

LAPORAN PRAKTIKUM 6

(Abstrak dan Interface)

Mata Kuliah Pemograman Berorientasi Objek



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1.

Source Code

```
Prak6No1Abstrak.php X
Prak 6 No.1 > Prak6No1Abstrak.php > Vehicle > addBox
1  <!-- Aini Azzah - 21091397006 - 2021 B -->
2
3  <?php
4      abstract class Vehicle
5      {
6          private $load = 0;
7          protected $maxLoad = 0, $name;
8
9          protected function __construct($maxLoad, $name)
10         {
11             $this->$maxLoad = $maxLoad;
12             $this->$name = $name;
13         }
14
15         public function getLoad()
16         {
17             return $this->load;
18         }
19
20         public function getMaxLoad()
21         {
22             echo 'Muatan Maksimal ' . $this->name . ' ' ;
23             return $this->maxLoad;
24         }
25
26         public function addBox($weight)
27         {
28             if ($this->load >= $this->maxLoad)
29             {
30                 echo "$this->name menambah muatan sebesar" . $weight. "<br>";
31                 echo 'Muatan telah penuh tidak bisa menambah lagi';
32             } else {
33                 $this->load += $weight;
34                 echo "$this->name menambah muatan sebesar" . $weight;
35             }
36         }
37
38         abstract public function calcFuelNeeds();
39
40         protected function calcFuelEfficiency()
41         {
42             $range = 50000000;
43             $range /= $this->load;
44             return $range;
45         }
46
47         protected function calcTripDistance()
48         {
49             return 500;
50         }
51     }
52     ?>

Prak6No1.php X
Prak 6 No.1 > Prak6No1.php > Truck > calcFuelNeeds
1  <!-- Aini Azzah - 21091397006 - 2021 B -->
2
3  <?php
4      require_once 'Prak6No1Abstrak.php';
5
6      class Truck extends Vehicle
7      {
8          public function __construct($maxLoad, $name)
9          {
10             $this->maxLoad = $maxLoad;
11             $this->name = $name;
12         }
```

```

13
14     public function calcFuelNeeds()
15     {
16         $fuel = $this->calcFuelEfficiency();
17         $trip = $this->calcTripDistance();
18
19         return ceil($fuel /= $trip);
20     }
21 }
22

```

```

23 class RiverBarge extends Vehicle
24 {
25     public function __construct($maxLoad, $name)
26     {
27         $this->maxLoad = $maxLoad;
28         $this->name = $name;
29     }
30
31     public function calcFuelNeeds()
32     {
33         $fuel = $this->calcFuelEfficiency();
34         $trip = $this->calcTripDistance();
35
36         return ceil($fuel /= $trip);
37     }
38 }
39
40 $truck = new Truck(16000, 'Truck');
41 $riverBarge = new RiverBarge(15000, 'River Barge');
42 ?>

```

Prak6No1Index.php X

Prak 6 No.1 > Prak6No1Index.php > html > body > div.container > div.row > div.col-5.mx-auto.border.p-3.mt-2 > br

```

1  <!-- Aini Azzah - 21091397006 - 2021 B -->
2
3  <?php
4      require_once 'Prak6No1.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="sha384-1BmE4kWBq78iYhFldvKuhfTAU6auU8tT94WrHftjDbrCEXSU1oBoqyl2QvZ6jIW3" crossorigin="anonymous">
14
15         <title>PBO Praktikum 6 No.1</title>
16     </head>
17
18     <body>
19         <div class="container">
20             <br>
21             <h2 class="text-center">PBO - Praktikum 6</h2>
22             <div class="row">
23                 <div class="col-5 mx-auto border p-3 mt-2">
24                     <h4 class="text-center"><strong>Soal 1</strong></h4>
25                     <br><br>
26                     <b><?= $truck->getMaxLoad() . ' kg'; ?> <br></b>
27                     <br>
28                     <?= $truck->addBox(6000) . ' kg'; ?> <br>
29                     <?= $truck->addBox(7000) . ' kg'; ?> <br>
30                     <?= $truck->addBox(1000) . ' kg'; ?> <br>
31
32                     <?php
33                         echo "Jadi, Butuh Bahan Bakar sebanyak " . $truck->calcFuelNeeds() . ' Liter'. '<br>';
34                     ?>
35                     <br>
36                     -----
37                     <br>
38                     <br>

