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NAME - Akanksha Saxena Date -

COURSE CODE - SEMESTER - 5th

COURSE TITLE -

ROLL NO -

Ques 1

Sol (a) Servlet and JDBC connection.

```
import java.io.*;
import java.sql.*;
import javax.servlet.*;
import javax.servlet.http.*;
public class DB_student extends HttpServlet {
public void doGet (HttpServletRequest req, HttpServletResponse res)
throws ServletException, IOException {
Connection con = null;
Statement stmt = null;
ResultSet rs = null;
rs.setContentType ("Text/html");
PrintWriter out = rs.getWriter();
try {
Class.forName (sun.jdbc.odbc.JdbcOdbcDriver);
Connection con = DriverManager.getConnection (jdb:odb:Accw);
stmt = con.createStatement();
rs = stmt.executeQuery ("SELECT ID, NAME, PHONE, ADDRESS, DATA
FROM STUDENT");
```

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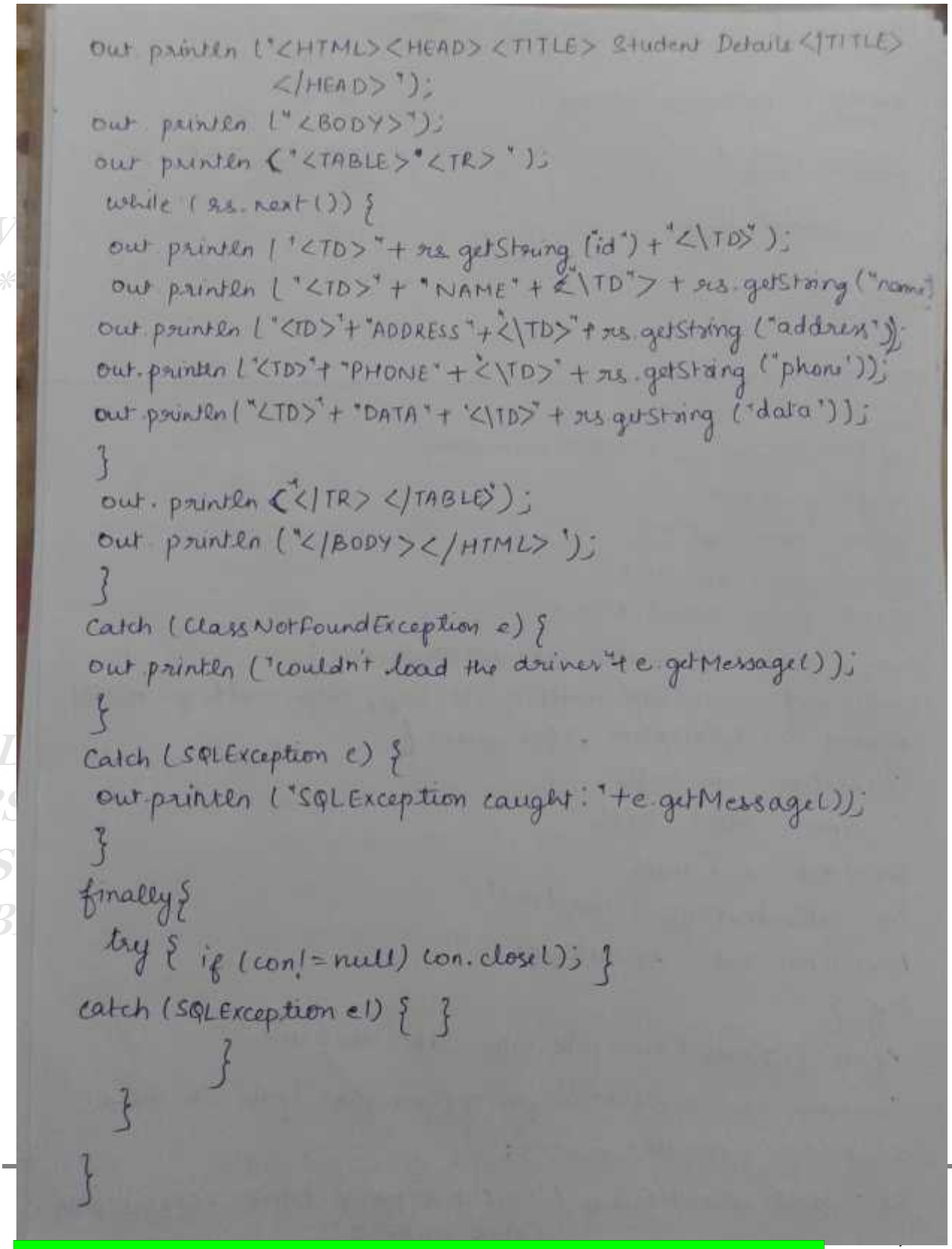

```
out.println("<HTML><HEAD><TITLE> Student Details</TITLE>
            </HEAD>");
out.println("<BODY>");
out.println("<TABLE><TR>");
while(rs.next()){
out.println("<TD>"+rs.getString("id")+"</TD>");
out.println("<TD>"+"NAME"+"</TD>"+rs.getString("name"));
out.println("<TD>"+"ADDRESS"+"</TD>"+rs.getString("address"));
out.println("<TD>"+"PHONE"+"</TD>"+rs.getString("phone"));
out.println("<TD>"+"DATA"+"</TD>"+rs.getString("data"));
}
out.println("</TR></TABLE>");
out.println("</BODY></HTML>");
}
catch(ClassNotFoundException e){
out.println("couldn't load the driver"+e.getMessage());
}
catch(SQLException e){
out.println("SQLException caught:"+e.getMessage());
}
finally{
try{ if(con!=null) con.close(); }
catch(SQLException el){ }
}
}
```

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(b) 5 JSP tags

① Declaration tag:
You can declare any variable and you can write any method also. This method is accessible in the JSP.
Between these <%! %> you can put anything and that will placed into converted servlet.

```
<%!
public int getValue(){ int j=9; return j; }
%>
```

In JSP you can use the method like <%= getValue() %>

② Expression Tag
Syntax of JSP scriptles are with <%= and ends with %>
Between these you can put anything and that will be converted to the string and that will be displayed.

In JSP if you want to display value of i.
<%= i %> or Date: <%= new java.util.Date() %>

③ Directive Tag:
There are three main types of directives:
a) page - processing information for this page
<%@ page import = "java.util.*" %>
b) Include - files to be included, to include a header.jsp found in the current directory.
<%@ include file = "header.jsp" %>
c) Tag library - is a collection of custom tags that can be used by the page
<%@ taglib uri = "tag library URI" prefix = "tagkifa" %>

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④ Scriptlet tag : begins with <% and ends with %>, we can embed any amount of java code in the JSP Scriptlet. JSP engine places these code in _jspService() method.

```
<% int i=6; i = i+9; %>
```

⑤ Action Tags : Three main roles.

a) enable the use of server side Javabeans

b) transfer control between pages.

c) browser independent support for applets.

```
<jsp:usebean id="test" scope="application" class="com.tech.test" />
```

Ques2

(a) Insert a record in Product table using JDBC and JSP

```
<%@ page import="java.sql.*" %>
<HTML>
    <HEAD>
        <TITLE> Insertion in Product Table </TITLE>
    </HEAD>
<BODY>
    <H1> Inserting Data </H1>
<% Connection con = null;
   Class.forName ("Sun.jdbc.odbc.JdbcOdbcDriver");
   Connection con= DriverManager.getConnection (jdbc:odbc:Access);
   Statement stmt = null;
   stmt = con.createStatement ();
   String sql = 'INSERT INTO Product (id, name, quantity, Price)
                 VALUES (2, 'Shampoo', 36, 150);

   stmt.executeUpdate (sql); %>
</BODY>
</HTML>
```

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(b)

Solution 2 Types of JDBC drivers

Type 1: JDBC-ODBC Bridge

They are JDBC-ODBC Bridge drivers. They delegate the work of data access to ODBC API. ODBC is widely used by developers to connect to a databases in a non-Java environment. This kind of driver is generally most appropriate when automatic instalation of a java technology is not important.

