdapat interface Flyer dan abstract class Vehicle. Class airplane implementasi dari interface Flyer dan turunan dari Vehicle sehingga class Airplane harus memiliki method calcFuelNeeds, takeoff, land, dan fly. Class Bird implementasi dari Flyer dan turunan dari Animal sehingga memiliki method takeoff, land, fly, dan eat. Class Superman turunan dari homosapiens yang juga turunan dari Animal, serta implementasi dari interface Flyer. Maka class Superman memiliki method eat, takeoff, land, fly.

4. Buat program berdasarkan UML berikut



4.

Source Code

◆ Interface PHP

```

C:\Users\FAMILY>Downloads> No4 interface prak6.php > Sailer
1 <!-- Nama : AHMAD DONNY DAMANIK
2 NIM : 21091397008
3 Kelas : 2021 B-->
4
5 <?php
6
7 interface Flyer {
8     public function takeOff();
9     public function land();
10    public function fly();
11 }
12
13 interface Sailer {
14     public function dock();
15     public function cruise();
16 }
  
```

◆ PHP

```

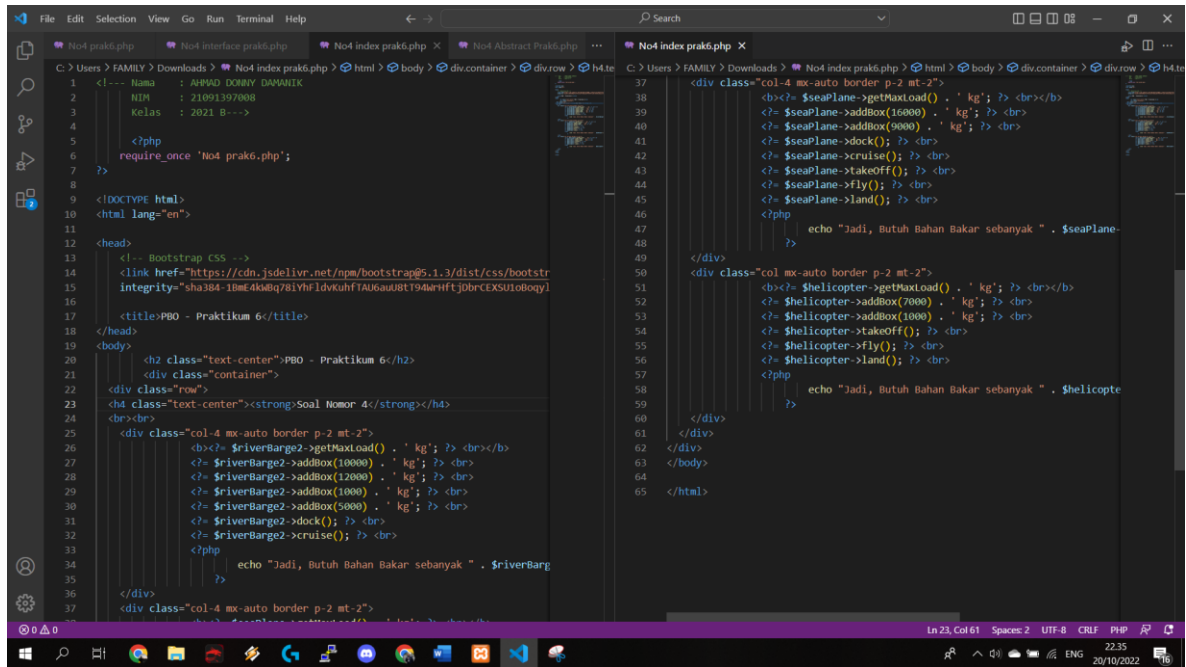
C:\Users\FAMILY>Downloads> No4 prak6.php > ...
1 <!-- Nama : AHMAD DONNY DAMANIK
2 NIM : 21091397008
3 Kelas : 2021 B-->
4
5 <?php
6
7 require_once 'No4 Abstract Praks.php';
8 require_once 'No4 interface prak6.php';
9
10 class RiverBarge2 extends Vehicle implements Sailer {
11     public function __construct($maxload, $name) {
12         $this->maxload = $maxload;
13         $this->name = $name;
14     }
15
16     public function calcFuelNeeds() {
17         $fuel = $this->calcFuelEfficiency();
18         $strip = $this->calcStripDistance();
19         return ceil($fuel / $strip);
20     }
21
22     public function dock() {
23         return $this->name . " berada di dermaga";
24     }
25
26     public function cruise() {
27         return $this->name . " sedang berlayar";
28     }
29 }
30
31 class Airplane2 implements Flyer {
32     public function takeOff() {
33         return $this->name . " lepas landas";
34     }
35
36     public function land() {
37         return $this->name . " mendarat";
38     }
39
40     public function fly() {
41         return $this->name . " Pesawat dalam perjalanan";
42     }
43 }
44
45 class SeaPlane extends Vehicle implements Sailer {
46     public function __construct($maxload, $name) {
47         $this->maxload = $maxload;
48         $this->name = $name;
49     }
50
51     public function calcFuelNeeds() {
52         $fuel = $this->calcFuelEfficiency();
53         $strip = $this->calcStripDistance();
54         return ceil($fuel / $strip);
55     }
56
57     public function dock() {
58         return $this->name . " berada di dermaga";
59     }
60
61     public function cruise() {
62         return $this->name . " sedang berlayar";
63     }
64
65     public function takeOff() {
66         return $this->name . " lepas landas";
67     }
68
69     public function land() {
70         return $this->name . " mendarat";
71     }
72
73     public function fly() {
  
