

Course Name: Database Management Systems

Course Number: CS-4513-001

Semester: Fall 2019

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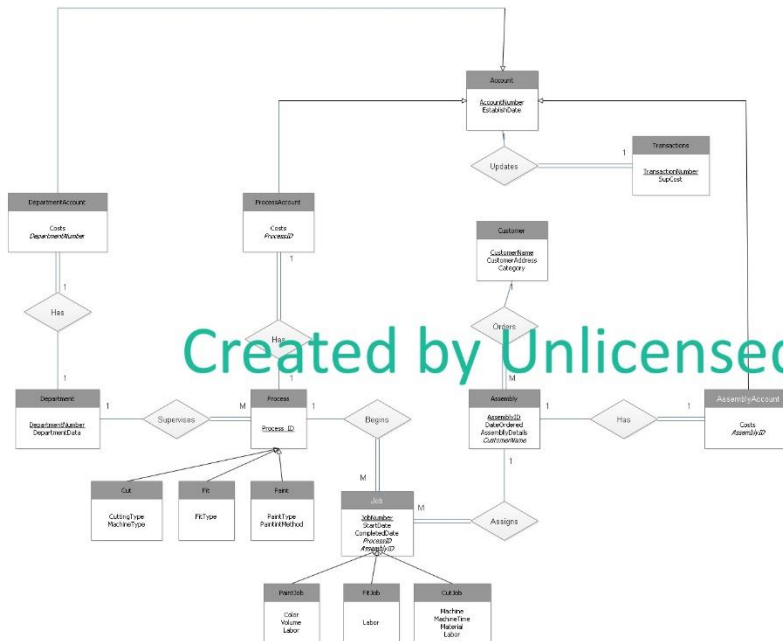
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A JOB-SHOP ACCOUNTING SYSTEM

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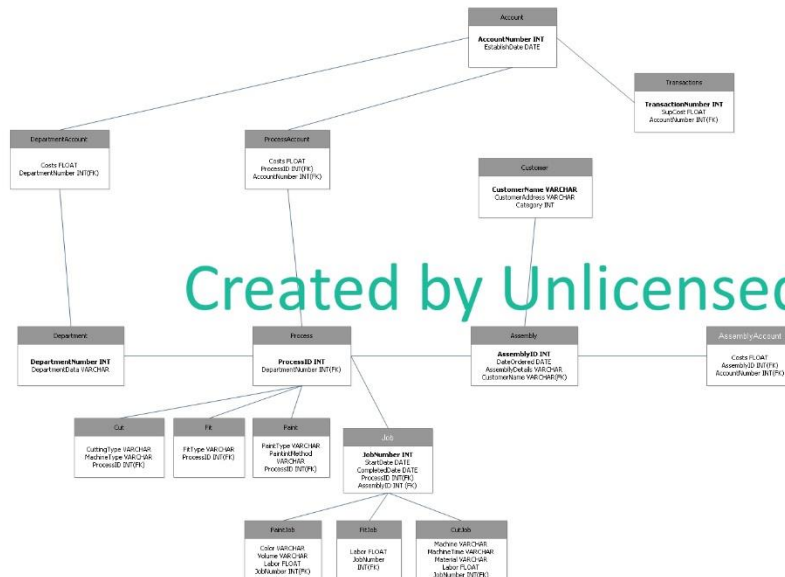
TASK 1

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TASK 2

Customer

CustomerName varchar 85 bytes

Category int 4 bytes

Assembly

AssemblyID int 4 bytes

DateOrdered Date 3 bytes

CustomerName varchar 85 bytes

Process

ProcessID int 4 bytes

ProcessType varchar 85 bytes

DepartmentNumber int 4 bytes

Department

DepartmentNumber int 4 bytes

DepartmentData varchar 85 byte

Fit

FitType varchar 85 bytes

ProcessID int 4 bytes

Cut CuttingType varchar 85 bytes

MachineType varchar 85 bytes

Paint

paintType varchar 85 bytes

ProcessID int 4 bytes

Job

JobNumber int 4 bytes

ProcessID int 4 bytes

AssemblyID int 4 bytes

CompletionDate 3 bytes

FitJob

Labor time 5 bytes

JobNumber int 4 bytes

CutJob

Machine varchar 85 bytes

Machinetime time 5 bytes

Materials varchar 85 bytes

Labor time 5 bytes

JobNumber int 4 bytes

PaintJob

color varchar 85 bytes

Volume varchar 85 bytes

Labor time 5 bytes

JobNumber int 4 bytes

Account

accountnumber int 4 bytes

Establishdate date 3 bytes

Accounttype varchar 85 bytes

AssemblyAccount

costs double 76 bytes

ProcessID int 4 bytes

AccountNumber int 4 bytes

DepartmentAccount

costs double 76 bytes

ProcessID int 4 bytes

AccountNumber int 4 bytes

ProcessAccount

costs double 76 bytes

ProcessID int 4 bytes

AccountNumber int 4 bytes

Transaction

transactionnumber int 4 bytes

Supcost double 76 bytes

Accountnumber int 4 bytes

TASK 3

Table Name	Query# and Type	Search Key	Query Frequency	Selected File Organization	Justification
Customer	1	None	30/day	unordered	Better for inserting due to frequency
Department	2	none	infrequent	ordered	Efficiency isn't an issue
Assembly	3	none	40/day	unordered	Inserting
Process Fit Cut	4	none	infrequent	ordered	Efficiency isn't an issue