Advantage :- It acts as good approach for learning JDBC. It may be useful for companies that already have ODBC drivers installed on each client machine — typically the case for Windows based m/c running productivity applications.

Disadvantages – It is not suitable for large-scale applications. They are the slowest of all. The performance of system may suffer because there is some overhead associated with the translation work to go from JDBC to ODBC. It doesn't support all features of java.

Type 2 – Native-API partly java technology-enable driver

They mainly use native API for data access and provide Java wrapper classes to be ~~able to~~ invoked using JDBC drivers. It converts the calls ~~to~~ that a developer writes to the JDBC application programming interface into calls that connect to the client machine's application programming interface for a specific database such as IBM, etc. this style of driver requires that some binary code be loaded on each client machine. (5)

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Advantage: It has a better performance that that of Type 1, in part because the Type 2 driver contains compiled code that's optimised for the back-end database server's operating system.

Disadvantage: For this, User needs to make sure the JDBC driver of the database vendor is loaded onto each client machine. Must have compiled code for every operating system that the application will run on. Best use is for controlled environments such as intranet.

Ques 3 (a) Telephone enquiry system

```
import javax.ejb.*;
import java.rmi.RemoteException;
public interface Telephone extends EjbObject {
public String getTelephoneNumber() throws RemoteException;
Public void setTelephoneNumber(String TelephoneNumber)
                                throws RemoteException;
public String getName() throws RemoteException;
public void setName(String name) throws RemoteException;

public Integer getOfficialExtension() throws RemoteException
public void setOfficialExtension(Integer officialExtension) throws RemoteException;

public Integer getExtention() throws RemoteException,
public void setExtension(Integer extension) throws
                                RemoteException.
}
```

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Telephone Home Interface

```
import javax.ejb.*;
import java.rmi.RemoteException;
public interface TelephoneHome extends EJBHome
{ public Telephone create (String Extension) throws
                    RemoteException, CreateException;
pubic Telephone findByPrimaryKey (String Extension) throws
                    RemoteException, FinderException;
}
```

Telephone Entity Bean

```
import javax.ejb.*;
import java.rmi.RemoteException;
import java.sql.*;
public interface TelephoneBean extends EntityBean
{ transient private EntityContext ejbContext;
public String TelephoneNumber;
public String Name;
public          OfficialExtension;
public int      Extention;
public String getTelephoneNumber() {
  return TelephoneNumber; }
public void setTelephoneNumber (String TelephoneNumber)
{ this.TelephoneNumber = TelephoneNumber;
}
```

(7)

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```
Public String getName() {
  Return Name; }
Public void setName(String Name) {
  this.Name = Name; }
Public Integer getTelephoneExtension() {
    Return Extension; }
public void setExtension(int TelephoneExtension){
  this.TelephoneExtension = TelephoneExtension; }
public Integer Extension() {
    Return extension; }
public void setExtension(int Extension) {
  this.Extension = Extension; }
public Telephone ejbCreate(String telephoneNumber) {
  this.TelephoneNumber = TelephoneNumber;
  return null; }
public void ejbPostCreate(String telephoneNumber)
  { }
public void setEntityContext(EntityContext ctx) {
ejbContext = ctx; }
public void unsetEntityContext() {
  ejbContext = null; }
public void ejbActivate() { }
public void ejbPassivate() { }
public void ejbload() {
Connection con;
```


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```
try {
String Primarykey = (String) ejbContext.getPrimaryKey();
Con = this.getConnection();
Statement stm = con.createStatement ("Select * from Telephone"
where Extension = "+primarykey);
ResultSet rs = stm.executeQuery();
if (!rs.next())
{ TelephoneNumber = rs.getString("TelephoneNumber");
  Name = res.getString("Name");
  OfficialExtension = rs.getInteger("OfficialNumber");
  Extension = rs.getExtension("Extension"); }
}
catch (SQLException sql)
{ throw new EJBException (sql); }
finally {
if (connection != null)
  con.close(); }
}
```

(b)

Solution

A session bean is an EJB that is created by a client and usually exists only for the duration of a single client-server session. A session bean usually perform operations such as calculations or database access on behalf of the client. While a session bean may be transactional, it is not recoverable if a system crash occurs. Session bean objects can be stateless or they can maintain a conversational state across methods and transactions

(9)

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If a session bean maintains a state, the EJB container manages this state if the object must be removed from memory. However, persistent data must be maintained by the session bean object itself. The tools for a container generate additional classes for a session bean at deployment time. These tools obtain information from the EJB architecture by examining its classes and interfaces. This information is utilized to generate two classes dynamically that implement the home and remote interfaces of the bean. These container generates a Serializable Handle class as well which provides a way to identify a session bean instance within a specific lifecycle. These classes can be implemented to perform customized operations and functionally when mixed in with container-specific code.

An entity bean is an object representation of persistent data maintained in a permanent data store such as a database. A primary key identifies each instance of an entity bean. Entity beans are transactional and recoverable in the event of a system crash. Entity Bean are representation of explicit data or collection of data, such as a row in a relational database. Entity bean methods provide procedures for acting on the data representation of the bean. An entity bean is persistent and survives as long as it data remains in the database.

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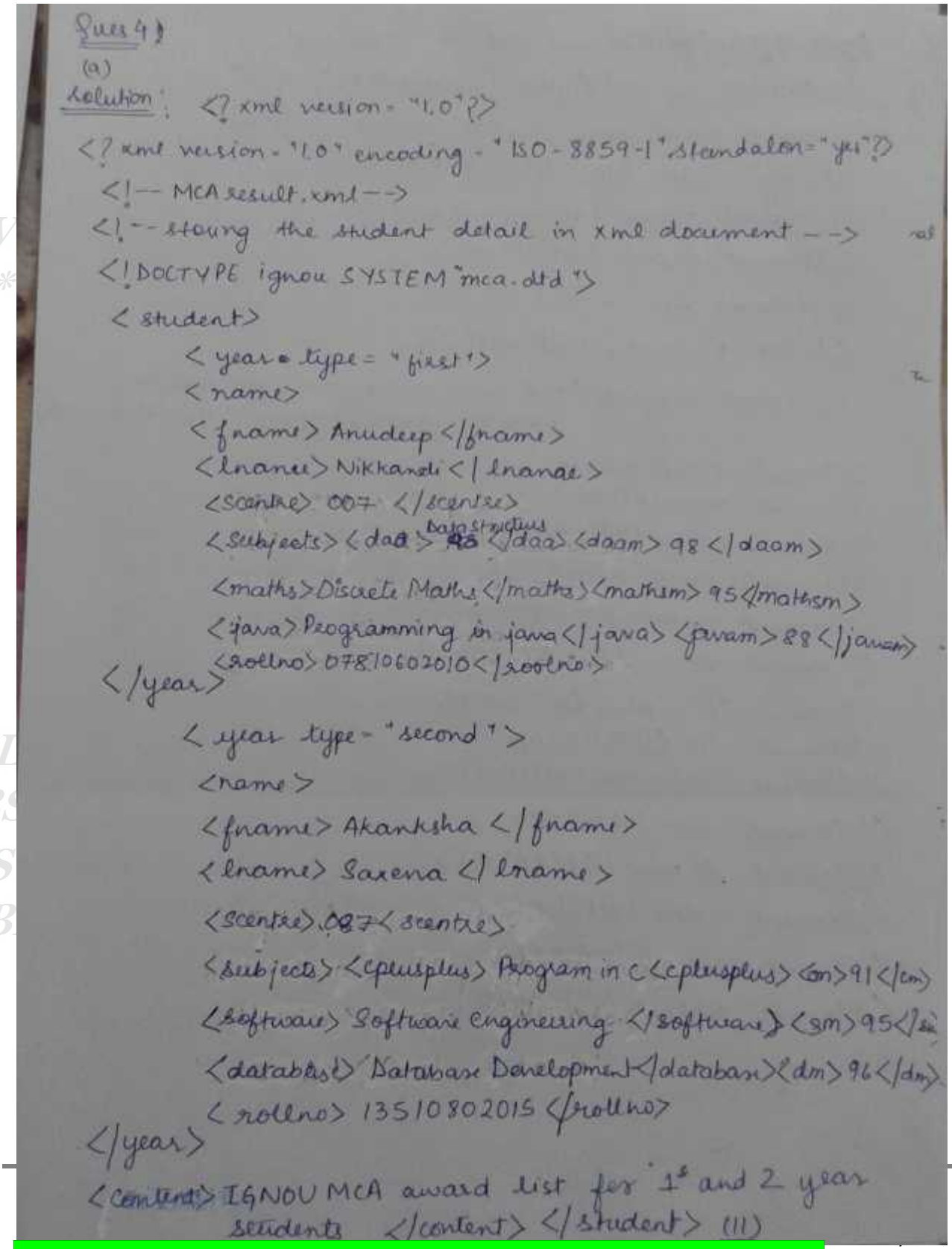