```

```

39         <b><?= $riverBarge->getMaxLoad() . ' kg'; ?> <br></b>
40     <br>
41     <?= $riverBarge->addBox(8000) . ' kg'; ?> <br>
42     <?= $riverBarge->addBox(1000) . ' kg'; ?> <br>
43     <?= $riverBarge->addBox(4000) . ' kg'; ?> <br>
44
45     <?php
46         echo "Jadi, Butuh Bahan Bakar sebanyak " . $riverBarge->calcFuelNeeds() . ' Liter';
47     ?>
48 </div>
49 </div>
50 </div>
51 </body>
52
53 </html>

```

Output



PBO - Praktikum 6

Soal 1

Muatan Maksimal Truck 16000 kg

Truck menambah muatan sebesar 6000 kg
 Truck menambah muatan sebesar 7000 kg
 Truck menambah muatan sebesar 1000 kg
 Jadi, Butuh Bahan Bakar sebanyak 8 Liter

Muatan Maksimal River Barge 15000 kg

River Barge menambah muatan sebesar 8000 kg
 River Barge menambah muatan sebesar 1000 kg
 River Barge menambah muatan sebesar 4000 kg
 Jadi, Butuh Bahan Bakar sebanyak 8 Liter

Analisis

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

```

Prak6No2Interface.php X
Prak 6 No.2 > Prak6No2Interface.php > ...
1  <!-- Aini Azzah - 21091397006 - 2021 B -->
2
3  <?php
4  interface Flyer {
5      public function takeOff();
6      public function land();
7      public function fly();
8  }
9  ?>

```

Prak6No2.php X

Prak 6 No.2 > Prak6No2.php > Superman1

```
1  <!-- Aini Azzah - 21091397006 - 2021 B -->
2
3  <?php
4      require_once 'Prak6No2Interface.php';
5
6      class Airplane1 implements Flyer
7      {
8          public function takeOff()
9          {
10             return 'Pesawat lepas landas';
11          }
12
13          public function land()
14          {
15             return 'Pesawat mendarat';
16          }
17
18          public function fly()
19          {
20             return 'Pesawat terbang';
21          }
22      }
23
24      class Bird implements Flyer
25      {
26          public function takeOff()
27          {
28             return 'Burung mencari makan';
29          }
30
31          public function land()
32          {
33             return 'Burung kembali pulang';
34          }
35
36          public function fly()
37          {
38             return 'Burung terbang';
39          }
40
41          public function buildNest()
42          {
43             return 'Burung membuat sarang';
44          }
45
46          public function layEggs()
47          {
48             return 'Burung bertelur';
49          }
50      }
51
52      class Superman1 implements Flyer
53      {
54          public function takeOff()
55          {
56             return 'Superman lepas landas';
57          }
58
59          public function land()
60          {
61             return 'Superman mendarat';
62          }
63
64          public function fly()
65          {
66             return 'Superman terbang';
67          }
68      }
```

```

68
69     public function leapBuilding()
70     {
71         return 'Superman melompati gedung-gedung tinggi';
72     }
73
74     public function stopBullet()
75     {
76         return 'Superman menghindari peluru';
77     }
78 }
79
80 $airplane = new Airplane1;
81 $bird = new Bird;
82 $superman = new Superman1;
83 ?>

