



Perancangan dan Pemrograman Web (PPW) – CSF2600201

Introduction to (a simple) Webservice

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2014

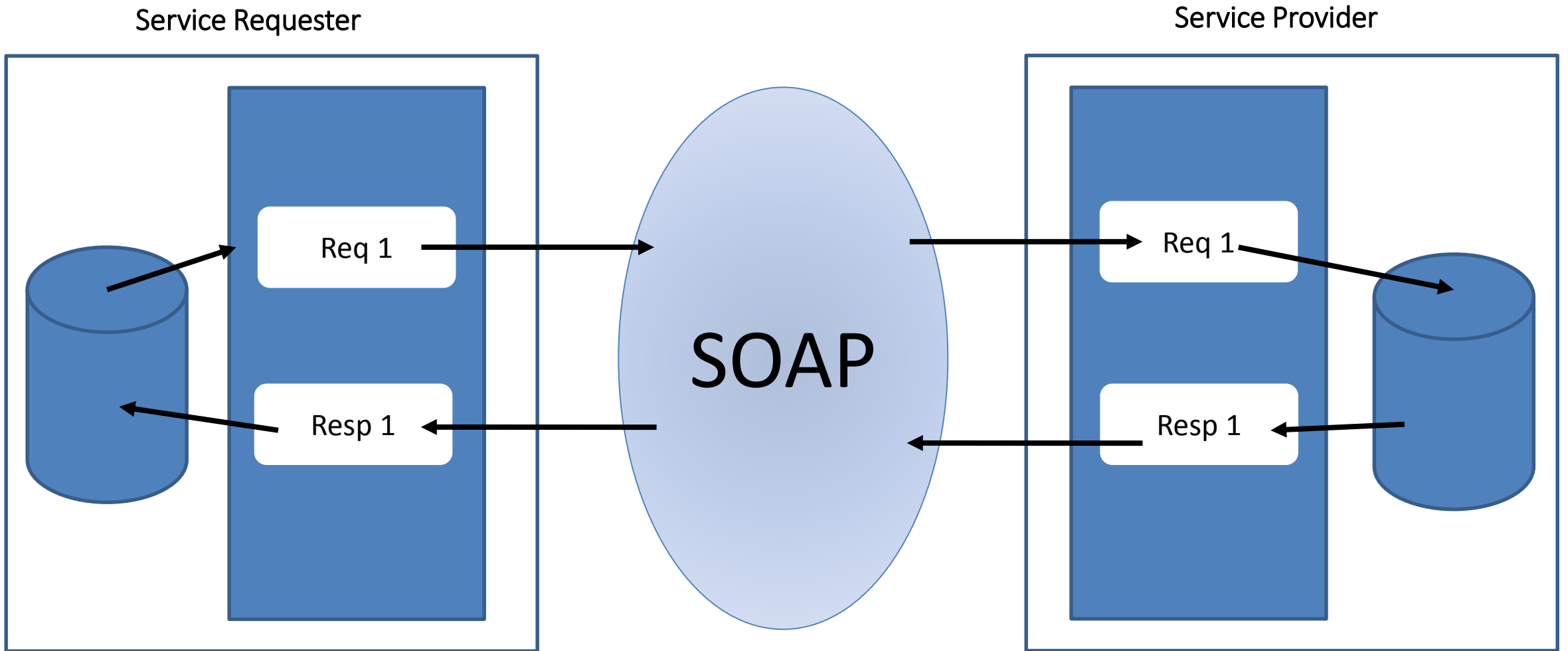


Web Services, an Introduction

- Web services are web application components.
- Web services can be published, found, and used on the Web.
- Web services communicate using such technologies as XML and HTTP



Motivation





What's New

- SOAP
 - SOAP: Simple Object Access Protocol.
 - SOAP is a protocol for accessing web services.
 - SOAP is **based on XML**.
- you should have a basic understanding of **XML** and **XML Namespaces** 😊.
- defines rules for sending and receiving Remote Procedure Calls (RPC) such as the structure of the request and responses



Why SOAP

- A better way to communicate between applications is over HTTP, because HTTP is supported by all Internet browsers and servers. SOAP was created to accomplish this.
- SOAP provides a way to communicate between applications running on different operating systems, with different technologies and programming languages.



