

Scripting Languages G22.3033-002 Summer 2008

Example solutions for hw05

Assigned Th 6/19/2008, due Fr 6/27 at 9pm. 50 points.

<http://www.cs.nyu.edu/courses/summer08/G22.3033-002/>

Instructions for example solutions

These are example solutions. Please keep in mind that often, there is not just one correct solution to a question. If you come up with different answers, then it may be that both your answers and these answers here are correct. Of course, these answers here may also contain mistakes. If you spot a mistake, please let me know so I can correct it.

Example solutions for Homework 5

solutions-hw05-1 Properties

a.

$$|2.00, 3.00| = 3.61$$

$$|2.77, 4.16| = 5.00$$

- b. One could convincingly argue either way. Properties are easier to use in PHP than in VBA, because in PHP, they are just special methods, whereas in VBA, they require a whole separate syntax. Properties are harder to use in PHP than in VBA, because in PHP, you have to look at the nested if-statement in the special method, whereas in VBA, the property is an official part of the top-level signature of a class.
- c. Again, one could convincingly argue either way. Properties are more expressive in PHP than in VBA, because in PHP, they can have arbitrary names at runtime, whereas in VBA, the set of names must be fixed at compile time. Properties are less expressive in PHP than in VBA, because in PHP, they always have a field-like look-and-feel, whereas in VBA, they can also have an array-like look-and-feel.

solutions-hw05-2 Call-backs

a.

```
0 => (2, 3)<br/>
```

```
1 => (0, 4)<br/>
```

```
2 => (-3, 4)<br/>
```

- b. The code passes the string "cmp_vector" as a parameter to library function `usort()`. That way, the library function makes a call-back to function `cmp_vector()` whenever it needs to compare two vectors for sorting.
- c. Either change the body of function "cmp_vector", or write a new function, and pass a different string for the call-back. Here is an example for the second solution:

```
function cmp_vector_by_x($a, $b) {  
    $aa = $a->x; $bb = $b->x;  
    return $aa < $bb ? -1 : $aa == $bb ? 0 : 1;  
}  
usort($a, "cmp_vector_by_x");
```

solutions-hw05-3 Installing script on server (PHP)

- a. <http://www.cs.nyu.edu/~hirzel/hw05-3a.html>

No user name or password required.

- b. <http://www.cs.nyu.edu/~hirzel/php/hw05-3b.html>

User name grader, password hype3.

- c. <http://www.cs.nyu.edu/~hirzel/php/hw05-3c.php>

User name grader, password hype3.

solutions-hw05-4 Cooking conversions (PHP)

```
<html>
<head>
  <?php
    function convert($qty, $unit, $ing) {
      $cup2g = array('flour' => '110', 'sugar' => 225, 'butter' => 225);
      $volume = array('cup' => 1, 'tbsp' => 16, 'tsp' => 48, 'ml' => 236);
      $weight = array('lb' => 1, 'oz' => 16, 'g' => 453);
      if (array_key_exists($ing, $cup2g) && array_key_exists($unit, $volume)) {
        $qty = 1.0 * $qty * $cup2g[$ing] / $volume[$unit];
        $unit = 'g';
      } elseif (array_key_exists($unit, $volume)) {
        $qty = 1.0 * $qty * $volume[ml] / $volume[$unit];
        $unit = 'ml';
      } elseif (array_key_exists($unit, $weight)) {
        $qty = 1.0 * $qty * $weight[g] / $weight[$unit];
        $unit = 'g';
      }
      return ((int)($qty + .5)) . " $unit $ing";
    }
  ?>
</head>
<body>
  <?php if(!empty($_GET['qty'])) { ?>
    Converted result:
    <?php echo convert($_GET['qty'], $_GET['unit'], $_GET['ing']); ?>
    <br/>
    <?php } ?>
    <form action="<?php echo $_SERVER[PHP_SELF]; ?>" method=get>
      <table border=1>
        <tr><td>Quantity
          <td><input type="text" name="qty" value=<?php echo $_GET[qty] ?> />
        <tr><td>Unit
          <td><input type="text" name="unit" value=<?php echo $_GET[unit] ?> />
        <tr><td>Ingredient
          <td><input type="text" name="ing" value=<?php echo $_GET[ing] ?> />
        </table>
```

```
    <input type="submit" value="Submit" />
  </form>
</body>
</html>
```