## 1.(a)

图示

描述已自动生成

1. A client event occurs -js triggers an Ajax request

2.An XMLHttpRequest object is created and configured then makes an asynchronous http request

3.A server(for example use a servlet) returns an XML/JSON/Text document containing the result 

4.The XMLHttpRequest object calls the callback() function and processes the result to update HTML DOM.

## 1(b)

### JSP Part: SearchStaff.jsp.

<!DOCTYPE html>

<html lang="en">

<head>

<title>Search</title>

</head>

<body>

<input type="text" size="20" id="searchString" name="searchString">

<input id="submit\_btn" type="Submit" value="Search Books" onClick="loadURL();">

<div id="myDiv">

<h3>Ajax Test</h3>

</div>

</body>

<script>

function loadURL()

{ var a = document.getElementById('searchString');

var url = "/SearchStaff/RetrieveLoan?searchStr=" + escape(a.value);

sendRequest(url);

}

var request = null;

var data = null;

var READY\_STATE\_COMPLETE = 4;

// Send user interactions on page to server

function sendRequest(url) {

request = createRequest()

if (request==null){

return;

}

// Set event handler and send user’s data

request.open("GET",url,true)

request.send(null) // 使用XMLHttpRequest对象发送请求,get请求不需要发送data

request.onreadystatechange = processRequestChange;

}

// Create XMLHttpRequest object

function createRequest() {

var req = null;

if(XMLHttpRequest){

req = new XMLHttpRequest()

}

else if(ActiveXObject) {

req = new ActiveXObject("Microsoft.XMLHTTP");

}

else{

req = null;

}

return req;

}

// Create event handler to receive responses from server

function processRequestChange(){

// Get status of request

if(request == null)

{

return;

}

if (request.readyState == READY\_STATE\_COMPLETE)

if(request.status < 200 || request.status >= 300){

alert('Search Failed，Status= ' + request.status);

return;

}

else if(request.status == 200){

// 得到服务端返回的数据

// request.responseText = [""]

if(req.responseXML.getElementsByTagName("Staffs")[0].childNodes.length === 0){

document.getElementById("myDiv").innerHTML = 'No data'

}

else {

document.getElementById("myDiv").innerHTML = processXML(req.responseXML);

data = request.responseText;

myform.results.value = data; // js操作DOM 将数据写到页面对象中,实现局部刷新

}

}

else{

clearTable()

}

}

function processXML(responseXML) {

var Staffs = responseXML.getElementsByTagName("Staffs")[0];

var numStaffs = staffs.childNodes.length;

var myTable = '';

if (numStaffs > 0) {

myTable += '<Table border="1">';

myTable += '<thead style="background-color:lightblue">';

myTable += '<tr><th>Name</th><th>Loan Item</th></tr></thead>';

myTable += '<tbody>';

for (loop=0; loop< Staffs.childNodes.length; loop++){

var aStaff = Staffs.childNodes[loop];

var staffName = aStaff.getElementsByTagName("Name")[0];

var LoanItem = aStaff.getElementsByTagName("LoanItem")[0];

myTable += '<tr>';

myTable += '<td>' + staffName.childNodes[0].nodeValue + '</td>';

myTable += '<td>' + LoanItem.childNodes[0].nodeValue + '</td>';

myTable += '</tr>';

}

myTable += '</tbody>';

myTable += '</Table>'; //alert(myTable);

return myTable; }

}

</script>

</html>

### Servlet Part: RetrieveLoan.java

package servlets;

protected void doGet(HttpServletRequest request, HttpServletResponse response)

throws ServletException, IOException {

response.setContentType("text/xml");

response.setHeader("Cache-Control", "no-cache");

PrintWriter out = response.getWriter();

String searchString = request.getParameter("searchString");

List staffs = null;

try{

LoanDBAO db = new LoanDBAO();

List staffs = db.getLoanByStaffName(searchString);

if(books != null){

StringBuilder sbXML = new StringBuilder();

for (int i=0; i<staffs.size(); i++) {

StaffDetails staff = (StaffDetails) staffs.get(i);

sbXML.append("<Staff>");

sbXML.append("<Name>" + staff.getName() + "</Name>");

sbXML.append("<LoanItems>");

ItemsDetails itemDetails = staff.LoanItems();

for (int j=0; j<itemDetails.size(); j++) {

Item item = (itemDetails) itemDetails.get(j);

sbXML.append("<LoanItem>");

sbXML.append("<Itemname>" + item.getName() + "</Itemname>");

sbXML.append("<LonaDetail>");

sbXML.append("<Qty>" + item.getQty() + "</Qty>");

sbXML.append("<LoanStart>" + item.getLoanStart() + "</LoanStart>");

sbXML.append("<LoanEnd>" + item.getLoanEnd() + "</LoanEnd>");

sbXML.append("</LonaDetail>");

}

sbXML.append("</LoanItems>");

sbXML.append("</Staff>"); }

out.write("<Staffs>" + sbXML.toString() + "</Staffs>");

}

else {

out.write("<Staffs>" + 'No tutors are found' + "</Staffs>");

}

}

catch (Exception e1){

response.setStatus(HttpServletResponse.SC\_NO\_CONTENT);

response.resetBuffer();