```

Prak6No2Index.php X

Prak 6 No.2 > Prak6No2Index.php > html

```

1  <!-- Aini Azzah - 21091397006 - 2021 B -->
2
3  <?php
4      require_once 'Prak6No2.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@5.1.3/dist/css/bootstrap.min.css" rel="stylesheet"
13             integrity="sha384-18mE4kWBq78iYhF1dvKuhfTAU6auU8tT94WrHftjDbrCEXSU1oBoqy12QvZ6jIW3" crossorigin="anonymous">
14
15         <title>Praktikum 6 No.2</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                     <h4 class="text-center"><strong><u>Soal 2</u></strong></h4>
24                     <br>
25                     <b><?php
26                         echo "Airplane";
27                     ?>
28                     </b> <br>

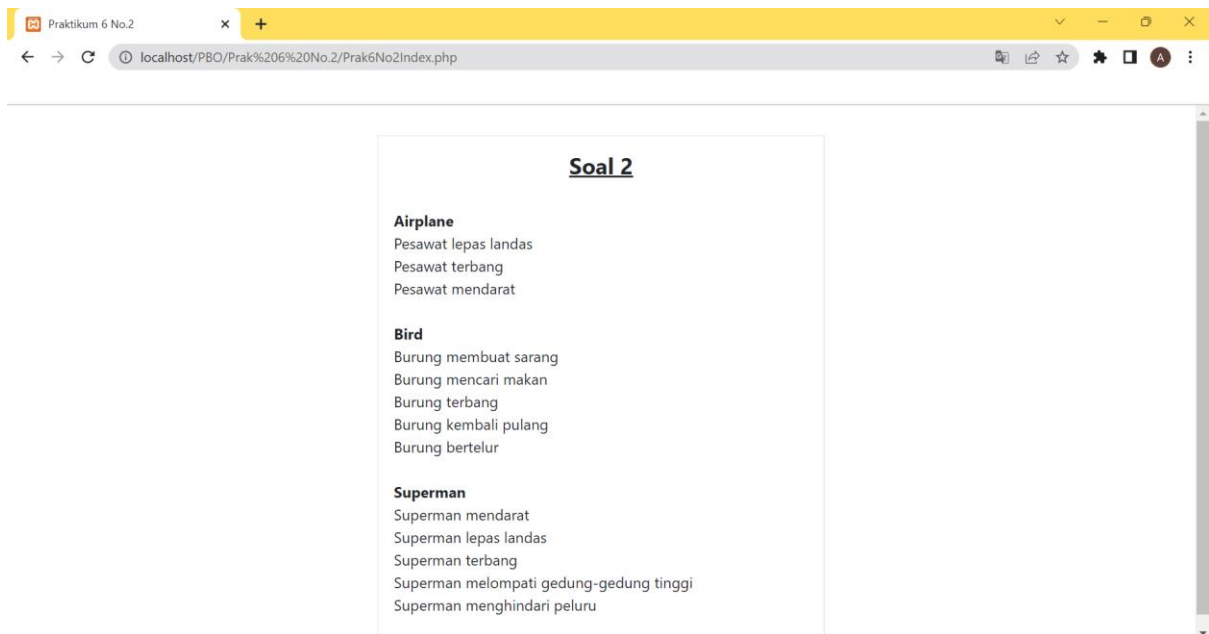
```

```

29                 <?> $airplane->takeOff(); ?> <br>
30                 <?> $airplane->fly(); ?> <br>
31                 <?> $airplane->land(); ?> <br>
32                 <br>
33                 <b><?php
34                     echo "Bird";
35                 ?>
36                 </b> <br>
37                 <?> $bird->buildNest(); ?> <br>
38                 <?> $bird->takeOff(); ?> <br>
39                 <?> $bird->fly(); ?> <br>
40                 <?> $bird->land(); ?> <br>
41                 <?> $bird->layEggs(); ?> <br>
42                 <br>
43                 <b><?php
44                     echo "Superman";
45                 ?>
46                 </b> <br>
47                 <?> $superman->land(); ?> <br>
48                 <?> $superman->takeOff(); ?> <br>
49                 <?> $superman->fly(); ?> <br>
50                 <?> $superman->leapBuilding(); ?> <br>
51                 <?> $superman->stopBullet(); ?> <br>
52                 <br>
53             </div>
54         </div>
55     </div>
56 </body>
57 </html>

```

Output



Analisis

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

3.

