



## CS 315 – Programming Languages

### Homework 2 -- Subprogram Parameters with Three Different Languages

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## Table of Contents

1. Codes and Comments.....	1
1.1 Python Code .....	2
1.2 PHP Code .....	3
1.3 JavaScript Code.....	4
2. Outputs.....	5
2.1 Python Code Outputs.....	6
2.2.PHP Code Outputs .....	1
2.3 JavaScript Output Image.....	2
3. Conclusion .....	3
4. References .....	4

## 1. Codes and Comments

### 1.1.Python Code

```
print("Python Code to Show Subprogram Parameters");

def positional(x, y, z): #this will show the positional usage [2]
    return x * y + z

def keywordBased(x, y, z = 5): #this will show the keyword usage [2]
    return x + y * z

def comb(x, y, z = 5): #this will show the combination of them [2]
    return x + y + z

p = positional(1, 2, 3);
print("First call for positional: %d" % p);

p = keywordBased(y = 1, x = 2);
print("Second call for Keyword-based with 2 variables: %d" % p);

p = keywordBased(y = 1, z = 3, x = 2);
print("Third call for Keyword-based with 3 variables: %d" % p);

p = comb(8, y = 6);
print("Fourth call for combination of default, positional and keyword-based: %d" % p);

#Here is the example of passing parameters and
https://stackoverflow.com/questions/1419046/python-normal-arguments-vs-keyword-arguments/1419159#1419159 is used to study and write testing program [1]

def exampleForPandK(*positional, **keyword): #Positional and Keyword-Based example
    print ("Positionals: " , positional)
    print ("Keywords: ", keyword)

exampleForPandK();
exampleForPandK(1,2,3,4)
exampleForPandK(1, 2, z = 3, t = 4)
exampleForPandK(x = 1, y = 2, z = 3, t = 4)
```

### 1.2.PHP Code

```
<?php
echo "PHP Code to Show Subprogram Parameters \n";

function positional($x, $y, $z)
{
    return $x * $y + $z;
}

echo "Positional usage: ";
```

```

echo positional(1, 2, 3);
echo "\n";

function keywordBased($x, $y, $z = 5)
{
    return $x + $y * $z;
}

echo "Keyword-Based usage with 2 variables: ";
echo keywordBased($y = 1, $x = 2);
echo "\n";

echo "Keyword-Based usage with 3 variables: ";
echo keywordBased($y = 1, $z = 3, $x = 2);
echo "\n";

function comb($x, $y, $z = 5)
{
    return $x + $y + $z;
}

echo "Combination of default, positional and keyword-based usage: ";
echo comb(8, $y = 2);
echo "\n";
?>

```

### 1.3.JavaScript Code

```

<html>
<head>
    <h1>JavaScript Code to Show Subprogram Parameters</h1>
</head>
<body>
<script>
    function f1(x, y, z)
    {
        return x * y + z;
    }
    var p = f1(1,2,3);
    document.write("Positional usage: ", p, "<br>");

    function f2(x, y, z = 5)
    {
        return x + y * z;
    }
    var p = f2(y = 1, x = 2);
    document.write("Keyword-Based usage with 2 variables: ", p, "<br>");
    var p = f2(y = 1, x = 3, z = 2);
    document.write("Keyword-Based usage with 3 variables: ", p, "<br>");

```

```
function f3(x, y, z = 5)
{
    return x + y + z;
}
var p = f3(8, y = 6);
document.write("Combinational usage example 1: ", p, "<br>");

var p = f3(8, y = 6, 3);
document.write("Combinational usage example 2: ", p, "<br>");

function array(a, b, c, d)
{
    return [1+a, 2, 3+b, 4];
}

var p = array();
document.write("Array p is: ", "[", p, "]", "<br>");
p[1] = 8;
p[3] = 10;
document.write("Array p is: ", "[", p, "]", "<br>");

var q = array(3, 6, 9, 8);
document.write("Array q is: ", "[", q, "]", "<br>");

function array2(a = 1, b = 3, c, d)
{
    return [1+a, 2, 3+b, 4];
}

var t = array2();
document.write("Array t is: ", "[", t, "]", "<br>");
t[1] = 5;
t[3] = 0;
document.write("Array t is: ", "[", t, "]", "<br>");

var z = array2(0, 6, 7, 1);
document.write("Array z is: ", "[", z, "]", "<br>");
</script>
</body>
</html>
```

## 2. Outputs

### 2.1. Python Code Outputs

python3 Özdil\_Seckin\_Abdullah\_python.py

Python Code to Show Subprogram Parameters

First call for positional: 5

Second call for Keyword-based with 2 variables: 7

Third call for Keyword-based with 3 variables: 5

Fourth call for combination of default, positional and keyword-based: 19

Positionals: ()

Keywords: {}

Positionals: (1, 2, 3, 4)

Keywords: {}

Positionals: (1, 2)