Ques 4)

(a)

Solution:

```
<?xml version="1.0"?>
<?xml version="1.0" encoding="ISO-8859-1" standalon="yes"?>
<!-- MCA result.xml -->
<!-- storing the student detail in xml document -->
<!DOCTYPE ignou SYSTEM "mca.dtd">
<student>
    <year type="first">
    <name>
    <fname> Anudeep </fname>
    <lname> Nikkandi </lname>
    <scentre> 007 </scentre>
    <subjects> <daa> 95 </daa> <daam> 98 </daam>
    <maths> Discrete Maths </maths> <mathsm> 95 </mathsm>
    <java> Programming in java </java> <javam> 88 </javam>
    <rollno> 07810602010 </rollno>
</year>
    <year type="second">
    <name>
    <fname> Akanksha </fname>
    <lname> Saxena </lname>
    <scentre> 087 </scentre>
    <subjects> <cplusplus> Program in C </cplusplus> <cm> 91 </cm>
    <software> Software engineering </software> <sm> 95 </sm>
    <database> Database Development </database> <dm> 96 </dm>
    <rollno> 13510802015 </rollno>
</year>
<content> IGNOU MCA award list for 1st and 2 year students </content> </student> (11)
```

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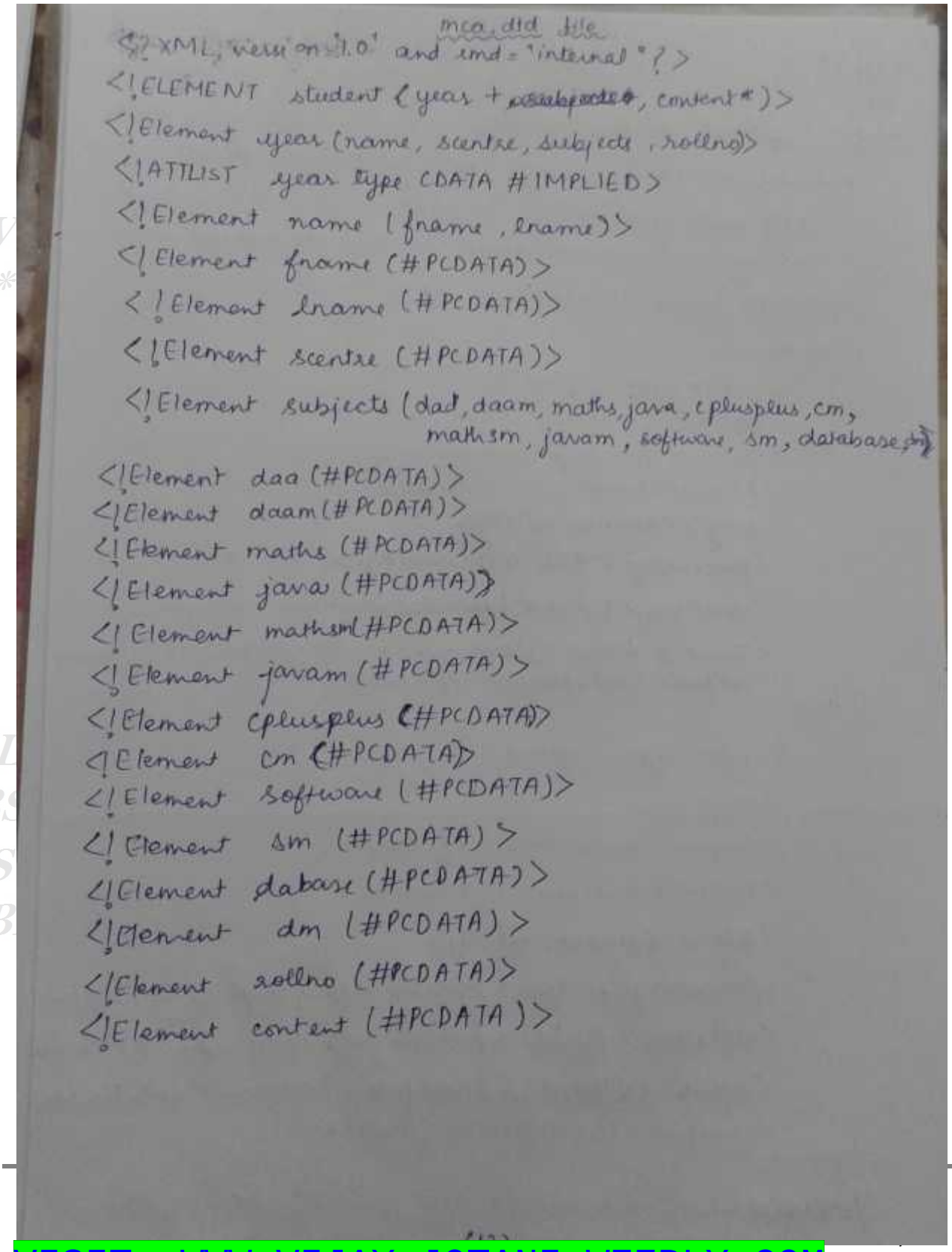

mca.dtd file

```
<?XML, version "1.0" and rmd = "internal"?>
<!ELEMENT student (year + ~~subjects~~, content*)>
<!Element year (name, scentre, subjects, rollno)>
<!ATTLIST year type CDATA #IMPLIED>
<!Element name (fname, lname)>
<!Element fname (#PCDATA)>
<!Element lname (#PCDATA)>
<!Element scentre (#PCDATA)>
<!Element subjects (dad, daam, maths, java, cplusplus, cm,
                    mathsm, javam, software, sm, database, dm)
<!Element daa (#PCDATA)>
<!Element daam (#PCDATA)>
<!Element maths (#PCDATA)>
<!Element java (#PCDATA)>
<!Element mathsm (#PCDATA)>
<!Element javam (#PCDATA)>
<!Element cplusplus (#PCDATA)>
<!Element cm (#PCDATA)>
<!Element software (#PCDATA)>
<!Element sm (#PCDATA)>
<!Element dabase (#PCDATA)>
<!Element dm (#PCDATA)>
<!Element rollno (#PCDATA)>
<!Element content (#PCDATA)>
```

