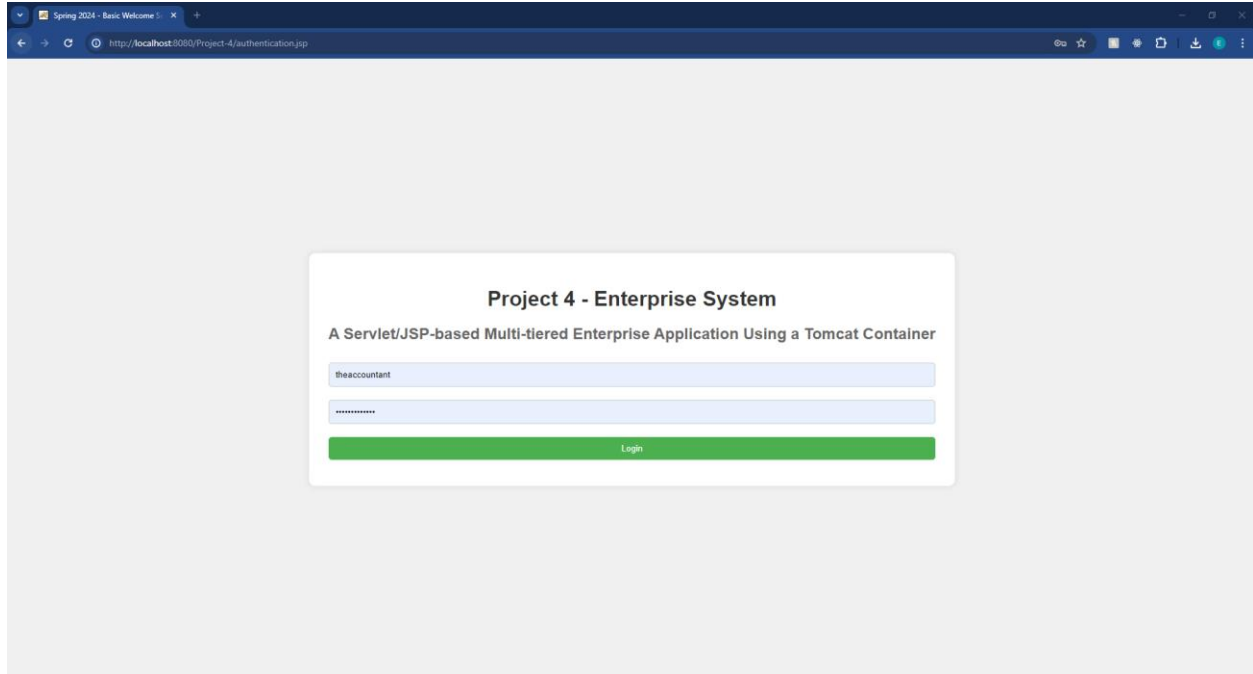


Project 4 Screen Shots:

Authentication Screen:



The screenshot shows a web browser window with the address bar displaying "http://localhost:8080/Project-4/authentication.jsp". The page content is centered on a light gray background. It features a white rectangular box with a thin gray border. Inside this box, the title "Project 4 - Enterprise System" is displayed in bold black text. Below the title, a subtitle reads "A Servlet/JSP-based Multi-tiered Enterprise Application Using a Tomcat Container". There are two input fields: the first is labeled "theaccountant" and contains the text "theaccountant"; the second is a password field with masked characters "*****". Below these fields is a green button with the text "Login" in white.