Source Code

```
Prak6No3Abstrak.php X
Prak 6 No.3 > Prak6No3Abstrak.php > ...
1  <!-- Aini Azzah - 21091397006 - 2021 B -->
2
3  <?php
4
5      abstract class Vehicle
6      {
7          private $load = 0;
8          protected $maxLoad = 0, $name;
9
10         protected function __construct($maxLoad, $name)
11         {
12             $this->$maxLoad = $maxLoad;
13             $this->$name = $name;
14         }
15
16         public function getLoad()
17         {
18             return $this->load;
19         }
20
21         public function getMaxLoad()
22         {
23             echo 'Maksimal muatan ' . $this->name . ' ' ;
24             return $this->maxLoad;
25         }
26
```

```

27     public function addBox($weight)
28     {
29         if ($this->load >= $this->maxLoad) {
30             echo "$this->name menambah muatan sebesar" . $weight. "<br>";
31             echo 'Muatan telah penuh tidak bisa menambah lagi';
32         }else {
33             $this->load += $weight;
34             echo "$this->name menambah muatan sebesar" . $weight;
35         }
36     }
37
38     abstract public function calcFuelNeeds();
39
40     protected function calcFuelEfficiency()
41     {
42         $range = 50000000;
43         $range /= $this->load;
44         return $range;
45     }
46
47     protected function calcTripDistance()
48     {
49         return 500;
50     }
51 }
52 ?>

```

Prak6No3Interface.php X

Prak 6 No.3 > Prak6No3Interface.php > ...

```

1  <!-- Aini Azzah - 21091397006 - 2021 B -->
2
3  <?php
4      interface Flyer
5      {
6          public function takeOff();
7          public function land();
8          public function fly();
9      }
10
11     interface Sailer
12     {
13         public function dock();
14         public function cruise();
15     }
16 ?>

```

Prak6No3.php X

Prak 6 No.3 > Prak6No3.php > ...

```

1  <!-- Aini Azzah - 21091397006 - 2021 B -->
2
3  <?php
4      require_once 'Prak6No3Abstrak.php';
5      require_once 'Prak6No3Interface.php';
6
7      class Animal
8      {
9          protected $name;
10
11         public function __construct($name)
12         {
13             $this->name = $name;
14         }
15
16         public function eat()
17         {
18             return $this->name . ' sedang makan';
19         }
20     }
21
22     class Homosapiens extends Animal {}
23

```



```

24     class Airplane extends Vehicle implements Flyer
25     {
26         public function __construct($maxLoad, $name)
27         {
28             $this->maxLoad = $maxLoad;
29             $this->name = $name;
30         }
31
32         public function takeOff()
33         {
34             return "$this->name lepas landas";
35         }
36
37         public function land()
38         {
39             return "$this->name mendarat";
40         }
41
42         public function fly()
43         {
44             return "$this->name terbang";
45         }
46
47         public function calcFuelNeeds()
48         {
49             $fuel = $this->calcFuelEfficiency();
50             $trip = $this->calcTripDistance();
51

```

```

52             return ceil($fuel /= $trip);
53         }
54     }
55
56     class Superman extends Homosapiens implements Flyer
57     {
58         public function takeOff()
59         {
60             return "$this->name lepas landas";
61         }
62
63         public function land()
64         {
65             return "$this->name mendarat";
66         }
67
68         public function fly()
69         {
70             return "$this->name terbang";
71         }
72
73         public function leapBuilding()
74         {
75             return "Superman melompati gedung-gedung tinggi";
76         }
77