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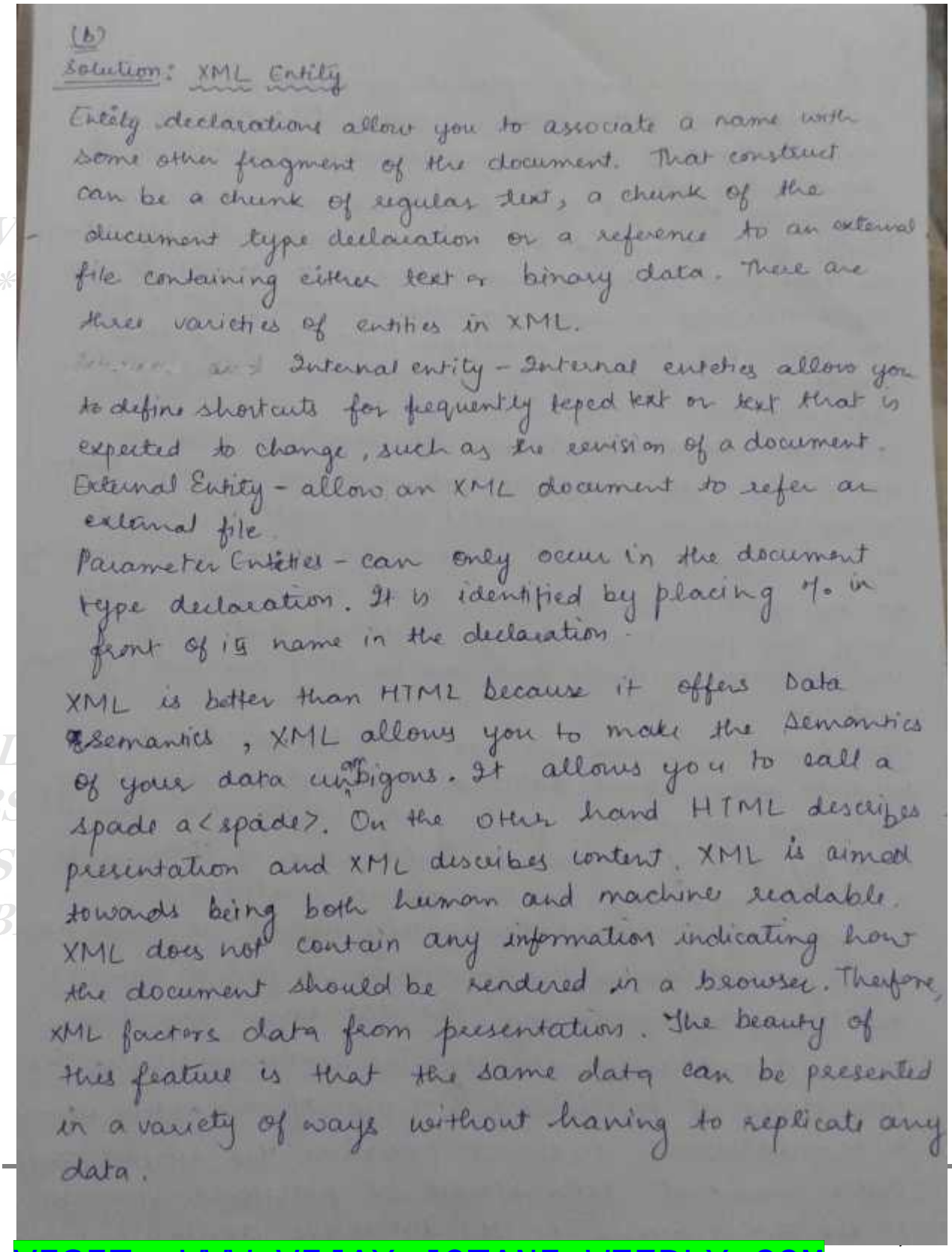

(b)

Solution: XML Entity

Entity declarations allow you to associate a name with some other fragment of the document. That construct can be a chunk of regular text, a chunk of the document type declaration or a reference to an external file containing either text or binary data. There are three varieties of entities in XML.

Internal entity - Internal entities allow you to define shortcuts for frequently typed text or text that is expected to change, such as the version of a document.

External Entity - allow an XML document to refer an external file.

Parameter Entities - can only occur in the document type declaration. It is identified by placing % in front of its name in the declaration.

XML is better than HTML because it offers Data Semantics, XML allows you to make the Semantics of your data unambigous. It allows you to call a spade a <spade>. On the other hand HTML describes presentation and XML describes content. XML is aimed towards being both human and machine readable. XML does not contain any information indicating how the document should be rendered in a browser. Therfore, XML factors data from presentations. The beauty of this feature is that the same data can be presented in a variety of ways without having to replicate any data.

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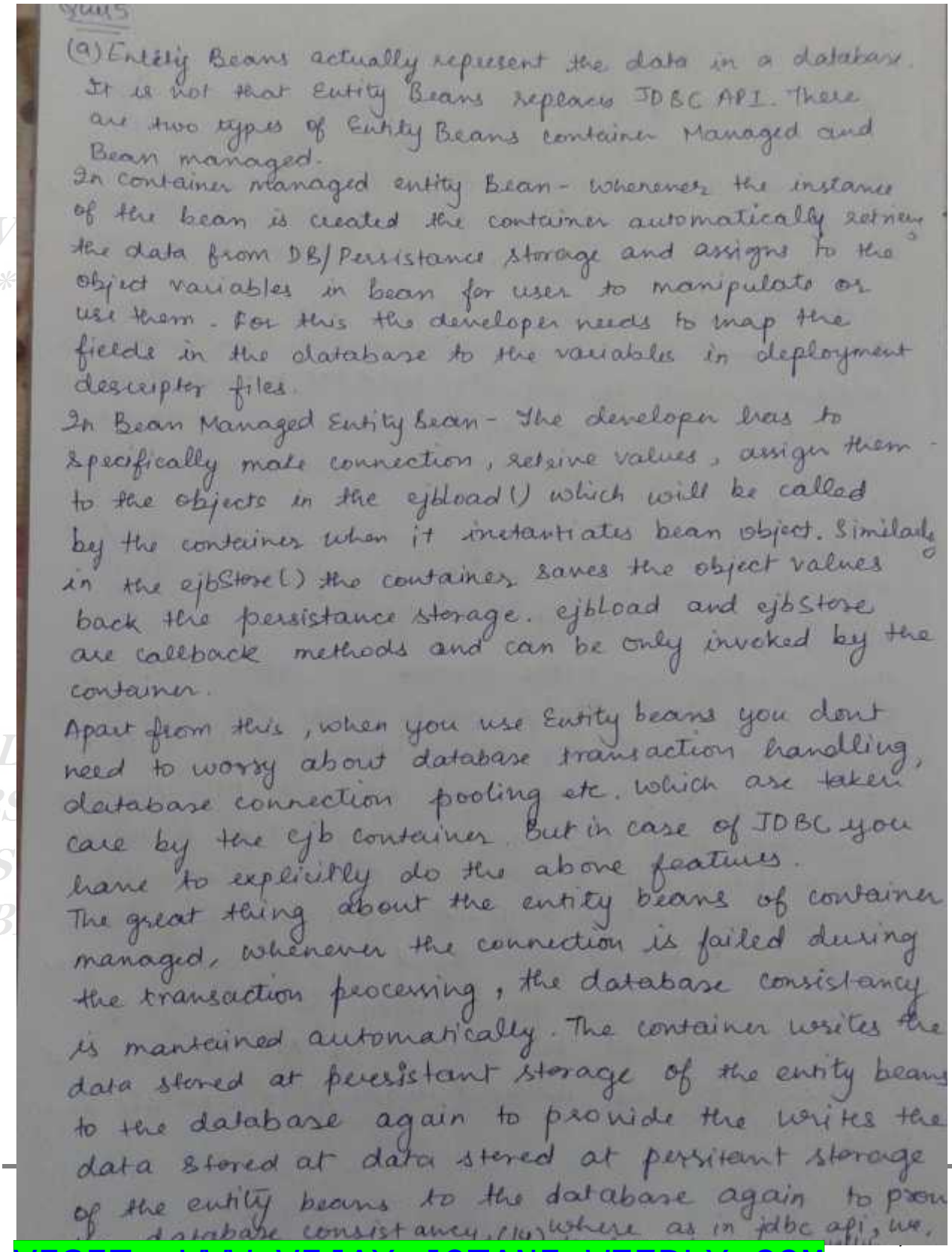