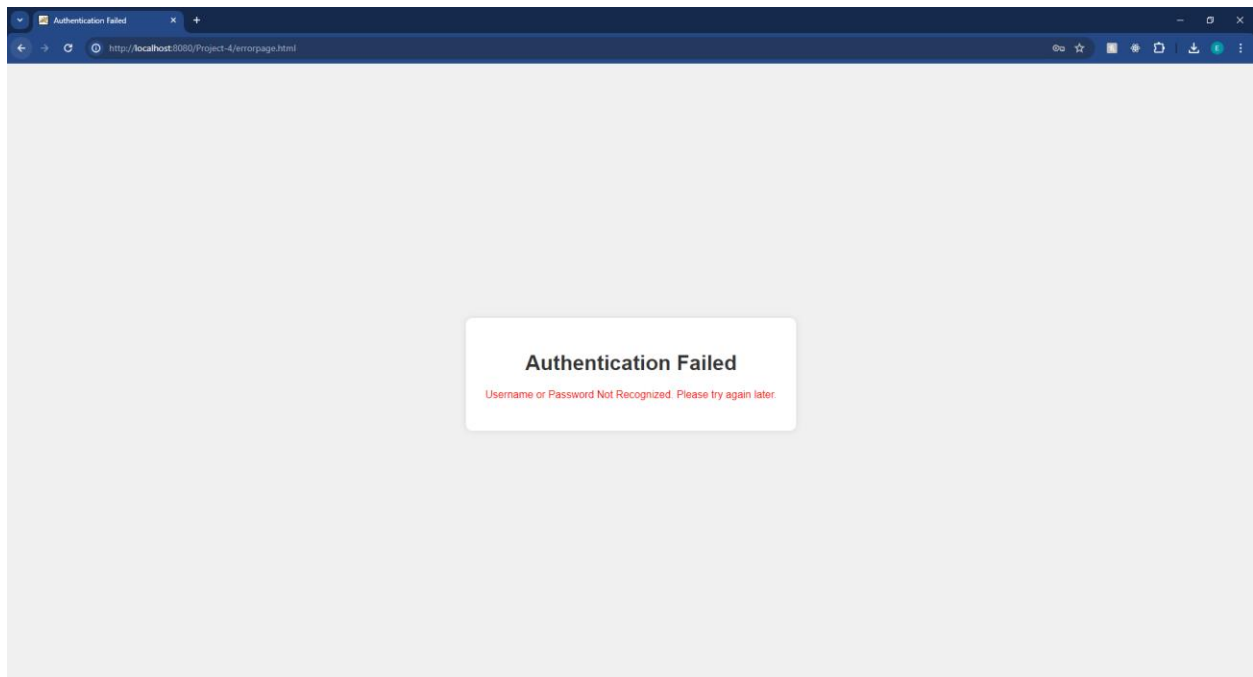
Project 4 - Enterprise System

A Servlet/JSP-based Multi-tiered Enterprise Application Using a Tomcat Container

theaccountant

Login

Failed Authentication screen:



Command 1: Query: list the supplier number and supplier name for those suppliers who ship every part.

Enterprise System

You are connected to the Project 4 Enterprise System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

select snum, sname from suppliers where not exists (select * from parts where

Execute Command

Reset Form

Clear Results

Execution Results

snum	sname
S6	Nicola Gianniberti

Business Logic Not Triggered

```
# Command 2 is a multi-part sequence that will trigger the business
logic.
# The first part is a query to illustrate all supplier information
before the update.
# The second part performs the update and causes the business logic
to trigger.
# The third part is a query that illustrates all supplier
information after the update/
#
# Command 2A: Query: list all supplier information.
```

Enterprise System

You are connected to the Project 4 Enterprise
System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

Execute CommandReset FormClear Results

Execution Results

ID	Supplier Name	City	Country
S32	Bernd Schnieder	Berlin	Germany
S33	Rolf Aldag	Berlin	Germany
S4	Mark Webber	Melbourne	Australia
S44	Beryl Burton	London	England
S5	Jenson Button	London	England
S56	Marianne Vos	Zandvoort	Netherlands

```
# Command 2B: add a new record to shipments table (S5, P6, J7, 400)
```

Enterprise System

You are connected to the Project 4 Enterprise System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

```
insert into shipments values ('S5', 'P6', 'J6', 400);
```

Execute Command

Reset Form

Clear Results

Execution Results

**The statement executed successfully.
1 row(s) affected.**

Business Logic updated 1 supplier status marks.

Command 2C: list all supplier information.

- You can see in the screenshot below Jenson and Beryl Burton were both changed to 9

Enterprise System

You are connected to the Project 4 Enterprise System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

Execute Command

Reset Form

Clear Results

Execution Results

S32	Bernd Schnieder	2	Berlin
S33	Rolf Aldag	3	Berlin
S4	Mark Webber	5	Melbourne
S44	Beryl Burton	9	London
S5	Jenson Button	9	London
S56	Marianne Vos	8	Zandvoort

```
#####  
# Command 3 is a multi-part that does not cause the business logic  
to trigger  
# Command 3A list all supplier information
```

Enterprise System

You are connected to the Project 4 Enterprise
System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

Execute CommandReset FormClear Results

Execution Results

snum	sname	status	city
S1	Michael Schumacher	6	Berlin
S10	David Coulthard	2	London
S11	Bernard Hinault	7	Paris
S12	Eddy Merckx	6	Brussels
S13	Candice Swanepoel	3	Cape Town

```
# Command 3B: add a new record to the supplier table (S39, Candice  
Swanepoel, 10,  
Cardiff)
```