```

```

78         public function stopBullet()
79         {
80             return "Superman menghindari peluru";
81         }
82     }
83
84     $burung = new Animal('Bird');
85     $airplane = new Airplane(25000, 'Airplane');
86     $superman = new Superman('Superman');
87     ?>

```

Prak6No3Index.php X

Prak 6 No.3 > Prak6No3Index.php > html

```

1     <!-- Aini Azzah - 21091397006 - 2021 B -->
2
3     <?php
4         require_once 'Prak6No3.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="sha384-1BmE4kWBq78iYhF1dvKuhfTAU6auU8tT94WrHftjDbrCEXSU1oBoqyl2QvZ6jIW3" crossorigin="anonymous">
14
15 <title>Praktikum 6 No.3</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 <?= $superman->eat(); ?> <br>
25 <br>
26
27 <b><?= $airplane->getMaxLoad() . ' kg'; ?> <br></b>
28 <?= $airplane->addBox(6000) . ' kg'; ?> <br>
29 <?= $airplane->addBox(2000) . ' kg'; ?> <br>
30 <?= $airplane->addBox(7000) . ' kg'; ?> <br>
31 <?= $airplane->addBox(5000) . ' kg'; ?> <br>
32 <?= $airplane->takeOff(); ?> <br>
33 <?= $airplane->fly(); ?> <br>
34 <?= $airplane->land(); ?> <br>
35
36 <?php
37 echo "Jadi, Butuh Bahan Bakar sebanyak " . $airplane->calcFuelNeeds() . ' Liter'.<br>;
38 ?>
39 <br>
40 <?= $superman->eat(); ?> <br>
41 <?= $superman->land(); ?> <br>
42 <?= $superman->takeOff(); ?> <br>
43 <?= $superman->fly(); ?> <br>
44 <?= $superman->leapBuilding(); ?> <br>
45 <?= $superman->stopBullet(); ?> <br>
46 </div>
47 </div>
48 </div>
49 </body>
50
51 </html>

```

Output

Praktikum 6 No.3

localhost/PBO/Prak%206%20No.3/Prak6No3Index.php

<u>Soal 3</u>	
<p>Bird sedang makan</p> <p>Superman sedang makan</p> <p>Maksimal muatan Airplane 25000 kg</p> <p>Airplane menambah muatan sebesar6000 kg</p> <p>Airplane menambah muatan sebesar2000 kg</p> <p>Airplane menambah muatan sebesar7000 kg</p> <p>Airplane menambah muatan sebesar5000 kg</p> <p>Airplane lepas landas</p> <p>Airplane terbang</p> <p>Airplane mendarat</p> <p>Jadi, Butuh Bahan Bakar sebanyak 5 Liter</p>	
<p>Superman sedang makan</p> <p>Superman mendarat</p> <p>Superman lepas landas</p> <p>Superman terbang</p> <p>Superman melompati gedung-gedung tinggi</p> <p>Superman menghindari peluru</p>	

4.

Source Code

```
Prak6No4Interface.php X
Prak 6 No.4 > Prak6No4Interface.php > ...
1  <!-- Aini Azzah - 21091397006 - 2021 B -->
2
3  <?php
4      interface Flyer {
5          public function takeOff();
6          public function land();
7          public function fly();
8      }
9
10     interface Sailer {
11         public function dock();
12         public function cruise();
13     }
14     ?>
```