(a) Entity Beans actually represent the data in a database. It is not that Entity Beans replaces JDBC API. There are two types of Entity Beans container Managed and Bean managed.
In container managed entity Bean - Whenever the instance of the bean is created the container automatically retrieves the data from DB/Persistance storage and assigns to the object variables in bean for user to manipulate or use them. For this the developer needs to map the fields in the database to the variables in deployment descripter files.
In Bean Managed Entity bean - The developer has to specifically make connection, retrive values, assign them to the objects in the ejbload() which will be called by the container when it instantiates bean object. Similarly in the ejbStore() the container saves the object values back the persistance storage. ejbload and ejbstore are callback methods and can be only invoked by the container.
Apart from this, when you use Entity beans you dont need to worry about database transaction handling, database connection pooling etc. which are taken care by the ejb container. But in case of JDBC you have to explicitly do the above features.
The great thing about the entity beans of container managed, whenever the connection is failed during the transaction processing, the database consistancy is mantained automatically. The container writes the data stored at peresistant storage of the entity beans to the database again to provide the writes the data stored at data stered at persitent storage of the entity beans to the database again to prov
database consistancy (b) where as in jdbc api, we,

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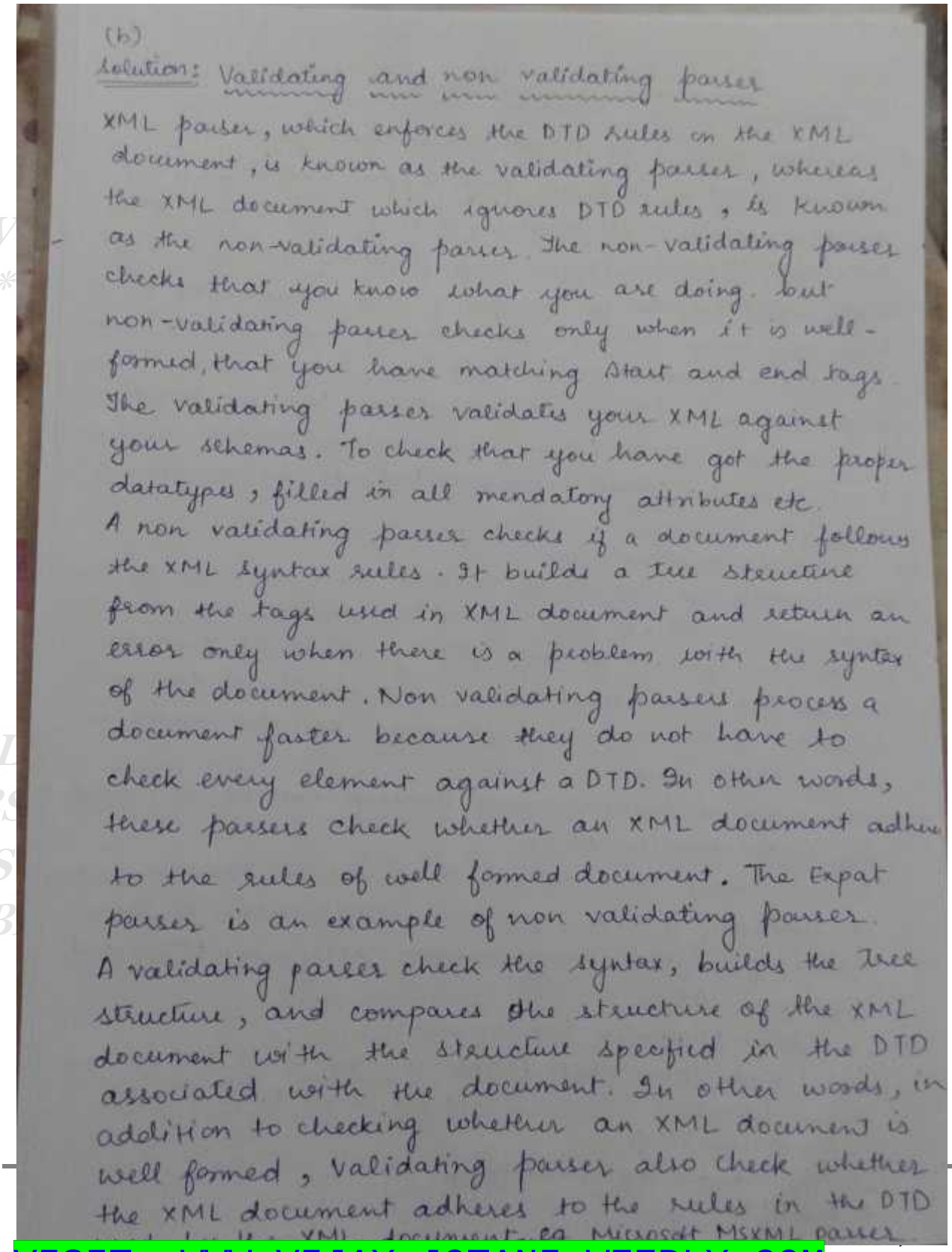

(b)

Solution: Validating and non validating parser

XML parser, which enforces the DTD rules on the XML document, is known as the validating parser, whereas the XML document which ignores DTD rules, is known as the non-validating parser. The non-validating parser checks that you know what you are doing. but non-validating parser checks only when it is well-formed, that you have matching start and end tags. The validating parser validates your XML against your schemas. To check that you have got the proper datatypes, filled in all mendatory attributes etc.

A non validating parser checks if a document follows the XML syntax rules. It builds a tree structure from the tags used in XML document and return an error only when there is a problem with the syntax of the document. Non validating parsers process a document faster because they do not have to check every element against a DTD. In other words, these parsers check whether an XML document adhere to the rules of well formed document. The Expat parser is an example of non validating parser.

A validating parser check the syntax, builds the tree structure, and compares the structure of the XML document with the structure specified in the DTD associated with the document. In other words, in addition to checking whether an XML document is well formed, validating parser also check whether the XML document adheres to the rules in the DTD

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Ques 4

(a) SSL Authentication in java clients

(i) JSSE (Java Secure Socket Extension) and Web logic

JSSE is a set of packages that support and implement the SSL and TLS v1 protocols, making those capabilities available. BEA Weblogic Server provides Secure Sockets Layer (SSL) support for encrypting data transmitted b/w Web logic Server clients and servers, Java clients, Web browsers and other servers. Web logic Server's Java Secure Socket Extension (JSSE) implementation can be used by Weblogic clients. Other JSSE implementations can be used for their client-side code outside the server as well.

(ii) Using JNDI Authentication

Java clients use the JNDI to pass on credentials to the Weblogic Server. A Java client establishes a connection with Weblogic Server by getting a JNDI initial-context. The Java client then, uses the InitialContext to look up the resources it needs in the Weblogic Server JNDI tree.

(iii) SSL certificate Authentication Development Environment.

- SSL Authentication API's.

To implement Java clients that use SSL authentication on Weblogic Server, you use a combination of Java SDK application programming interfaces (API) and Weblogic API.

- SSL Client Application components

SSL clients comprises following components at minimum.

