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Your name: _____

Enterprise Computing (WS 2014)

Exercise 2 (3 Portfoliopunkte)

Info:

- The solution to this exercise must be handed in by Tuesday, Nov 11th 2014, 2PM to Markus Klems.
- The solution must be printed out. Please write your name on the solution sheet.

Task 1 – Web Services (30%)

Given the following excerpts from the AWS EC2 WSDL document <http://s3.amazonaws.com/ec2-downloads/ec2.wsdl>, please answer the three multiple choice questions below. Each correct answer gives you 10%; for each wrong answer you lose 5%. You cannot get less than 0% for this task.

```
<?xml version="1.0" encoding="UTF-8"?><definitions ...>
  <types>
    ...
    <xs:element name="RunInstances" type="tns:RunInstancesType"/>
    <xs:complexType name="RunInstancesType">
      <xs:sequence>
        <xs:element name="imageId" type="xs:string"/>
        <xs:element name="minCount" type="xs:int"/>
        <xs:element name="maxCount" type="xs:int"/>
        ...
      </xs:sequence>
    </xs:complexType>
    ...
    <xs:element name="RunInstancesResponse"
      type="tns:RunInstancesResponseType"/>
    <xs:complexType name="RunInstancesResponseType">
      <xs:sequence>
        <xs:element name="requestId" type="xs:string"/>
        ...
      </xs:sequence>
    ...
  </types>
</definitions>
```

```
        </xs:complexType>
...
    <message name="RunInstancesRequestMsg">
        <part name="RunInstancesRequestMsgReq" element="tns:RunInstances"/>
    </message>
    <message name="RunInstancesResponseMsg">
        <part name="RunInstancesResponseMsgResp"
            element="tns:RunInstancesResponse"/>
    </message>
...
    <portType name="AmazonEC2PortType">
...
        <operation name="RunInstances">
            <input message="tns:RunInstancesRequestMsg"/>
            <output message="tns:RunInstancesResponseMsg"/>
        </operation>
...
    </portType>
    <binding name="AmazonEC2Binding" type="tns:AmazonEC2PortType">
        <soap:binding style="document"
            transport="http://schemas.xmlsoap.org/soap/http"/>
...
        <operation name="RunInstances">
            <soap:operation soapAction="RunInstances"/>
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
        </operation>
...
    </binding>
    <service name="AmazonEC2">
        <port name="AmazonEC2Port" binding="tns:AmazonEC2Binding">
            <soap:address location="https://ec2.amazonaws.com"/>
        </port>
    </service>
</definitions>
```

Which version of the WSDL specification is used for the EC2 Web Service?

<input checked="" type="checkbox"/>	WSDL 1.x
<input type="checkbox"/>	WSDL 2.0
<input type="checkbox"/>	WSDL 3.1

Which messages are sent when the `RunInstances` operation is called?

<input type="checkbox"/>	First a message by the web service, then a response by the client.
<input type="checkbox"/>	Only a message by the client.
<input type="checkbox"/>	First a message by the client, then a response by the web service, then a response by the client.
<input checked="" type="checkbox"/>	First a message by the client, then a response by the web service.

To which address does the web service client send messages?

<input type="checkbox"/>	http://www.w3.org/2001/XMLSchema-instance
<input checked="" type="checkbox"/>	https://ec2.amazonaws.com
<input type="checkbox"/>	http://ec2.amazonaws.com/doc/2014-06-15/
<input type="checkbox"/>	http://schemas.xmlsoap.org/soap/http

Task 2 – AWS S3 (40%)

- Clone the Eclipse project from <https://gitlab.tubit.tu-berlin.de/klems/awss3>
- Build the project with Maven

Prerequisites:

Set up your AWS credentials that were given to you by Markus as follows:

```
~/.aws/credentials
```

```
[default]
```

```
aws_access_key_id=enteryourkeyhere
```

```
aws_secret_access_key=enteryoursecrethere
```

(If you don't know how to do this, please read this:

<http://docs.aws.amazon.com/AWSSdkDocsJava/latest/DeveloperGuide/credentials.html> or post a question in the ISIS2 forum for Enterprise Computing)

a) Now fill the blanks with your code (20%)

```
// TODO create a bucket with name "ise-tu-berlin-exercise2-",
```

```
// followed by your nickname (e.g., silversurfer)
```

```
log.info("Creating a bucket (if it does not exist, yet)");
```

```
String bucketName = "ise-tu-berlin-exercise2-batman";
```

```
if(!s3.doesBucketExist(bucketName)){
```

```
    s3.createBucket(new CreateBucketRequest(bucketName));
```

```
}
```

```
// TODO Upload a text File object to your S3 bucket
```

```
// use the createSampleFile method to create the File object
```

```
log.info("Uploading an object");
```

```
File file = createSampleFile("batman");
```

```
String key = "batman-sample-file";
```

```
s3.putObject(new PutObjectRequest(bucketName, key, file));
```

```
// TODO Download the file from S3 and print it out using the
```

```
// displayTextInputStream method.
```

```
log.info("Downloading an object");
```

```
S3Object s3Object = s3.getObject(new GetObjectRequest(bucketName, key));
```

```
displayTextInputStream(s3Object.getObjectContent());
```

b) Which AWS S3 operation uses which HTTP method? (20%)

AWS operation	HTTP method
createBucket	HEAD
putObject	PUT
getObject	GET
deleteObject	DELETE

(Hint: Launch the Java program with JVM option

*"-Dlog4j.configuration=log4j.properties" and log4j.properties setting
"log4j.logger.org.apache.http=DEBUG")*

Task 3 – AWS SQS (30%)

Rewrite the (unmodified) borrower/lender example from 3b) of the previous exercise 1 by replacing JMS with AWS SQS. Most of the structure already exists but some pieces are missing. Fill out the blanks in the snippets below with your code.

Solution:

```
// SqsBorrower.java
// TODO check response queue for matching responses
ReceiveMessageRequest receiveMessageRequest = new ReceiveMessageRequest();
receiveMessageRequest.setQueueUrl(responseQ);
receiveMessageRequest.setMessageAttributeNames(Arrays.asList("uuid"));
// Print out the response
System.out.println(        lenderResponseMessage.getBody()        );
```

```
// delete the message from the queue
```

```
sqs.deleteMessage(new DeleteMessageRequest(responseQ, messageReceiptHandle));
```

```
// SqsLender.java
// TODO Prepare receive loan request message request.
ReceiveMessageRequest receiveLoanRequestMessageRequest =
                                new ReceiveMessageRequest();

receiveMessageRequest.setQueueUrl(requestQ);
receiveMessageRequest.setMessageAttributeNames(Arrays.asList("uuid"));
```

```
// TODO Check request queue for loan requests.  
List<Message> messages = sqs.receiveMessage(receiveMessageRequest).getMessages();  
  
// TODO Delete loan request message from queue  
  
String messageReceiptHandle = loanRequestMessage.getReceiptHandle();  
sqs.deleteMessage(new DeleteMessageRequest(requestQ, messageReceiptHandle));  
  
// TODO Send out the response  
sqs.sendMessage(loanResponseMessageRequest);
```