Prak6No4Abstrak.php X

Prak 6 No.4 > Prak6No4Abstrak.php > Vehicle

```

1  <!-- Aini Azzah - 21091397006 - 2021 B -->
2
3  <?php
4      abstract class Vehicle
5      {
6          private $load = 0;
7          protected $maxLoad = 0, $name;
8
9          protected function __construct($maxLoad, $name)
10         {
11             $this->$maxLoad = $maxLoad;
12             $this->$name = $name;
13         }
14
15         public function getLoad()
16         {
17             return $this->load;
18         }
19
20         public function getMaxLoad()
21         {
22             echo 'Maksimal muatan ' . $this->name . ' ' ;
23             return $this->maxLoad;
24         }
25
26         public function addBox($weight)
27         {
28             if ($this->load >= $this->maxLoad) {
29                 echo "$this->name menambah muatan sebesar $weight <br>";
30
31                 echo 'Muatan telah penuh tidak bisa menambah lagi';
32             }else {
33                 $this->load += $weight;
34                 echo "$this->name menambah muatan sebesar $weight";
35             }
36
37             abstract public function calcFuelNeeds();
38
39             protected function calcFuelEfficiency()
40             {
41                 $range = 50000000;
42                 $range /= $this->load;
43                 return $range;
44             }
45
46             protected function calcTripDistance()
47             {
48                 return 500;
49             }
50         }
51     }
52     ?>

```

Prak6No4.php X

Prak 6 No.4 > Prak6No4.php > ...

```

1  <!-- Aini Azzah - 21091397006 - 2021 B -->
2
3  <?php
4
5      require_once 'Prak6No4Abstrak.php';
6      require_once 'Prak6No4Interface.php';
7
8      class RiverBarge extends Vehicle implements Sailer
9      {
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             $trip = $this->calcTripDistance();
20
21             return ceil($fuel /= $trip);
22         }
23     }

```

```

24     public function dock()
25     {
26         return $this->name . ' berada di dermaga';
27     }
28
29     public function cruise()
30     {
31         return $this->name . ' sedang berlayar';
32     }
33 }
34
35 class Airplane implements Flyer
36 {
37     public function takeOff()
38     {
39         return 'Pesawat lepas landas';
40     }
41     public function land()
42     {
43         return 'Pesawat mendarat';
44     }
45     public function fly()
46     {
47         return 'Pesawat dalam perjalanan';
48     }
49 }
50

```

```

51 class SeaPlane extends Vehicle implements Sailer
52 {
53     public function __construct($maxLoad, $name)
54     {
55         $this->maxLoad = $maxLoad;
56         $this->name = $name;
57     }
58
59     public function calcFuelNeeds()
60     {
61         $fuel = $this->calcFuelEfficiency();
62         $trip = $this->calcTripDistance();
63
64         return ceil($fuel /= $trip);
65     }
66
67     public function dock()
68     {
69         return $this->name . ' berada di dermaga';
70     }
71
72     public function cruise()
73     {
74         return $this->name . ' sedang berlayar';
75     }
76
77     public function takeOff()
78     {
79         return $this->name . ' lepas landas';
80

```

```

81     }
82
83     public function land()
84     {
85         return $this->name . ' mendarat';
86     }
87
88     public function fly()
89     {
90         return $this->name . ' dalam perjalanan';
91     }
92 }
93
94 class Helicopter extends Vehicle
95 {
96     public function __construct($maxLoad, $name)
97     {
98         $this->maxLoad = $maxLoad;
99         $this->name = $name;
100     }

```

```

100
101     public function calcFuelNeeds()
102     {
103         $fuel = $this->calcFuelEfficiency();
104         $trip = $this->calcTripDistance();
105
106         return ceil($fuel /= $trip);
107     }
108     public function takeOff()
109     {
110         return $this->name . ' lepas landas';
111     }
112
113     public function land()
114     {
115         return $this->name . ' mendarat';
116     }
117
118     public function fly()
119     {
120         return $this->name . ' dalam perjalanan';
121     }
122 }
123
124 $riverBarge = new RiverBarge(30000, 'River Barge');
125 $seaPlane = new SeaPlane(20000, 'Sea Plane');
126 $helicopter = new Helicopter(10000, 'Helicopter');
127 ?>

