

LAPORAN PRAKTIKUM 6

Mata Kuliah Pemograman Berorientasi Obyek



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PROGRAM STUDI D4 MANAJEMEN INFORMATIKA

FAKULTAS VOKASI

UNIVERSITAS NEGERI SURABAYA

2022

1.

Source Code

PHP

```
nomor 1 php (prak 6).php • nomor 1 abstract (prak 6).php nomor 1 index (prak 6).php nomor 2 p
C:\Users\HPWin10Pro> Downloads > nomor 1 php (prak 6).php
1 <!-- Nama : Zabrina Rulif Aurellia
2 | NIM : 21091397056
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 = $this->calcTripDistance();
20
21         return ceil($fuel / $strip);
22     }
23 }
24
25 class RiverBarge extends Vehicle {
26     public function __construct($maxload, $name)
27     {
28         $this->maxload = $maxload;
29         $this->name = $name;
30     }
31
32     public function calcFuelNeeds()
33     {
34         $fuel = $this->calcFuelEfficiency();
35         $strip = $this->calcTripDistance();
36
37         return ceil($fuel / $strip);
38     }
39 }
40 $truck = new Truck(16000, 'Truk');
41 $riverBarge = new RiverBarge(15000, 'Perahu');
```

Abstract PHP

```
1 <!-- Nama : Zabrina Rulif
2 | NIM : 21091397056
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 $this->maxload;
23     }
24
25     public function addBox($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";
```

```

33     }
34
35     abstract public function calcFuelNeeds();
36
37     protected function calcFuelEfficiency() {
38         $range = 50000000;
39         $range /= $this->load;
40         return $range;
41     }
42
43     protected function calcTripDistance() {
44         return 500;
45     }
46 }

```

Index PHP

```

1  <!-- Nama : Zabrina Rulif
2      NIM : 21091397056
3      Kelas : 2021 B-->
4
5  <?php
6      require_once 'No1 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.min.css" rel="stylesheet"
15         integrity="sha384-1BmE4kqBQ781YhF1dvkuhfTAU6au8tT94WrHftjDbrCEXSUIoBoqyl2QvZ6jI13" crossorigin="anonymous">
16
17     <title>PBO Praktikum 6</title>
18 </head>
19
20 <body>
21     <div class="container">
22         <br>
23         <h2 class="text-center">PBO - Praktikum 6</h2>
24         <div class="row">
25             <div class="col-5 mx-auto border p-3 mt-2">
26                 <h4 class="text-center"><strong>Soal 1</strong></h4>
27                 <br><br>
28                 <b><?=$truck->getMaxLoad() . ' kg'; ?> <br></b>
29                 <br>
30                 <?=$truck->addBox(1000) . ' kg'; ?> <br>
31                 <?=$truck->addBox(7000) . ' kg'; ?> <br>
32                 <?=$truck->addBox(7000) . ' kg'; ?> <br>
33                 <?=$truck->addBox(8000) . ' kg'; ?> <br>
34                 <?php
35                     echo "Jadi, Butuh Bahan Bakar sebanyak " . $truck->calcFuelNeeds() . ' Liter'. '<br>';
36                 ?>
37                 <br>
38                 -----
39                 <br>
40                 <br>
41                 <b><?=$riverBarge->getMaxLoad() . ' kg'; ?> <br></b>
42                 <br>
43                 <?=$riverBarge->addBox(2000) . ' kg'; ?> <br>
44                 <?=$riverBarge->addBox(4000) . ' kg'; ?> <br>
45                 <?=$riverBarge->addBox(9000) . ' kg'; ?> <br>
46                 <br>
47                 <?php
48                     echo "Jadi, Butuh Bahan Bakar sebanyak " . $riverBarge->calcFuelNeeds() . ' Liter';
49                 ?>
50             </div>
51         </div>
52     </div>
53 </body>
54
55 </html>

```

Output

Maksimal muatan Truk 16000 kg

Truk menambah muatan sebesar 1000 kg
 Truk menambah muatan sebesar 7000 kg
 Truk menambah muatan sebesar 8000 kg
 Jadi, Butuh Bahan Bakar sebanyak 7 Liter

Maksimal muatan Perahu 15000 kg

Perahu menambah muatan sebesar 2000 kg
 Perahu menambah muatan sebesar 4000 kg
 Perahu menambah muatan sebesar 9000 kg
 Jadi, Butuh Bahan Bakar sebanyak 7 Liter

Analisa

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

2.