```

```
File Edit Selection View Go Run Terminal Help
No4 prak6.php x No4 interface prak6.php No4 index prak6.php No4 Abstract Prak6.php
C:\Users\FAMILY\Downloads> No4 prak6.php > ...
72
73     public function fly() {
74         return $this->name . ' dalam perjalanan';
75     }
76 }
77
78 class Helicopter extends Vehicle {
79     public function __construct($maxload, $name) {
80         $this->maxload = $maxload;
81         $this->name = $name;
82     }
83
84     public function calcFuelNeeds() {
85         $fuel = $this->calcFuelEfficiency();
86         $trip = $this->calcTripDistance();
87
88         return ceil($fuel / $trip);
89     }
90
91     public function takeOff() {
92         return $this->name . ' lepas landas';
93     }
94
95     public function land() {
96         return $this->name . ' mendarat';
97     }
98
99     public function fly() {
100         return $this->name . ' dalam perjalanan';
101     }
102 }
103 $riverBarge2 = new RiverBarge2(35000, 'Atomic');
104 $seaPlane = new SeaPlane(25000, 'Titanic');
105 $helicopter = new Helicopter(15000, 'Brocklyn');
```

◆ Abstract PHP

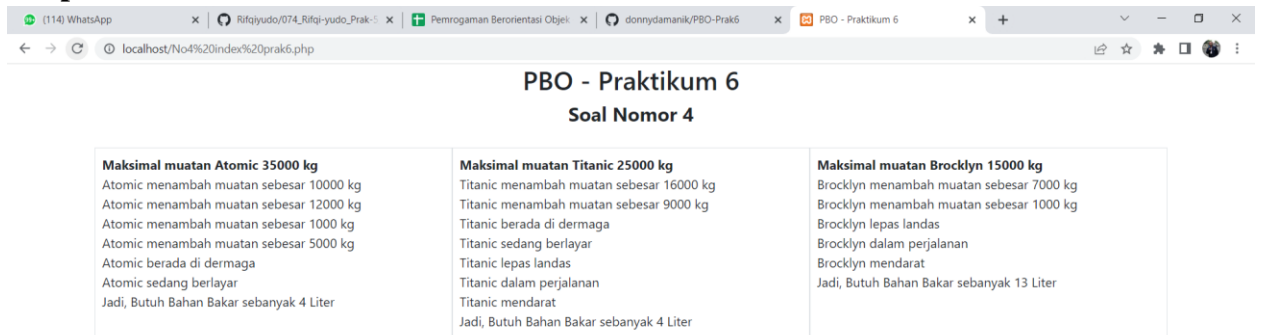
```
File Edit Selection View Go Run Terminal Help
No4 prak6.php No4 interface prak6.php No4 index prak6.php No4 Abstract Prak6.php
C:\Users\FAMILY\Downloads> No4 Abstract Prak6.php > ...
1 <!-- Nama : ARYO DOJOY GAWALIS
2 NIM : 21091397008
3 Kelas : 2021 B-->
4
5 <?php
6
7 abstract class Vehicle {
8     private $load = 0;
9     protected $maxload = 0, $name;
10
11     protected function __construct($maxload, $name) {
12         $this->maxload = $maxload;
13         $this->name = $name;
14     }
15
16     public function getload() {
17         return $this->load;
18     }
19
20     public function getMaxload() {
21         echo 'Maksimal muatan ' . $this->name . ' ' ;
22         return $this->maxload;
23     }
24
25     public function addload($weight) {
26         if ($this->load >= $this->maxload) {
27             echo "$this->name menambah muatan sebesar $weight <br>";
28             echo "Muatan telah penuh tidak bisa menambah lagi";
29         } else {
30             $this->load += $weight;
31             echo "$this->name menambah muatan sebesar $weight";
32         }
33     }
34
35     abstract public function calcFuelNeeds();
36
37     protected function calcFuelEfficiency() {
38
39         abstract public function calcFuelNeeds();
40
41         protected function calcFuelEfficiency() {
42             $range = 50000000;
43             $range /= $this->load;
44             return $range;
45         }
46
47         protected function calcTripDistance() {
48             return 500;
49         }
50     }
51 }
```