}

}

#### XML Format:

<Staffs>

<Staff>

<Name>Jayson Wong</Name>

<LoanItems>

<LoanItem>

<Itemname>Lenove Thinkpad L15</Itemname>

<LonaDetail>

<Qty>1</Qty>

<LoanStart>12 Jan 2020</LoanStart>

<LoanEnd>12 Jan 2021</LoanEnd>

</LonaDetail>

</LoanItem>

<LoanItem>

<Itemname>Lenove Monitor 27 inch</Itemname>

<LonaDetail>

<Qty>1</Qty>

<LoanStart>12 Jan 2020</LoanStart>

<LoanEnd>12 Jan 2021</LoanEnd>

</LonaDetail>

</LoanItem>

</LoanItems>

</Staff>

<Staff>

<Name>Janie Chung</Name>

<LoanItems>

<LoanItem>

<Itemname>Macbook Pro 13</Itemname>

<LonaDetail>

<Qty>1</Qty>

<LoanStart>15 June 2020</LoanStart>

<LoanEnd>12 June 2021</LoanEnd>

</LonaDetail>

</LoanItem>

</LoanItems>

</Staff>

</Staffs>

### 1(c)

how SQL injection attack works:

1. Occurs when an attacker is able to manipulate SQL statements through data input of an application.
2. During the process that the malformed code is sent to the database server, an SQLi attack is done, leading to the exposure of your data.
3. Attacker can possibly modify SQL statement in a vulnerable application via forms or parameters results in data loss or corruption, lack of accountability, or denial of access.
4. CIA: **Confidentiality:** exposure of your data, may lead to gaining access to vulnerable system. **Integrity:** Data loss or corruption **Availability:** lack of accountability, or denial of access

## 2.(a) code accordion

### code

<!doctype html>

<html lang="en">

<head>

<meta charset="utf-8">

<meta name="viewport" content="width=device-width, initial-scale=1">

<title>jQuery UI Accordion - Default functionality</title>

<link rel="stylesheet" href="//code.jquery.com/ui/1.12.1/themes/base/jquery-ui.css">

<script src="https://code.jquery.com/jquery-1.12.4.js"></script>

<script src="https://code.jquery.com/ui/1.12.1/jquery-ui.js"></script>

<script>

$( function() {

$( ".accordion" ).accordion();

} );

</script>

</head>

<body>

<div class="accordion">

<h3>STAFF</h3>

<div class="accordion">

<h3>Permanent</h3>

<p>

Benefits : 14-days annual leave

</p >

<h3>Adjunct</h3>

<p>

No annual leave entitlement

</p >

</div>

<h3>PARKING</h3>

<div class="accordion">

<h3>Carpark J</h3>

<p>

$80 per month

</p >

<h3>Carpark H (Sheltered)</h3>

<p>

$100 per month

</p >

</div>

</div>

</body>

</html>

### Figure

Figure(1)

图形用户界面, 应用程序

描述已自动生成

Figure(2)

图形用户界面, 应用程序

描述已自动生成

Figure(3)

图形用户界面, 文本, 应用程序, 电子邮件

描述已自动生成

Figure(4)

图形用户界面, 应用程序

描述已自动生成

## 2.(b) Checkbox

### Code:

<html>

<head>

<title>Bubble Tea with jQuery</title>

<script src="https://code.jquery.com/jquery-3.5.1.min.js"></script>

</head>

<body>

<p><h2> Bubble Tea add-on</h2></p>

<p><input id="item1" type="checkbox">Boba pearls ($1)</p>

<p><input id="item2" type="checkbox">Brown Sugar ($1)</p>

<p><input id="item3" type="checkbox">Aloe Jelly ($2)</p>

<table>

<tr>

<td>Total Amount = S$</td>

<td><div style="background: yellow;" id="TotalAmount" >0</div></td>

</tr>

</table>

</body>

<script>

$("#item1").change(function() {

var sum = 0

console.log('input',$("#item1").is(':checked'))

if($("#item1").is(':checked')){

sum = sum + 1

}

if($("#item2").is(':checked')){

sum = sum + 1

}

if($("#item3").is(':checked')){

sum = sum + 2

}

$('#TotalAmount').html(sum)

});

$("#item2").change(function() {

var sum = 0

console.log('input',$("#item1").is(':checked'))

if($("#item1").is(':checked')){

sum = sum + 1

}

if($("#item2").is(':checked')){

sum = sum + 1

}

if($("#item3").is(':checked')){

sum = sum + 2

}

$('#TotalAmount').html(sum)

});

$("#item3").change(function() {

var sum = 0

console.log('input',$("#item1").is(':checked'))

if($("#item1").is(':checked')){

sum = sum + 1

}

if($("#item2").is(':checked')){

sum = sum + 1

}

if($("#item3").is(':checked')){

sum = sum + 2

}

$('#TotalAmount').html(sum)

});

// $("input[type='checkbox']").attr('value');

// $("#item1").bind("input propertychange",function(event){

// console.log($("#item1").val())

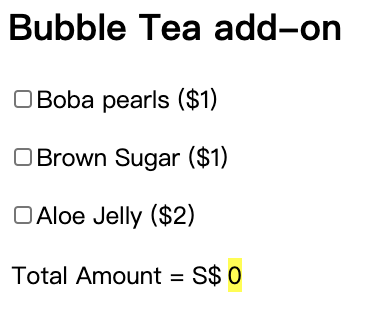
// });

</script>

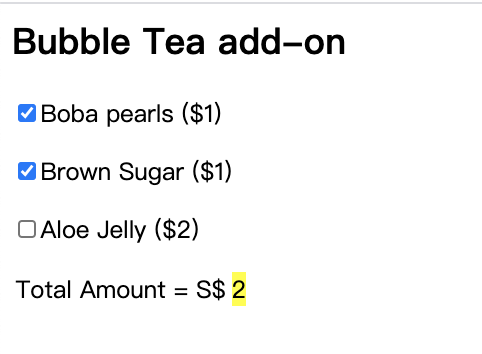
</html>

### Figure

Figure(1)



Figure(2)



Figure(3)