Enterprise System

You are connected to the Project 4 Enterprise
System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

```
insert into suppliers values ('S39','Candice Swanepoel',10,'Cardiff');
```

Execute Command

Reset Form

Clear Results

Execution Results

**The statement executed successfully.
1 row(s) affected.**

Business Logic Not Triggered


```
# Command 3C: list all supplier information.
```

Enterprise System

You are connected to the Project 4 Enterprise System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

Execute CommandReset FormClear Results

Execution Results

S39	Candice Swanepoel	10	Cardiff
S4	Mark Webber	5	Melbourne
S44	Beryl Burton	9	London
S5	Jenson Button	9	London
S56	Marianne Vos	8	Zandvoort
S6	Nicola Gianniberti	7	Milan

```
# Command 3D: add a new record to shipments table (S39, P3, J1, 20), business logic will trigger
```

Enterprise System

You are connected to the Project 4 Enterprise System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

insert into shipments values ('S39','P3','J1', 20);

Execute Command

Reset Form

Clear Results

Execution Results

The statement executed successfully.
1 row(s) affected.

Business Logic updated 9 supplier status marks.

```
# Command 3E: list all supplier information
```

Enterprise System

You are connected to the Project 4 Enterprise System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

Execute CommandReset FormClear Results

Execution Results

S3	Dietrich Thureau	6	Berlin
S32	Bernd Schnieder	2	Berlin
S33	Rolf Aldag	3	Berlin
S39	Candice Swanepoel	10	Cardiff
S4	Mark Webber	5	Melbourne
S44	Beryl Burton	9	London

```
#####  
# Command 4: List the snum, sname, and pnum for those suppliers who  
ship the  
# same part to every job. This is a fairly complex SQL nested  
query.
```

Enterprise System

You are connected to the Project 4 Enterprise
System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

select distinct suppliers.snum, suppliers.sname, shipments.pnum from supplier;

Execute Command

Reset Form

Clear Results

Execution Results

snum	sname	pnum
S1	Michael Schumacher	P8

Business Logic Not Triggered

```
#####
# Command 5 is a multipart transaction that will cause the business
logic to
trigger
#
# The first part is a query to illustrate all shipment information
before the
update.
# The second part performs the update and causes the business logic
to trigger.
# The third part is a query that illustrates all shipment
information after the
update/
#
# Command 5A: List all supplier information
```

Enterprise System

You are connected to the Project 4 Enterprise
System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

Execute CommandReset FormClear Results

Execution Results

snum	sname	status	city
S1	Michael Schumacher	6	Berlin
S10	David Coulthard	2	London
S11	Bernard Hinault	7	Paris
S12	Eddy Merckx	6	Brussels
S13	Candice Swanepoel	3	Cape Town

```
# Command 5B: List all shipment information
```

Enterprise System

You are connected to the Project 4 Enterprise System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

Execute CommandReset FormClear Results

Execution Results

snum	pnum	jnum	quantity
S1	P1	J1	40
S1	P1	J4	200
S1	P19	J13	200
S1	P3	J13	95
S1	P33	J5	40

```
# Command 5C: Update the shipments table by increasing the quantity  
by 10 every  
shipment of part P3.
```

Enterprise System

You are connected to the Project 4 Enterprise
System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

Execute Command

Reset Form

Clear Results

Execution Results

The statement executed successfully.
13 row(s) affected.

Business Logic updated 9 supplier status marks

```
# Command 5D: List all shipment information
```

Enterprise System

You are connected to the Project 4 Enterprise System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

Execute CommandReset FormClear Results

Execution Results

snum	pnum	jnum	quantity
S1	P1	J1	40
S1	P1	J4	200
S1	P19	J13	200
S1	P3	J13	105
S1	P33	J5	40


```
# Command 5E: List all supplier information
```

Enterprise System

You are connected to the Project 4 Enterprise System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

Execute CommandReset FormClear Results

Execution Results

snum	sname	status	city
S1	Michael Schumacher	6	Berlin
S10	David Coulthard	2	London
S11	Bernard Hinault	7	Paris
S12	Eddy Merckx	6	Brussels
S13	Candice Swanepoel	3	Cape Town

```
#####  
# Command 6: List the snum, and sname for those suppliers who ship  
only green  
parts.  
# Output should list only supplier number S44 (Beryl Burton)
```

Enterprise System

You are connected to the Project 4 Enterprise
System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