Source Code

PHP

```
1 <!-- Zabrina Rulif_21091397056 -->
2
3 <?php
4
5 require_once 'inter-face no2 prak6.php';
6
7 class Airplane implements Flyer {
8     public function takeOff() {
9         return 'Pesawat lepas landas..';
10    }
11
12    public function land() {
13        return 'Pesawat mendarat';
14    }
15
16    public function fly() {
17        return 'Pesawat dalam perjalanan';
18    }
19 }
20
21 class Bird implements Flyer {
22     public function takeOff() {
23         return 'Burung mencari makan';
24     }
25
26     public function land() {
27         return 'Burung kembali pulang';
28     }
29
30     public function fly() {
31         return 'Burung terbang';
32     }
33
34     public function buildNest() {
35         return 'Burung membuat sarang';
36     }
37
38     public function layEggs() {
39         return 'Burung bertelur';
40     }
41 }
42
43 class Superman implements Flyer {
44     public function takeOff() {
45         return 'Superman mengejar Batman';
46     }
47
48     public function land() {
49         return 'Superman melawan Batman';
50     }
51
52     public function fly() {
53         return 'Superman melancarkan pukulan';
54     }
55
56     public function leapBuilding() {
57         return 'Batman terpelantai menabrak bangunan pencakar langit';
58     }
59
60     public function stopBullet() {
61         return 'Polisi menembaki superman namun ditangkis';
62     }
63 }
64
65 $airplane = new Airplane;
66 $bird = new Bird;
67 $superman = new Superman;
```

Interface PHP

```
1 <!-- Zabrina Rulif_21091397056 -->
2
3 <?php
4
5 interface Flyer {
6     public function takeOff();
7     public function land();
8     public function fly();
9 }
10
11 interface Sailer {
12     public function dock();
13     public function cruise();
14 }
```

Index PHP

```

1 <!-- Zabrina Nulif_21091397056-->
2
3 <?php
4 |     require_once 'no 2 prak6.php';
5 |>
6
7 <!DOCTYPE html>
8 <html lang="en">
9
10 <head>
11 |     <!-- Bootstrap CSS -->
12 |     <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.1/dist/css/bootstrap.min.css" rel="stylesheet"
13 |         integrity="sha384-1lme434q781y91dvkuhftAU5aud86194mshft3dbrCExSU0loog12Qv26jIM3" crossorigin="anonymous">
14 |
15 |     <title>Praktikum 6</title>
16 </head>
17
18 <body>
19 |     <div class="container">
20 |         <br>
21 |         <div class="row">
22 |             <div class="col-5 mx-auto border p-3 mt-2">
23 |                 <div class="text-center"><strong>Soal 2</strong></div>
24 |                 <br><br>
25 |                 <div><?php
26 |                     |     echo "Superman";
27 |                     |></div> <br>
28 |                 <?=> $superman->land(); ?> <br>
29 |                 <?=> $superman->takeOff(); ?> <br>
30 |                 <?=> $superman->fly(); ?> <br>
31 |                 <?=> $superman->leapBuilding(); ?> <br>
32 |
33 |                 <?=> $superman->stopBullet(); ?> <br>
34 |                 <br>
35 |                 <div><?php
36 |                     |     echo "Bird";
37 |                     |></div> <br>
38 |                 <?=> $bird->buildNest(); ?> <br>
39 |                 <?=> $bird->takeOff(); ?> <br>
40 |                 <?=> $bird->fly(); ?> <br>
41 |                 <?=> $bird->land(); ?> <br>
42 |                 <?=> $bird->layEggs(); ?> <br>
43 |                 <br>
44 |                 <div><?php
45 |                     |     echo "Airplane";
46 |                     |></div> <br>
47 |                 <?=> $airplane->takeOff(); ?> <br>
48 |                 <?=> $airplane->fly(); ?> <br>
49 |                 <?=> $airplane->land(); ?> <br>
50 |             </div>
51 |         </div>
52 </body>
53
54 </html>

```

Output

Superman

Superman melawan Batman
 Superman mengejar Batman
 Superman melancarkan pukulan
 Batman terpentak menabrak bangunan pencakar langit
 Polisi menembaki superman namun ditangkis

Bird

Burung membuat sarang
 Burung mencari makan
 Burung terbang
 Burung kembali pulang
 Burung bertelur

Airplane

Pesawat lepas landas..
 Pesawat dalam perjalanan
 Pesawat mendarat

Analisa

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

3.