- Java Client
- Hostname Verifier
- HandShakeCompletedListner
- TrustManager
- build script (build.xml)

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Example : SSLSocketClient sample code

The SSLSocketClient sample demonstrates how to use SSL sockets to go directly to the secure port to connect to a JSP served by an instance of WebLogic Server and display the results of that connection. It shows how to implement the following functions -

- Initializing an SSLContext with client identity, a HostnameVerifier JSSE and a TrustManager JSSE
- Creating a keystore and retrieving the private key and certificate chain
- Using an SSLSocketFactory
- Using HTTPS to connect to a JSP served by WebLogic server.
- Implementing the javax.net.ssl.HandshakeCompleted-Listner interface
- Creating a dummy implementation of the weblogic.security.SSL.HostnameVerifierJSSE class to verify that the server the example connects to is running on the desired host.

```
import java.io.File;
import java.io.*;
import java.util.Hashtable;
import java.security.*;
import weblogic.security.SSL.HostnameVerifierJSSE;
import weblogic.security.SSL.SSLContext;
import javax.net.ssl.SSLSocket;
import javax.net.ssl.SSLSession;
import weblogic.security.SSL.SSLSocketFactory;
import weblogic.security.SSL.TrustManagerJSSE;
public class SSLSocketClient {
public void SSLSocketClient() {}
public static void main (String [] arg) throws IOException {
```

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```
if ((argv.length<2)||(argv.length>3)) {
  System.out.println("usage: javaSSLSocketClient host sslepost
                    <HostnameVerifierJSSE>");
System.out.println("example: java SSLsocketClient Server2.weblogic
                    .com 443  MyHVClassName");
System.exit(-1); }

try { System.out.println("\n https://"+argv[0]+":"+argv[1]);
System.out.println("Creating the SSL context");
SSLContext sslCtx = SSLContext.getInstance("https");
File KeyStoreFile = new File("mykeystore");
if (!KeyStoreFile.exists()) {
System.out.println("Keystore Error: mykeystore is not present in
                    this directory");
System.out.println("To create it run-ant creatmykeystore");
System.exit(0); }
System.out.println("Initializing the SSLContext with client \n"+
                    "identity(Certificates and privatekey), \n"+
                    "HosnameVerifierJSSE, AND NulledTrustManager");
KeyStore ks = keystore.getInstance("jks");
ks.load(new FileInputStream("mykeystore"), null);
PrivateKey key = (PrivateKey)ks.getKey("mykey", "testkey", toCharArray());
Certificate[] certChain = ks.getCertificateChain("mykey");
sslCtx.loadLocalIdentity(certChain, key);
HostnameVerifierJSSE hVerifier = null;
if (argv.length<3)
hVerifier = new NulledHostnameVerifier();
else
hVerifier = (HostnameVerifierJSSE) Class.forName(argv[2].newInstance();
sslCtx.setHostnameVerifierJSSE(hVerifier);
TrustManagerJSSE tManager = new NulledTrustManager();
sslCtx.setTrustManagerJSSE(tManager);
```

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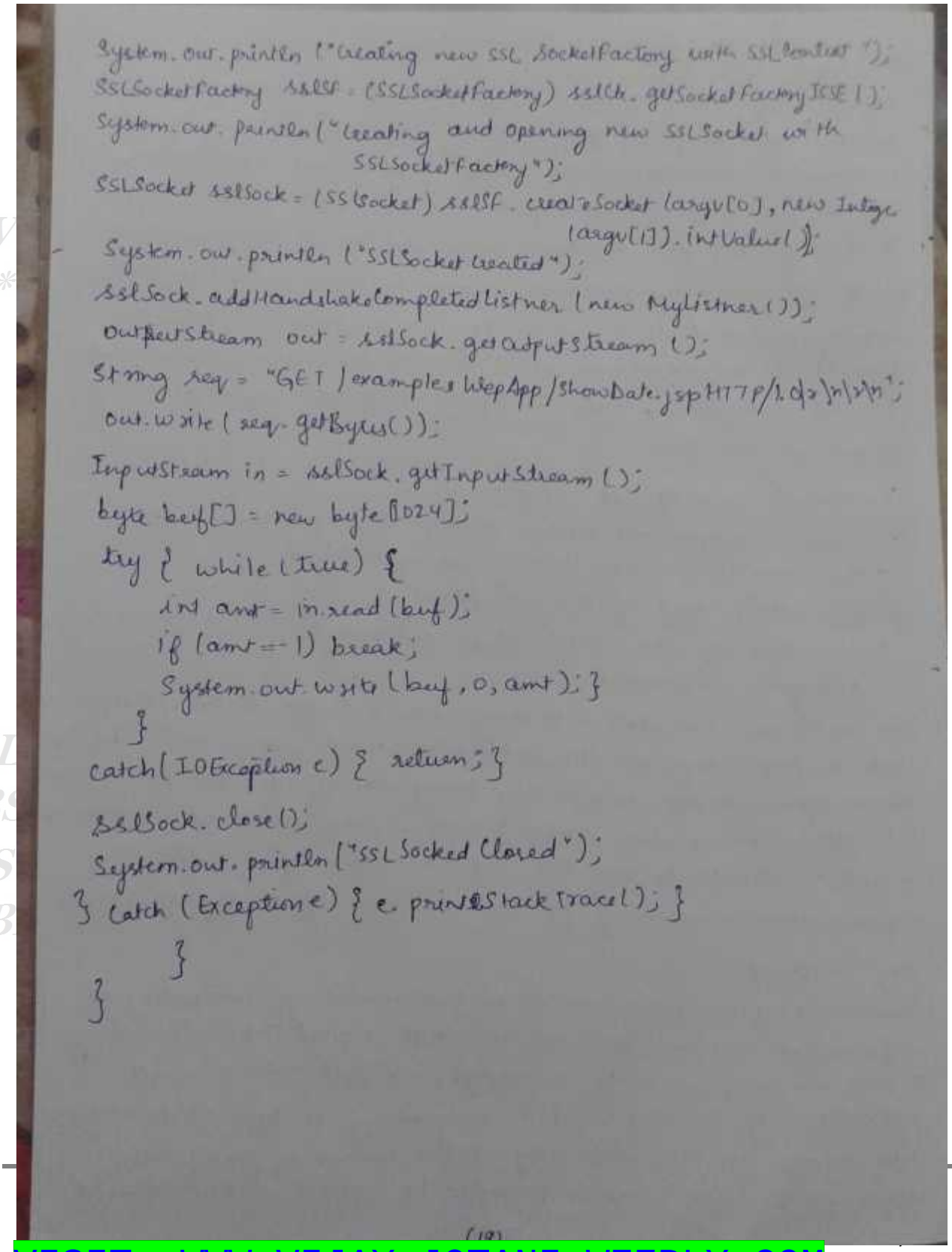