Keywords: {'z': 3, 't': 4}

Positionals: ()

Keywords: {'y': 2, 'z': 3, 't': 4, 'x': 1}

### 2.2. PHP Code Outputs

php Özdil\_Seckin\_Abdullah\_php.php

PHP Code to Show Subprogram Parameters

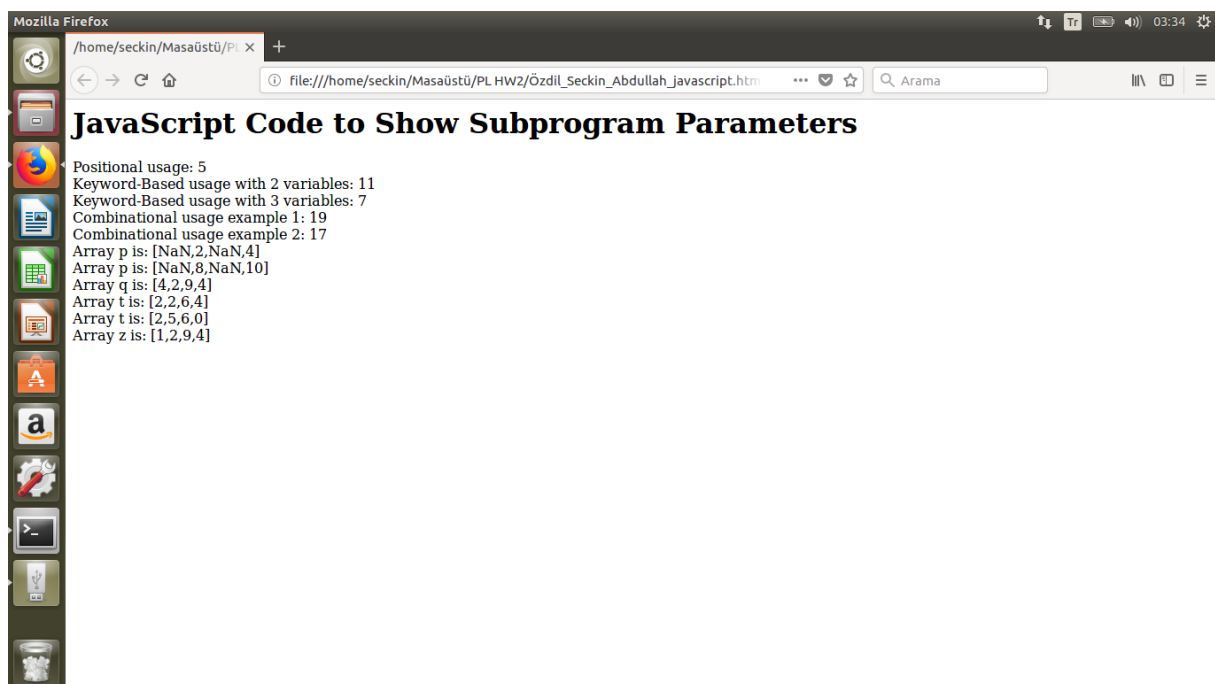
Positional usage: 5

Keyword-Based usage with 2 variables: 11

Keyword-Based usage with 3 variables: 7

Combination of default, positional and keyword-based usage: 15

### 2.3. JavaScript Output Image



### 3. Conclusion

In this homework, I observed the usage of equality assignment by using three different programming languages which are PHP, Python and JavaScript. First of all I used a couple of internet resource to gather some information about the homework topic [1], [2], [3], [4], [5].

Equality operator is the most important term in this homework because it, actually, identifies the function's behavior. In positional parameter, there is no equality sign and variables can be defined by looking the function's identification which means variable can be executed one by one. Also, there are examples of NULL output if we did not give any variable for the calling function on the example code. Keyword-Based parameter uses its own variables, which means we can give the variables by using equality operator no matter it is in the function. Combinational part is the mix of positional and keyword-based usage.

According to my example code keyword-based can be used in python and JavaScript code as well. However, PHP does not include the keyword-based implementation. As I observed that keyword-based is very useful if we want to execute lots of inputs. For example, in Python Code's last part [1] we can use our variables by defining just two constant. To do this process we need to use \* and \*\* terms. They allow us to declare number of inputs in order. Also this is an example of parameter passing methods.

### 4. References

- [1] <https://stackoverflow.com/questions/1419046/python-normal-arguments-vs-keyword-arguments/1419159#1419159>
- [2] <https://stackoverflow.com/questions/9450656/positional-argument-v-s-keyword-argument>
- [3] <https://stackoverflow.com/questions/6605640/javascript-by-reference-vs-by-value>
- [4] <https://stackoverflow.com/questions/13299427/python-functions-call-by-reference>
- [5] <https://stackoverflow.com/questions/7704339/can-php-functions-have-keyword-arguments-like-python>