Source Code

Interface PHP

```
1 <!-- Zabrina Rulif_21091397056 -->
2
3 <?php
4
5 interface Flyer {
6     public function takeOff();
7     public function land();
8     public function fly();
9 }
10
11 interface Saller {}
12     public function dock();
13     public function cruise();
14 }
```

PHP

```
1 <!-- Zabrina Rulif_21091397056 -->
2
3 <?php
4
5 require_once 'abstrac no 3 prak6.php';
6 require_once 'interface no 3 prak6.php';
7
8 class Animal
9 {
10     protected $name;
11
12     public function __construct($name)
13     {
14         $this->name = $name;
15     }
16
17     public function eat()
18     {
19         return $this->name . ' sedang makan';
20     }
21 }
22
23 class Homosapiens extends Animal {}
24
25 class Airplane2 extends Vehicle implements Flyer
26 {
27     public function __construct($maxload, $name)
28     {
29         $this->maxload = $maxload;
30         $this->name = $name;
31     }
32 }
```

```

33     public function takeOff()
34     {
35         return "$this->name lepas landas";
36     }
37
38     public function land()
39     {
40         return "$this->name mendarat";
41     }
42
43     public function fly()
44     {
45         return "$this->name dalam perjalanan";
46     }
47
48     public function calcFuelNeeds()
49     {
50         $fuel = $this->calcFuelEfficiency();
51         $trip = $this->calcTripDistance();
52
53
54         return ceil($fuel / $trip);
55     }
56 }
57
58 class Superman2 extends Homosapiens implements Flyer
59 {
60     public function takeOff()
61     {
62         return "$this->name mengejar Batman";
63     }
64 }

```

```

62     {
63         return "$this->name mengejar Batman";
64     }
65
66     public function land()
67     {
68         return "$this->name melawan Batman";
69     }
70
71     public function fly()
72     {
73         return "$this->name melancarkan pukulan";
74     }
75
76     public function leapBuilding()
77     {
78         return "Batman terpenyal menabrak bangunan pencakar langit";
79     }
80
81     public function stopBullet()
82     {
83         return "Polisi menembaki $this->name namun ditangkis";
84     }
85 }
86
87 $burung = new Animal('Burung');
88 $manusia = new Homosapiens('Aransha');
89 $airplane2 = new Airplane2(25000, 'Batik Air');
90 $superman2 = new Superman2('Superman');

```

Abstract PHP

```

1  <!-- Zabrina Rulif_21091397056 -->
2
3  <?php
4
5  abstract class Vehicle {
6      private $load = 0;
7      protected $maxLoad = 0, $name;
8
9      protected function __construct($maxLoad, $name) {
10         $this->$maxLoad = $maxLoad;
11         $this->$name = $name;
12     }
13
14     public function getLoad() {
15         return $this->load;
16     }
17
18     public function getMaxLoad() {
19         echo 'Maksimal muatan ' . $this->name . ' : ' . $this->maxLoad;
20         return $this->maxLoad;
21     }
22
23     public function addBox($weight) {
24         if ($this->load >= $this->maxLoad) {
25             echo "$this->name menambah muatan sebesar $weight <br>";
26             echo "Muatan telah penuh tidak bisa menambah lagi";
27         } else {
28             $this->load += $weight;
29             echo "$this->name menambah muatan sebesar $weight";
30         }
31     }

```

```

32
33     abstract public function calcFuelNeeds();
34
35     protected function calcFuelEfficiency() {
36         $range = 50000000;
37         $range /= $this->load;
38         return $range;
39     }
40
41     protected function calcTripDistance() {
42         return 500;
43     }
44 }