Execute CommandReset FormClear Results

Execution Results

sname
Beryl Burton

Business Logic Not Triggered

```
#####  
# Command 7: This will generate an intentional error in command  
syntax.  
# Output should show the error message generated by catching an  
SQLException
```

Enterprise System

You are connected to the Project 4 Enterprise
System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

Execute Command

Reset Form

Clear Results

Execution Results

ERROR: Unknown column 'alpha' in 'field list'

```
#####  
# Command 8: This will not trigger the business logic.  
# Output should show the message indicating that the command was  
executed but the  
business logic has not triggered
```

Enterprise System

You are connected to the Project 4 Enterprise
System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

update jobs set city = "Madrid" where city = "Paris";]

Execute Command

Reset Form

Clear Results

Execution Results

The statement executed successfully.
1 row(s) affected.

Business Logic Not Triggered

```
#####  
# Command 9: Verify that command #8 did in fact update the jobs  
table
```

Enterprise System

You are connected to the Project 4 Enterprise
System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

Execute CommandReset FormClear Results

Execution Results

jnum	jname	numworkers	city
J1	Operation DB	45	Berlin
J13	Night Strike	350	Madrid
J2	Really Big Job	500	Melbourne
J22	Project On-Time	200	London
J3	Small Job	100	Chicago

```
#####  
# Command 10: This is a basic select command using an aggregation  
operator  
# Business logic not triggered and no table is updated.
```

Enterprise System

You are connected to the Project 4 Enterprise
System database as a **root-level** user.

Please enter any SQL query or update command in the box below.

Execute CommandReset FormClear Results

Execution Results

total_shipments
58

Business Logic Not Triggered

```
# Client level user command script
# CNT 4714 - Spring 2024 - Project 4
# This script contains the commands that a client-level user will
issue against the
# Project4 database (supplier/parts/jobs/shipments. Due to the
restrictions on the
client-level user, the
# business logic cannot be triggered by any input from this
category of user.
#

#####
# Command 1: Query: list the supplier number and supplier name for
those suppliers
who ship every green part.
# This should return supplier S6 (Nicola Gianniberti).
```

Enterprise System

You are connected to the Project 4 Enterprise
System database as a **client-level** user.

Please enter any SQL query or update command in the box below.

select snum, sname from suppliers where not exists (select * from parts where

Execute Command

Reset Form

Clear Results

Execution Results

snum	sname
S6	Nicola Gianniberti

```
#####  
# Command 2: This command will not execute for the client-level  
user.  
# Output should show the message indicating that the command was  
denied to the  
client-level user.
```

Enterprise System

You are connected to the Project 4 Enterprise
System database as a **client-level** user.

Please enter any SQL query or update command in the box below.

Execute Command

Reset Form

Clear Results

Execution Results

**ERROR: UPDATE command denied to user 'client1'@'localhost' for table
'jobs'**


```
#####  
# Command 3: This is a basic select command using an aggregation  
operator  
# Business logic not triggered and no table is updated.
```

Enterprise System

You are connected to the Project 4 Enterprise
System database as a **client-level** user.

Please enter any SQL query or update command in the box below.

Execute Command

Reset Form

Clear Results

Execution Results

total_shipments_with_quantity_over_100
--

26

```
#####  
# Command 4: This command will not execute for the client-level  
user.  
# Output should show the message indicating that the command was  
denied to the  
client-level user.
```

Enterprise System

You are connected to the Project 4 Enterprise
System database as a **client-level** user.

Please enter any SQL query or update command in the box below.

replace into suppliers values ("S1", "Michael Schumacher",4,"Frankfurt");

Execute Command

Reset Form

Clear Results

Execution Results

**ERROR: INSERT, DELETE command denied to user 'client1'@'localhost' for
table 'suppliers'**

```
# Data entry level user command script
# CNT 4714 - Spring 2024 - Project 4
# This script contains the commands that a cdata-entyr-level user
will issue
against the
# project3 database (supplier/parts/jobs/shipments). Due to the
restrictions on
the data entry level user
# only inserts are allowed. Project 4 incorporates server-side
# business logic that manipulates the status of a supplier when
certain conditions
involving shipment quantity are triggered.
# This business logic can be impacted by this user.
#
# Note that this is technically not an SQL script file, but I have
shown the
corresponding SQL commands in the comments.
#
```

```
#####  
# Command 1: Insert new shipment record for supplier S5.  
# This will work ok. Business logic not triggered  
# insert into shipments values ("S39", "P6", "J4", 33);
```

Data Entry Application

Enter your data below:

Supply Number:

Supply Name:

Status:

City:

Enter Supplier Record into Database

Clear Data and Results

Part Number:

Part Name:

Color:

Weight:

City:

Enter Part Record into Database

Clear Data and Results

Job Number:

Job Name:

numworkers:

City:

Enter Job Record into Database

Clear Data and Results

Supply Number:

Parts Number:

Job Number:

quantity:

Enter Shipment Record into Database

Clear Data and Results

Execution Results

New shipments record:(S39, P6, J4, 33) - successfully inserted into database! Business Logic Not Triggered.

```
#####  
# Command 2: This command will not execute due to a referential  
integrity  
violation
```

Data Entry Application

Enter your data below:

Supply Number:

Supply Name:

Status:

City:

Enter Supplier Record into Database

Clear Data and Results

Part Number:

Part Name:

Color:

Weight:

City:

Enter Part Record into Database

Clear Data and Results

Job Number:

Job Name:

numworkers:

City:

Enter Job Record into Database

Clear Data and Results

Supply Number:

Parts Number:

Job Number:

quantity:

Enter Shipment Record into Database

Clear Data and Results

Execution Results

```
ERROREROEROERR: Cannot add or update a child row: a foreign key constraint fails  
(`project4`.`shipments`, CONSTRAINT `shipments_ibfk_2` FOREIGN KEY (`pnum`) REFERENCES `parts`  
(`pnum`))
```

```
#####  
# Command 3: This command will work.  
# insert into suppliers values("S90","Anna-Frieda",34,"Stockholm");
```

Data Entry Application

Enter your data below:

Supply Number:

Supply Name:

Status:

City:

Enter Supplier Record into Database

Clear Data and Results

Part Number:

Part Name:

Color:

Weight:

City:

Enter Part Record into Database

Clear Data and Results

Job Number:

Job Name:

numworkers:

City:

Enter Job Record into Database

Clear Data and Results

Supply Number:

Parts Number:

Job Number:

quantity:

Enter Shipment Record into Database

Clear Data and Results

Execution Results

New shipments record:(S90, Anna-Frieda, 34, Stockholm) - successfully inserted into database!

```
#####  
# Command 4: This command will work.  
# insert into jobs values ("J90","Top Secret Job",3,"Stockholm");
```

Data Entry Application

Enter your data below:

Supply Number:

Supply Name:

Status:

City:

Enter Supplier Record into Database

Clear Data and Results

Part Number:

Part Name:

Color:

Weight:

City:

Enter Part Record into Database

Clear Data and Results

Job Number:

Job Name:

numworkers:

City:

Enter Job Record into Database

Clear Data and Results

Supply Number:

Parts Number:

Job Number:

quantity:

Enter Shipment Record into Database

Clear Data and Results

Execution Results

New jobs record:(J90, Top Secret Job, 3, Stockholm) - successfully inserted into database!

```
#####
# Command 5: This command will work and trigger the business logic.
# insert into shipments values("S39","P6","J6",500);
```

Data Entry Application

Enter your data below:

Supply Number:

Enter supply number

Supply Name:

Enter supply name

Status:

Enter status

City:

Enter city

Enter Supplier Record into Database

Clear Data and Results

Part Number:

Enter part numbe

Part Name:

Enter part name

Color:

Enter color

Weight:

Enter weight

City:

Enter city

Enter Part Record into Database

Clear Data and Results

Job Number:

Enter job number

Job Name:

Enter job name

numworkers:

Enter numworkers

City:

Enter city

Enter Job Record into Database

Clear Data and Results

Supply Number:

Enter supply number

Parts Number:

Enter parts number

Job Number:

Enter job number

quantity:

Enter quantity

Enter Shipment Record into Database

Clear Data and Results

Execution Results

New shipments record:(S39, P6, J6, 500) - successfully inserted into database! Business Logic Triggered.


```
#####
# Command 6: This command will work and not trigger the business logic.
# insert into parts values("P90","U-plate","black",50,"Cardiff");
```

Data Entry Application

Enter your data below:

Supply Number:

Supply Name:

Status:

City:

Enter Supplier Record into Database

Clear Data and Results

Part Number:

Part Name:

Color:

Weight:

City:

Enter Part Record into Database

Clear Data and Results

Job Number:

Job Name:

numworkers:

City:

Enter Job Record into Database

Clear Data and Results

Supply Number:

Parts Number:

Job Number:

quantity:

Enter Shipment Record into Database

Clear Data and Results

Execution Results

New Parts record:(P90, U-plate, black, 50, Cardiff) - successfully inserted into database!

```
#####
# Command 7: This command will not work.
# insert into shipments values("S39","P6","J6",35);
```

Data Entry Application

Enter your data below:

Supply Number:

Enter supply number

Supply Name:

Enter supply name

Status:

Enter status

City:

Enter city

Enter Supplier Record into Database

Clear Data and Results

Part Number:

Enter part numbe

Part Name:

Enter part name

Color:

Enter color

Weight:

Enter weight

City:

Enter city

Enter Part Record into Database

Clear Data and Results

Job Number:

Enter job number

Job Name:

Enter job name

numworkers:

Enter numworkers

City:

Enter city

Enter Job Record into Database

Clear Data and Results

Supply Number:

Enter supply number

Parts Number:

Enter parts number

Job Number:

Enter job number

quantity:

Enter quantity

Enter Shipment Record into Database

Clear Data and Results

Execution Results

ERROREROEROERR: Duplicate entry 'S39-P6-J6' for key 'shipments.PRIMARY'

```
#####  
# Command 8: This command will work and trigger the business logic.  
# insert into shipments values("S90","P90","J90",500);
```

Data Entry Application

Enter your data below:

Supply Number:

Supply Name:

Status:

City:

Enter Supplier Record into Database

Clear Data and Results

Part Number:

Part Name:

Color:

Weight:

City:

Enter Part Record into Database

Clear Data and Results

Job Number:

Job Name:

numworkers:

City:

Enter Job Record into Database

Clear Data and Results

Supply Number:

Parts Number:

Job Number:

quantity:

Enter Shipment Record into Database

Clear Data and Results

Execution Results

New shipments record:(S90, P90, J90, 500) - successfully inserted into database! Business Logic Triggered.

```
// These are the commands for the accountant user for Project 4
// Note that these are not sql commands, just selections.
//
// Command 1
choose First Option
//
```

Enterprise System

You are connected to the Project 4 Enterprise System database as an **accountant-level** user.

Please select the operation you would like to perform from the list below.

- ☐ Get the maximum status value of all suppliers
- ☐ Get the total weight of all parts
- ☐ Get the total number of shipments
- ☐ Get the name and number of workers of the job with the most workers
- ☐ List the name and status of every supplier

Execute command

Clear results

Execution Results

Maximum_Status_Of_All_Suppliers
39

```
// Command 2  
choose Second Option  
//
```

Enterprise System

You are connected to the Project 4 Enterprise System database as an **accountant-level** user.

Please select the operation you would like to perform from the list below.

- ☐ Get the maximum status value of all suppliers
- ☐ Get the total weight of all parts
- ☐ Get the total number of shipments
- ☐ Get the name and number of workers of the job with the most workers
- ☐ List the name and status of every supplier

Execute command

Clear results

Execution Results

Sum_Of_All_Part_Weights
143

```
// Command 3
choose Third Option
//
```

Enterprise System

You are connected to the Project 4 Enterprise System database as an **accountant-level** user.

Please select the operation you would like to perform from the list below.

- ☐ Get the maximum status value of all suppliers
- ☐ Get the total weight of all parts
- ☐ Get the total number of shipments
- ☐ Get the name and number of workers of the job with the most workers
- ☐ List the name and status of every supplier

Execute command

Clear results

Execution Results

The_Total_Number_Of_Shipments
61

```
// Command 4  
choose Fourth Option  
//
```

Enterprise System

You are connected to the Project 4 Enterprise System database as an **accountant-level** user.

Please select the operation you would like to perform from the list below.

- ☐ Get the maximum status value of all suppliers
- ☐ Get the total weight of all parts
- ☐ Get the total number of shipments
- ☐ Get the name and number of workers of the job with the most workers
- ☐ List the name and status of every supplier

Execute command

Clear results

Execution Results

jname	numworkers
Really Big Job	500

```
// Command 5  
choose Fifth Option  
//
```

Enterprise System

You are connected to the Project 4 Enterprise System database as an **accountant-level** user.

Please select the operation you would like to perform from the list below.

- ☐ Get the maximum status value of all suppliers
- ☐ Get the total weight of all parts
- ☐ Get the total number of shipments
- ☐ Get the name and number of workers of the job with the most workers
- ☐ List the name and status of every supplier

Execute command

Clear results

Execution Results

sname	status
Michael Schumacher	16
David Coulthard	2
Bernard Hinault	7
Eddy Merckx	16
Candice Swanepoel	3