```
System.out.println("Creating new SSL SocketFactory with SSLContext");
SSLSocketFactory sslSF = (SSLSocketFactory) sslCtx.getSocketFactory();
System.out.println("Creating and opening new SSLSocket via the
                    SSLSocketFactory");
SSLSocket sslSock = (SSLSocket) sslSF.createSocket(argv[0], new Integer
                                                   (argv[1]).intValue());
System.out.println("SSLSocket created");
sslSock.addHandshakeCompletedListner(new MyListner());
OutputStream out = sslSock.getOutputStream();
String req = "GET /examples/HelloApp/showDate.jsp HTTP/1.0\n\n";
out.write(req.getBytes());
InputStream in = sslSock.getInputStream();
byte buf[] = new byte[1024];
try { while(true) {
    int amt = in.read(buf);
    if (amt == -1) break;
    System.out.write(buf, 0, amt); }
  }
catch(IOException e) { return; }
sslSock.close();
System.out.println("SSL Socked Closed");
} catch (Exception e) { e.printStackTrace(); }
    }
}
```

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(b) Digital Citification

Digital certificates provide a mechanism to authenticate and secure information on open networks. Applications using this mechanism include secure email, secure web applications, digital signing of software files, smart card authentication, and encrypting file systems. Certificates are a key building block for providing security services within an IT infrastructure usually referred to a public key infrastructure (PKI). This PKI infrastructure will then enforce user authentication, network encryption, data integrity and non-repudiation of origin for the data.

Constituents of a digital Citification

The basic components within a digital certificate include:

- the name of the user/entity being certified
- the public key of the user/entity
- the name of the certification authority
- a digital signature.

The certificate provides a binding link between a user/entity and a public key, so the certificates must use a well defined name space for the user/entity being identified. The International Telecommunication Union X.509 specification [3] provides a set of standards for the implementation of a public key infrastructure - one being for the structure of a digital public key certificate.

While many computer users and students of computing or information science are aware that digital certificates play a role in secure data exchange, the full nature and application of the associated technology is difficult to embrace. One source for this difficulty is the range of component technologies that combine in order to afford data security.

(20)

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In order to clarify the relationship between central technologies such as symmetric and asymmetric encryption, digital signatures, certificate key stores, certificate revocation lists, and the use of digital certificates in secure Web transactions, we have developed a software tool that allows users to explore these aspects of data security.

Ques 7

(a) Recovery Procedures

When a trusted system fails, it is very important that the failure does not compromise the security policy requirements. The recovery procedures also should not give any opportunity for violation of the system's security policy. The system restart must be in a secure mode. Startup should be in the maintenance mode that permits access only by privileged users from privileged terminals.

Fault-tolerant System - In this system, the computer or network continues to function even when a component fails. This system has the capability of detecting the fault and correcting the fault as well.

Failsafe System - here, the program execution is terminated and the system is protected from being compromised when a system failure occurs is detected.

Failsoft or resilient - When a system failure occurs and is detected, selected not critical processing is terminated. The system continues to function in a graded mode.

Failover - This refer to switching to a duplicate "hot" backup component in real time when a hardware or software failure occurs.

Cold Start - This is required when a system failure occurs and the recovery procedures cannot return the system to a known, reliable, secure state.

(21)

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(b) Type 2 Drivers

Native-API partly Java technology - enable drivers

They mainly use native API for data access and provide Java wrapper classes to be able to be invoked using JDBC drivers. It converts the calls that a developer writes to the JDBC application programming interface interface into calls that connect to the client machine's application programming interface for a specific database such as IBM, Oracle etc like, the bridge driver, this style of driver requires that some binary code be loaded on each client machine.

Advantage - It has a better performance than Type1, in part because the Type 2 driver contains compiled code that's optimised for back-end database servers's operating system