```

Prak6No4Index.php X

Prak 6 No.4 > Prak6No4Index.php > html

```

1  <!-- Aini Azzah - 21091397006 - 2021 B -->
2
3  <?php
4      require_once 'Prak6No4.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@5.1.3/dist/css/bootstrap.min.css" rel="stylesheet"
13             integrity="sha384-1BmE4kWbQ78iYhFldvKuhfTAU6auU8tT94WrHftjDbrCEXSU1oBoqyl2QvZ6jIW3" crossorigin="anonymous">
14
15         <title>Praktikum 6 No.4</title>
16     </head>
17
18     <body>
19         <div class="container">
20             <div class="row">
21                 <h4 class="text-center"><strong><u>Soal No.4</u></strong></h4>
22                 <br><br>
23                 <div class="col-4 mx-auto border p-2 mt-2">
24                     <b><?= $riverBarge->getMaxLoad() . ' kg'; ?> <br></b>
25                     <?= $riverBarge->addBox(17000) . ' kg'; ?> <br>
26                     <?= $riverBarge->addBox(6000) . ' kg'; ?> <br>
27                     <?= $riverBarge->addBox(11000) . ' kg'; ?> <br>
28                     <?= $riverBarge->addBox(1000) . ' kg'; ?> <br>
29                     <?= $riverBarge->dock(); ?> <br>
30
31                     <?= $riverBarge->cruise(); ?> <br>
32                 </div>
33                 <div class="col-4">
34                     <?php
35                         echo "Jadi, Butuh Bahan Bakar sebanyak ".$riverBarge->calcFuelNeeds().' Liter'.<br>
36                     ?>
37                 </div>
38             </div>
39         </div>
40     </body>
41 </html>

```

```

36 <div class="col-4 mx-auto border p-2 mt-2">
37     <b><?=$seaPlane->getMaxLoad() . ' kg'; ?> <br></b>
38     <?=$seaPlane->addBox(14000) . ' kg'; ?> <br>
39     <?=$seaPlane->addBox(8000) . ' kg'; ?> <br>
40     <?=$seaPlane->dock(); ?> <br>
41     <?=$seaPlane->cruise(); ?> <br>
42     <?=$seaPlane->takeOff(); ?> <br>
43     <?=$seaPlane->fly(); ?> <br>
44     <?=$seaPlane->land(); ?> <br>
45     <?php
46         echo "Jadi, Butuh Bahan Bakar sebanyak " . $seaPlane->calcFuelNeeds() . ' Liter'.
47     ?>
48 </div>
49
50 <div class="col mx-auto border p-2 mt-2">
51     <b><?=$helicopter->getMaxLoad() . ' kg'; ?> <br></b>
52     <?=$helicopter->addBox(6000) . ' kg'; ?> <br>
53     <?=$helicopter->addBox(7000) . ' 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'
59     ?>
60 </div>
61 </div>
62 </div>
63 </body>
64 </html>

```

Output



Soal No.4

Maksimal muatan River Barge 30000 kg River Barge menambah muatan sebesar 17000 kg River Barge menambah muatan sebesar 6000 kg River Barge menambah muatan sebesar 11000 kg River Barge menambah muatan sebesar 1000 Muatan telah penuh tidak bisa menambah lagi kg River Barge berada di dermaga River Barge sedang berlayar River Barge sedang berlayar Jadi, Butuh Bahan Bakar sebanyak 3 Liter	Maksimal muatan Sea Plane 20000 kg Sea Plane menambah muatan sebesar 14000 kg Sea Plane menambah muatan sebesar 8000 kg Sea Plane berada di dermaga Sea Plane sedang berlayar Sea Plane lepas landas Sea Plane dalam perjalanan Sea Plane mendarat Jadi, Butuh Bahan Bakar sebanyak 5 Liter	Maksimal muatan Helicopter 10000 kg Helicopter menambah muatan sebesar 6000 kg Helicopter menambah muatan sebesar 7000 kg Helicopter lepas landas Helicopter dalam perjalanan Helicopter mendarat Jadi, Butuh Bahan Bakar sebanyak 8 Liter
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Analisis

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.