```


Index PHP

```
1 <!-- Zabrina Rulif_21091397056 -->
2
3 <?php
4 |   require_once 'no 3 praktik6.php';
5 ?>
6
7 <!DOCTYPE html>
8 <html lang="id">
9
10 <head>
11 |   <!-- Bootstrap CSS -->
12 |   <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css" rel="stylesheet"
13 |   integrity="sha384-1BmE4kqBq781YhFdvKuhfTAUGaJ8tT94wRHftjDbrCEXSUioBoqyl2Qv26jIW3" crossorigin="anonymous">
14
15 |   <title>Praktikum 6</title>
16 </head>
17 <body>
18 |   <div class="container">
19 |     <div class="row">
20 |       <div class="col-5 mx-auto border p-3 mt-2">
21 |         <h4 class="text-center"><strong><u>Soal 3</u></strong></h4>
22 |         <br><br>
23 |         <?=> $burung->eat(); ?> <br>
24 |         <?=> $manusia->eat(); ?> <br>
25 |         <br>
26 |         <b><?=> $airplane2->getMaxLoad() . ' kg'; ?> <br></b>
27 |         <?=> $airplane2->addBox(6000) . ' kg'; ?> <br>
28 |         <?=> $airplane2->addBox(2000) . ' kg'; ?> <br>
29 |         <?=> $airplane2->addBox(7000) . ' kg'; ?> <br>
30 |         <?=> $airplane2->addBox(5000) . ' kg'; ?> <br>
31 |         <?=> $airplane2->addBox(5000) . ' kg'; ?> <br>
32 |         <?=> $airplane2->takeOff(); ?> <br>
33 |         <?=> $airplane2->fly(); ?> <br>
34 |         <?=> $airplane2->land(); ?> <br>
35 |
36 |         <?php
37 |         |   echo "Jadi, Butuh Bahan Bakar sebanyak " . $airplane2->calcFuelNeeds() . ' Liter'. '<br>';
38 |         ?>
39 |         <br>
40 |         <?=> $superman2->eat(); ?> <br>
41 |         <?=> $superman2->land(); ?> <br>
42 |         <?=> $superman2->takeOff(); ?> <br>
43 |         <?=> $superman2->fly(); ?> <br>
44 |         <?=> $superman2->leapBuilding(); ?> <br>
45 |         <?=> $superman2->stopBullet(); ?> <br>
46 |       </div>
47 |     </div>
48 |   </div>
49 </body>
50
51 </html>
```

Output

Burung sedang makan

Aransha sedang makan

Maksimal muatan Batik Air 25000 kg

Batik Air menambah muatan sebesar 6000 kg

Batik Air menambah muatan sebesar 2000 kg

Batik Air menambah muatan sebesar 7000 kg

Batik Air menambah muatan sebesar 5000 kg

Batik Air lepas landas

Batik Air dalam perjalanan

Batik Air mendarat

Jadi, Butuh Bahan Bakar sebanyak 5 Liter

Superman sedang makan

Superman melawan Batman

Superman mengejar Batman

Superman melancarkan pukulan

Batman terpental menabrak bangunan pencakar langit

Polisi menembaki Superman namun ditangkis

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.

Source Code

Interface PHP

```
1 <!-- Nama : Zabrina Rulif
2 NIM : 21091397056
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

```
1 <!-- Nama : Zabrina Rulif
2 NIM : 21091397056
3 Kelas : 2021 B-->
4
5 <?php
6
7 require_once 'No4 Abstract Prak6.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         $trip = $this->calcTripDistance();
19
20         return ceil($fuel / $trip);
21     }
22
23     public function dock() {
24         return $this->name . ' berada di dermaga';
25     }
26
27     public function cruise() {
28         return $this->name . ' sedang berlayar';
29     }
30 }
31
```

```

31
32 class Airplane2 implements Flyer {
33     public function takeOff() {
34         return 'Pesawat lepas landas';
35     }
36     public function land() {
37         return 'Pesawat mendarat';
38     }
39     public function fly() {
40         return 'Pesawat dalam perjalanan';
41     }
42 }
43
44 class SeaPlane extends Vehicle implements Sailer {
45     public function __construct($maxload, $name) {
46         $this->maxload = $maxload;
47         $this->name = $name;
48     }
49
50     public function calcFuelNeeds() {
51         $fuel = $this->calcFuelEfficiency();
52         $trip = $this->calcTripDistance();
53
54         return ceil($fuel / $trip);
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() {
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';

```

Abstract PHP

```

1 <!-- Nama : Zabrina Rulif
2 NIM : 21091397056
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 . ' : ' . $this->maxload;
22     }
23
24     public function addBox($weight) {
25         if ($this->load >= $this->maxload) {
26             echo "$this->name menambah muatan sebesar $weight <br>";
27             echo 'Muatan telah penuh tidak bisa menambah lagi';
28         } else {
29             $this->load += $weight;
30             echo "$this->name menambah muatan sebesar $weight";
31         }

```

```

C:\Users\HP-Win10Pro\Downloads> nomor 4 abstarct (prak 6).php
32     }
33 }
34
35 abstract public function calcFuelNeeds();
36
37 protected function calcFuelEfficiency() {
38     $range = 50000000;
39     $range /= $this->load;
40     return $range;
41 }
42
43 protected function calcTripDistance() {
44     return 500;
45 }
46

```

Index PHP