◆ Index PHP



```
1 <!-- Nama : APMO DOBRY DAMAILK
2 HUK : 21091307080
3 Kelas : 2021 B-->
4
5 <?php
6 require_once 'No4 prak6.php';
7 ?>
8
9 <!DOCTYPE html>
10 <html lang="en">
11
12 <head>
13 <!-- Bootstrap CSS -->
14 <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css" integrity="sha384-1Bm44kq781YHf1dvKuhfTAU6au0BTtJ98rqCEXSU100y" rel="stylesheet">
15 <title>PBO - Praktikum 6</title>
16 </head>
17 <body>
18 <div class="text-center">PBO - Praktikum 6</div>
19 <div class="container">
20 <div class="row">
21 <div class="col-4 mx-auto border p-2 mt-2">
22 <div class="text-center"><strong>Soal Nomor 4</strong></div>
23 <div class="table">
24 <table>
25 <tr>
26 <th>Maksimal muatan Atomic 35000 kg</th>
27 <th>Maksimal muatan Titanic 25000 kg</th>
28 <th>Maksimal muatan Brooklyn 15000 kg</th>
29 </tr>
30 <tr>
31 <td>Atomic menambah muatan sebesar 10000 kg</td>
32 <td>Titanic menambah muatan sebesar 16000 kg</td>
33 <td>Brooklyn menambah muatan sebesar 7000 kg</td>
34 </tr>
35 <tr>
36 <td>Atomic menambah muatan sebesar 1000 kg</td>
37 <td>Titanic berada di dermaga</td>
38 <td>Brooklyn berada di dermaga</td>
39 </tr>
40 <tr>
41 <td>Atomic menambah muatan sebesar 5000 kg</td>
42 <td>Titanic sedang berlayar</td>
43 <td>Brooklyn dalam perjalanan</td>
44 </tr>
45 <tr>
46 <td>Atomic berada di dermaga</td>
47 <td>Titanic lepas landas</td>
48 <td>Brooklyn mendarat</td>
49 </tr>
50 <tr>
51 <td>Atomic sedang berlayar</td>
52 <td>Titanic dalam perjalanan</td>
53 <td>Jadi, Butuh Bahan Bakar sebanyak 13 Liter</td>
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```

◆ Output



Maksimal muatan Atomic 35000 kg	Maksimal muatan Titanic 25000 kg	Maksimal muatan Brooklyn 15000 kg
Atomic menambah muatan sebesar 10000 kg	Titanic menambah muatan sebesar 16000 kg	Brooklyn menambah muatan sebesar 7000 kg
Atomic menambah muatan sebesar 1000 kg	Titanic berada di dermaga	Brooklyn menambah muatan sebesar 1000 kg
Atomic menambah muatan sebesar 5000 kg	Titanic sedang berlayar	Brooklyn lepas landas
Atomic berada di dermaga	Titanic lepas landas	Brooklyn dalam perjalanan
Atomic sedang berlayar	Titanic dalam perjalanan	Brooklyn mendarat
Jadi, Butuh Bahan Bakar sebanyak 4 Liter	Titanic mendarat	Jadi, Butuh Bahan Bakar sebanyak 13 Liter
	Jadi, Butuh Bahan Bakar sebanyak 4 Liter	

◆ Analisa

turunan dari class Airplane yang implements Flyer dan child dari Vehicle sehingga class SeaPlane memiliki method dock, cruise, takeoff, land, fly, dan calcFuelNeeds.

Implementasi polymorphism dengan interface dan abstact class ditunjukkan pada class SeaPlane yang implements interface Sailer,