(Basic) Skeleton/Structure of SOAP Message

```
<?xml version="1.0"?>
<soap:Envelope
  xmlns:soap="http://www.w3.org/2001/12/soap-envelope"
  soap:encodingStyle="http://www.w3.org/2001/12/soap-encoding">
  <soap:Header>
    ...
  </soap:Header>
  <soap:Body>
    ...
    <soap:Fault>
      ...
    </soap:Fault>
  </soap:Body>
</soap:Envelope>
```



(Basic) Skeleton/Structure of SOAP Message

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  <soap:Header>
    ...
  </soap:Header>
  <soap:Body>
    ...
    <soap:Fault>
      ...
    </soap:Fault>
  </soap:Body>
</soap:Envelope>
```

Optional

Required

Optional



Request

```
<?xml version="1.0"?>
<soap:Envelope
  xmlns:soap="http://www.w3.org/2001/12/soap-envelope"
  soap:encodingStyle="http://www.w3.org/2001/12/soap-encoding">
  <soap:Body xmlns:m="http://www.yourwebroot.com/stock">
    <m:GetStockPrice>
      <m:StockName>IBM</m:StockName>
    </m:GetStockPrice>
  </soap:Body>
</soap:Envelope>
```



Response

```
<?xml version="1.0"?>
<soap:Envelope
  xmlns:soap="http://www.w3.org/2001/12/soap-envelope"
  soap:encodingStyle="http://www.w3.org/2001/12/soap-encoding">
  <soap:Body xmlns:m="http://www.yourwebroot.com/stock">
    <m:GetStockPriceResponse>
      <m:Price>183.08</m:Price>
    </m:GetStockPriceResponse>
  </soap:Body>
</soap:Envelope>
```



Build a SOAP Server

```
<?php
```

```
require_once "nusoap.php";
```

```
function getProd($category) {
```

```
    if ($category == "books") {
```

```
        return join(",", array(
            "Rekayasa Perangkat Lunak",
            "Perancangan dan Pemrograman Web",
            "Algoritme dan Struktur Data"));
    }
```

```
    else {
```

```
        return "No products listed under that category";
    }
```

```
}
```

```
$server = new soap_server();
```

```
$server->register("getProd");
```

```
$server->service($_HTTP_RAW_POST_DATA);
```



Build a SOAP Client

```
<?php
require_once "nusoap.php";

$client = new
nusoap_client("http://localhost/nusoap/productlist.php");

$error = $client->getError();
if ($error) {
    echo "<h2>Constructor error</h2><pre>" . $error . "</pre>";
}

$result = $client->call("getProd", array("category" => "books"));
```

```
if ($client->fault) {
    echo "<h2>Fault</h2><pre>";
    print_r($result);
    echo "</pre>";
}
else {
    $error = $client->getError();
    if ($error) {
        echo "<h2>Error</h2><pre>" . $error . "</pre>";
    }
    else {
        echo "<h2>Books</h2><pre>";
        echo $result;
        echo "</pre>";
    }
}
```



Build a SOAP Client

```
<?php
require_once "nusoap.php";

$client = new
nusoap_client("http://localhost/nusoap/productl
ist.php");

$error = $client->getError();
if ($error) {
    echo "<h2>Constructor error</h2><pre>" .
$error . "</pre>";
}

$result = $client->call("getProd",
array("category" => "books"));
```

```
if ($client->fault) {
    echo "<h2>Fault</h2><pre>";
    print_r($result);
    echo "</pre>";
}
else {
    $error = $client->getError();
    if ($error) {
        echo "<h2>Error</h2><pre>" . $error .
"</pre>";
    }
    else {
        echo "<h2>Books</h2><pre>";
        echo $result;
        echo "</pre>";
    }
}
```



Introd to WSDL

- WSDL stands for Web Services Description Language.
- a language for describing web services and how to access them.
- written in XML.
- Before you continue you should have a basic understanding of the following 😊:
 - XML
 - XML Namespaces
 - XML Schema



Introd to WSDL

- WSDL files have a specific schema to adhere to, and specific elements that must be in place to be valid



WSDL Structure

```
<definitions>
  <types>
    .....
  </types>
  <message>
    <part></part>
  </message>
  <portType>
    .....
  </portType>
  <binding>
    ....
  </binding>
  <service>
    ....
  </service>
</definitions>
```



WSDL: How to Build

```
<?php
require_once "nusoap.php";

function getProd($category) {
    if ($category == "books") {
        return join(",", array(
            "Rekayasa Perangkat Lunak",
            "Perancangan dan Pemrograman Web",
            "Algoritme dan Struktur Data"));
    }
    else {
        return "No products listed under that category";
    }
}

$server = new soap_server();
$server->configureWSDL("productlist", "urn:productlist");

$server->register("getProd",
    array("category" => "xsd:string"),
    array("return" => "xsd:string"),
    "urn:productlist",
    "urn:productlist#getProd",
    "rpc",
    "encoded",
    "Get a listing of products by category");

$server->service($_HTTP_RAW_POST_DATA);
```

productlist.php?wsdl



WSDL: The Way to Consume

- Change nusoap_client instantiation become

```
$client = new nusoap_client("products.wsdl", true);
```



Let us try it!



References

- W3schools
- Stephen Thorpe
 - <http://www.sitepoint.com/web-services-with-php-and-soap-1/>
 - <http://www.sitepoint.com/web-services-with-php-and-soap-2/>