Disadvantage - For this, user needs to make sure the JDBC driver of the database vendor is loaded onto each client machine. eg> Oracle Call Interface (OCI) driver

Type 4 Drivers also known as 100% Pure Java.

A native-protocol fully Java technology-enabled driver

It is direct-to-database pure Java driver. It converts JDBC technology calls into the network protocol used by different DBMS directly. Basically it converts JDBC calls into packet that are sent over the network in the proprietary format used by the specific database. Allows a direct call from the client machine to the database.

Advantage - It again has better performance than Type1 and 2 and there is no need to install special software on client server. It can be downloaded dynamically

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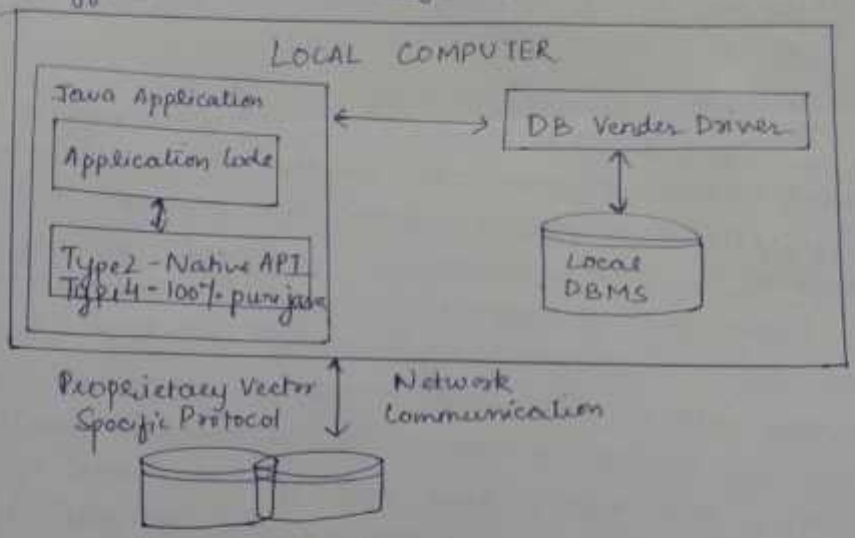
Disadvantage - It is not optimized for server operating system, so the driver can't take advantage of operating system features. For this, user needs a different driver for each different database eg MYSQL's connector



Type2 and Type4 drivers

Ques 8

(a)

Solution: Invoking Servlet

You can invoke a servlet by directly addressing it from a web page with a URL or by calling programmatically from an already running servlet.

- Calling a servlet with a URL

You can call servlets by using URLs embedded as links in HTML or JSP pages. The format of the URL is a follows -

http://server:port/context_root/servlet/servlet_name?name=value

- Calling a servlet Programmatically

First, identify which servlet to call by a specific URI. This URI is normally a path relative to current application. You can call servlet programmatically in two ways

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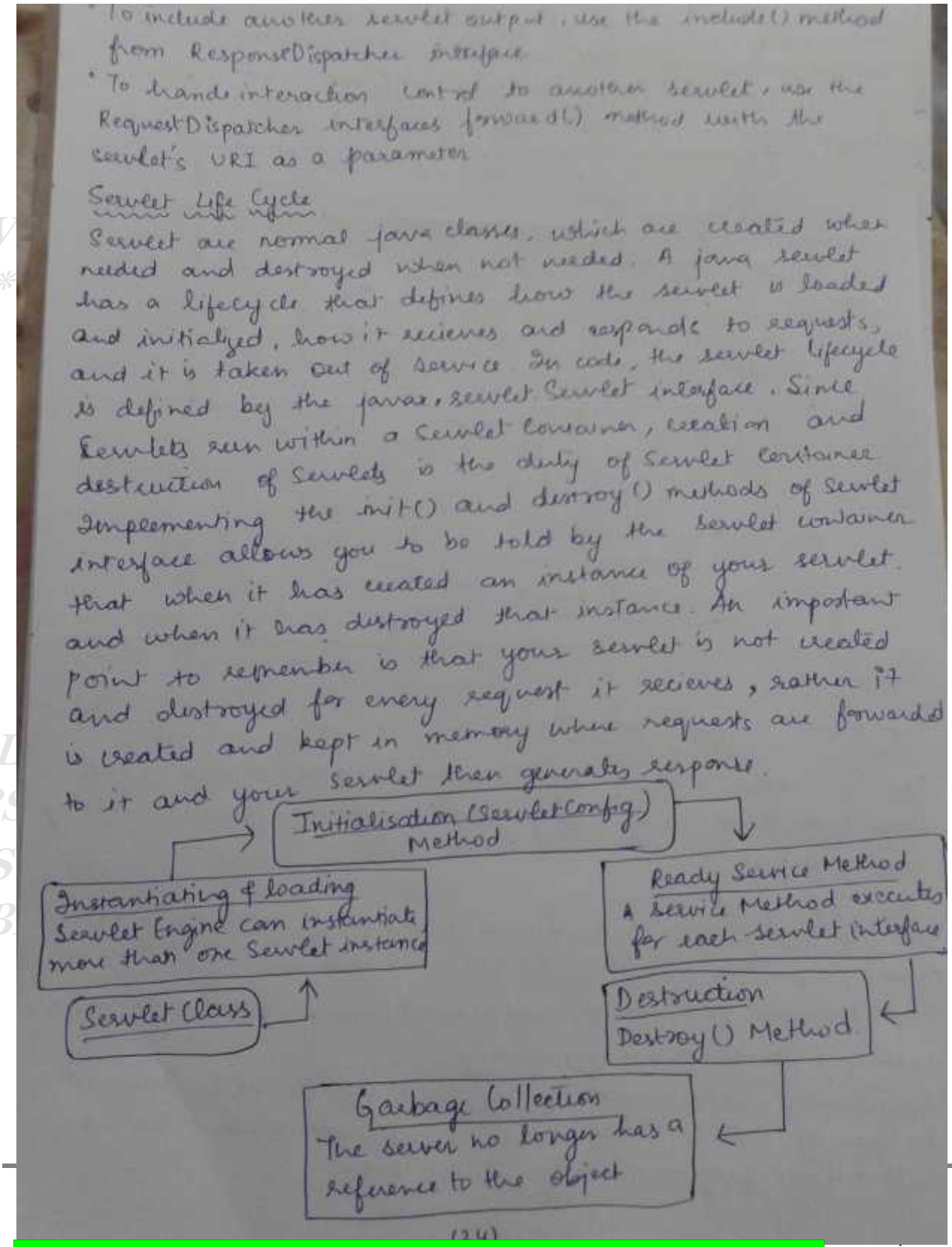

- To include another servlet output, use the include() method from RequestDispatcher interface
- To handle interaction control to another servlet, use the RequestDispatcher interfaces forward() method with the servlet's URI as a parameter

Servlet Life Cycle

Servlet are normal java classes, which are created when needed and destroyed when not needed. A java servlet has a lifecycle that defines how the servlet is loaded and initialized, how it recieves and responds to requests, and it is taken out of service. In code, the servlet lifecycle is defined by the javax.servlet.Servlet interface. Since Servlets run within a Servlet Container, creation and destruction of Servlets is the duty of Servlet Container. Implementing the init() and destroy() methods of Servlet interface allows you to be told by the servlet container that when it has created an instance of your servlet and when it has destroyed that instance. An important point to remember is that your servlet is not created and destroyed for every request it recieves, rather it is created and kept in memory where requests are forwarded to it and your servlet then generates response.

Initialisation (ServletConfig) Method

Instantiating & loading
Servlet Engine can instantiate more than one Servlet instance

Servlet Class

Ready Service Method
A Service Method executes for each servlet interface

Destruction
Destroy() Method

Garbage Collection
The server no longer has a reference to the object

(24)

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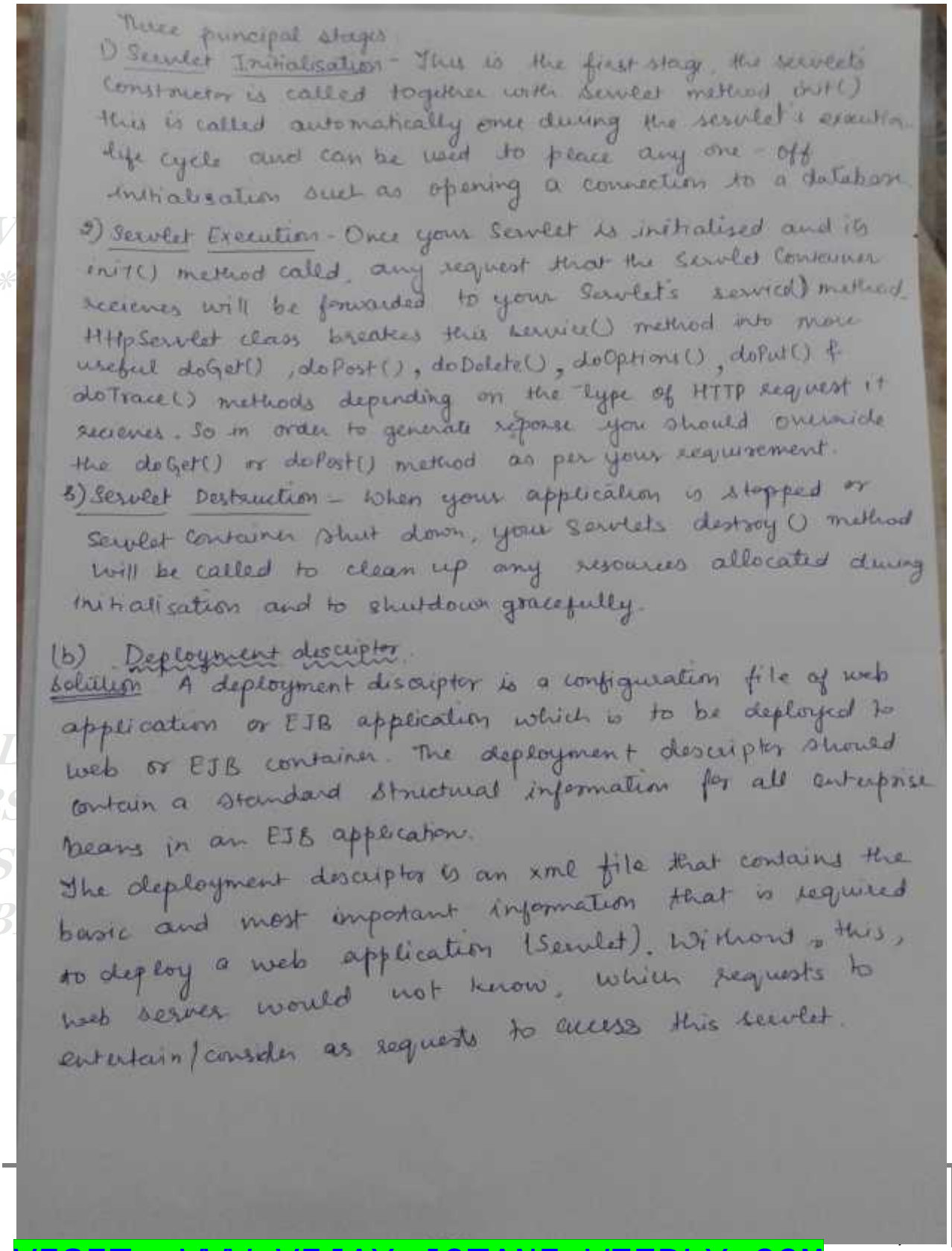

Three principal stages

1) Servlet Initialisation - This is the first stage, the servlets Constructor is called together with Servlet method init() this is called automatically once during the servlet's execution life cycle and can be used to place any one-off initialisation such as opening a connection to a database

2) Servlet Execution - Once your Servlet is initialised and its init() method called, any request that the Servlet Container receives will be forwarded to your Servlet's service() method. HttpServlet class breakes this service() method into more useful doGet(), doPost(), doDelete(), doOptions(), doPut() & doTrace() methods depending on the type of HTTP request it receives. So in order to generate response you should overwride the doGet() or doPost() method as per your requirement.

3) Servlet Destruction - When your application is stopped or Servlet Container shut down, your Servlets destroy() method will be called to clean up any resources allocated during initialisation and to shutdown gracefully.

(b) Deployment descriptor

Solution A deployment discripter is a configuration file of web application or EJB application which is to be deployed to web or EJB container. The deployment discripter should contain a standard structural information for all enterprise beans in an EJB application.

The deployment discripter is an xml file that contains the basic and most important information that is required to deploy a web application (Servlet). Without this, web server would not know, which requests to entertain/consider as requests to access this servlet.

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