```

1  <!-- Nama      : Zabrina Rulif
2     NIM       : 21091397056
3     Kelas    : 2021 8---->
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" rel="stylesheet"
15         integrity="sha384-1Bme4k8Bq781YhF1dvKuhfTAU6au08tT94wrHfjDbrCEXSU1oBoqyl2QvZ6jIN3" crossorigin="anonymous">
16
17     <title>P80 - Praktikum 6</title>
18 </head>
19 <body>
20     <h2 class="text-center">P80 - Praktikum 6</h2>
21     <div class="container">
22         <div class="row">
23             <h4 class="text-center"><strong>Soal 4</strong></h4>
24             <br><br>
25             <div class="col-4 mx-auto border p-2 mt-2">
26                 <b><?=$riverBarge2->getMaxLoad() . ' kg'; ?> <br></b>
27                 <?=$riverBarge2->addBox(12000) . ' kg'; ?> <br>
28                 <?=$riverBarge2->addBox(14000) . ' kg'; ?> <br>
29                 <?=$riverBarge2->addBox(1000) . ' kg'; ?> <br>
30                 <?=$riverBarge2->addBox(3000) . ' kg'; ?> <br>
31                 <?=$riverBarge2->dock(); ?> <br>

```

```

34 |         echo "Jadi, Butuh Bahan Bakar sebanyak " . $riverBarge2->calcFuelNeeds() . ' Liter'. '<br>';
35 |     }>
36 | </div>
37 | <div class="col-4 mx-auto border p-2 mt-2">
38 |     <b><?=$seaPlane->getMaxLoad() . ' kg'; ?> <br></b>
39 |     <?=$seaPlane->addBox(12000) . ' kg'; ?> <br>
40 |     <?=$seaPlane->addBox(8000) . ' kg'; ?> <br>
41 |     <?=$seaPlane->dock(); ?> <br>
42 |     <?=$seaPlane->cruise(); ?> <br>
43 |     <?=$seaPlane->takeOff(); ?> <br>
44 |     <?=$seaPlane->fly(); ?> <br>
45 |     <?=$seaPlane->land(); ?> <br>
46 |     <?php
47 |         echo "Jadi, Butuh Bahan Bakar sebanyak " . $seaPlane->calcFuelNeeds() . ' Liter'. '<br>';
48 |     }>
49 | </div>
50 | <div class="col mx-auto border p-2 mt-2">
51 |     <b><?=$helicopter->getMaxLoad() . ' kg'; ?> <br></b>
52 |     <?=$helicopter->addBox(8000) . ' kg'; ?> <br>
53 |     <?=$helicopter->addBox(2000) . ' kg'; ?> <br>
54 |     <?=$helicopter->takeOff(); ?> <br>
55 |     <?=$helicopter->fly(); ?> <br>
56 |     <?=$helicopter->land(); ?> <br>
57 |     <?php
58 |         echo "Jadi, Butuh Bahan Bakar sebanyak " . $helicopter->calcFuelNeeds() . ' Liter'. '<br>';
59 |     }>
60 | </div>
61 | </div>
62 | </div>
63 | </body>
64 |

```

Output

Maksimal muatan Atomic 30000 kg

Atomic menambah muatan sebesar 12000 kg
 Atomic menambah muatan sebesar 14000 kg
 Atomic menambah muatan sebesar 1000 kg
 Atomic menambah muatan sebesar 3000 kg
 Atomic berada di dermaga
 Atomic sedang berlayar
 Jadi, Butuh Bahan Bakar sebanyak 4 Liter

Maksimal muatan Titanic 20000 kg

Titanic menambah muatan sebesar 12000 kg
 Titanic menambah muatan sebesar 8000 kg
 Titanic berada di dermaga
 Titanic sedang berlayar
 Titanic lepas landas
 Titanic dalam perjalanan
 Titanic mendarat
 Jadi, Butuh Bahan Bakar sebanyak 5 Liter

Maksimal muatan Brooklyn 10000 kg

Brooklyn menambah muatan sebesar 8000 kg
 Brooklyn menambah muatan sebesar 2000 kg
 Brooklyn lepas landas
 Brooklyn dalam perjalanan
 Brooklyn mendarat
 Jadi, Butuh Bahan Bakar sebanyak 10 Liter

Analisa

Implementasi polymorphism dengan interface dan abstract class ditunjukkan pada class SeaPlane yang implements interface Sailer, turunan dari class Airplane yang implements Flyer dan child dari Vehicle sehingga class SeaPlane memiliki method dock, cruise, takeoff, land, fly, dan calcFuelNeeds