Paint					
Account AssemblyAccount DepartmentAccount ProcessAccount	5	none	10/day	unordered	Better for inserting due to frequency
Job	6	none	50/day	Heap file	Higher frequency needs faster than unordered
FitJob CutJob PaintJob	7	none	50/day	Heap file	Higher frequency needs faster than unordered
Transaction AssemblyAccount DepartmentAccount ProcessAccount	8	Costs	50/day	Heap file	Higher frequency needs faster than unordered
AssemblyAccount	9	Costs	200/day	Hash table	Due to frequency, needs fastest therefore hash table
FitJob CutJob PaintJob	10	Labor	20/day	Ordered	Ordered is better at retrieval than unordered
Fit Cut Paint	11	ProcessID	100/day	B+ tree	Due to frequency, needs something between heap file and hash table
Job	12	Jobumber	20/day	Ordered	Ordered is better at retrieval than unordered
Customer	13	CustomerName	100/day	B+ tree	Primary key is already b-tree
CutJobs	14	JobNumber	1/month	Heap file	Primary key is already b-tree

PaintJob	15	Color	1/week	Heap File	Isn't being accessed enough to be indexed
----------	----	-------	--------	-----------	---

TASK 4

```
CREATE TABLE Customer (
```

```
    CustomerName VARCHAR(20) PRIMARY KEY NOT NULL,
```

```
    CustomerAddress VARCHAR(85) NOT NULL,
```

```
    Category INT NOT NULL
```

```
);
```

```
CREATE TABLE Department(
```

```
    DepartmentNumber INT PRIMARY KEY NOT NULL,
```

```
    DepartmentData VARCHAR(85) NOT NULL
```

```
);
```

```
CREATE TABLE Assembly(
```

```
    AssemblyID int PRIMARY KEY NOT NULL,
```

```
    DateOrdered DATE NOT NULL,
```

```
    AssemblyDetails VARCHAR(85) NOT NULL,
```

```
    CustomerName VARCHAR(20) FOREIGN KEY REFERENCES Customer(CustomerName)
```

```
);
```

```
CREATE TABLE Process (
```

```
    ProcessID int NOT NULL PRIMARY KEY,
```

```
    DepartmentNumber INT FOREIGN KEY REFERENCES Department(DepartmentNumber)
```

```
);
```

```
CREATE TABLE Fit(
```

```
    FitType VARCHAR(85) NOT NULL,
```

```
    ProcessID int FOREIGN KEY REFERENCES Process(ProcessID)
```



```
);
```

```
CREATE TABLE Paint(
```

```
    PaintType VARCHAR(85) NOT NULL,
```

```
    PaintingMethod VARCHAR(85) NOT NULL,
```

```
    ProcessID int FOREIGN KEY(ProcessID) REFERENCES Process(ProcessID)
```

```
);
```

```
CREATE TABLE Cut(
```

```
    CuttingType VARCHAR(85) NOT NULL,
```

```
    MachineType VARCHAR(85) NOT NULL,
```

```
    ProcessID int FOREIGN KEY(ProcessID) REFERENCES Process(ProcessID)
```

```
);
```

```
CREATE TABLE Account(
```

```
    AccountNumber INT PRIMARY KEY NOT NULL,
```

```
    EstablishDate DATE NOT NULL
```

```
);
```

```
CREATE TABLE AssemblyAccount(
```

```
    Costs DECIMAL(19, 4) NOT NULL,
```

```
    AccountNumber INT FOREIGN KEY(AccountNumber) REFERENCES Account(AccountNumber),
```

```
    AssemblyID INT FOREIGN KEY(AssemblyID) REFERENCES Assembly(AssemblyID)
```

```
);
```

```
CREATE TABLE DepartmentAccount(
```

```
    Costs DECIMAL(19, 4) NOT NULL,
```

```
    AccountNumber INT FOREIGN KEY(AccountNumber) REFERENCES Account(AccountNumber),
```

```
    DepartmentNumber INT FOREIGN KEY(DepartmentNumber) REFERENCES  
Department(DepartmentNumber)
```

```
);
```

```
CREATE TABLE ProcessAccount(
```

```
    Costs DECIMAL(19, 4) NOT NULL,
```

```
AccountNumber INT FOREIGN KEY(AccountNumber) REFERENCES Account(AccountNumber),
ProcessID INT FOREIGN KEY(ProcessID) REFERENCES Process(ProcessID)
);

CREATE TABLE Job(
    JobNumber INT PRIMARY KEY NOT NULL,
    AssemblyID INT FOREIGN KEY REFERENCES Assembly(AssemblyID),
    ProcessID INT FOREIGN KEY REFERENCES Process(ProcessID),
    StartDate DATE NOT NULL,
    CompletionDate DATE
);

CREATE TABLE CutJob(
    Machine VARCHAR(85) NOT NULL,
    MachineTime TIME NOT NULL,
    Material VARCHAR(85) NOT NULL,
    Labor FLOAT NOT NULL,
    JobNumber INT FOREIGN KEY REFERENCES Job(JobNumber)
);

CREATE TABLE PaintJob(
    Color VARCHAR(85) NOT NULL,
    Volume VARCHAR(85) NOT NULL,
    Labor FLOAT NOT NULL,
    JobNumber INT FOREIGN KEY REFERENCES Job(JobNumber)
);

CREATE TABLE FitJob(
    Labor FLOAT NOT NULL,
    JobNumber INT FOREIGN KEY REFERENCES Job(JobNumber)
);

CREATE TABLE Transactions(
    TransactionNumber INT PRIMARY KEY NOT NULL,
```

```

SupCost DECIMAL(19, 4) NOT NULL,

AccountNumber INT FOREIGN KEY REFERENCES Account(AccountNumber)

);

CREATE INDEX costIndex ON AssemblyAccount(Costs);

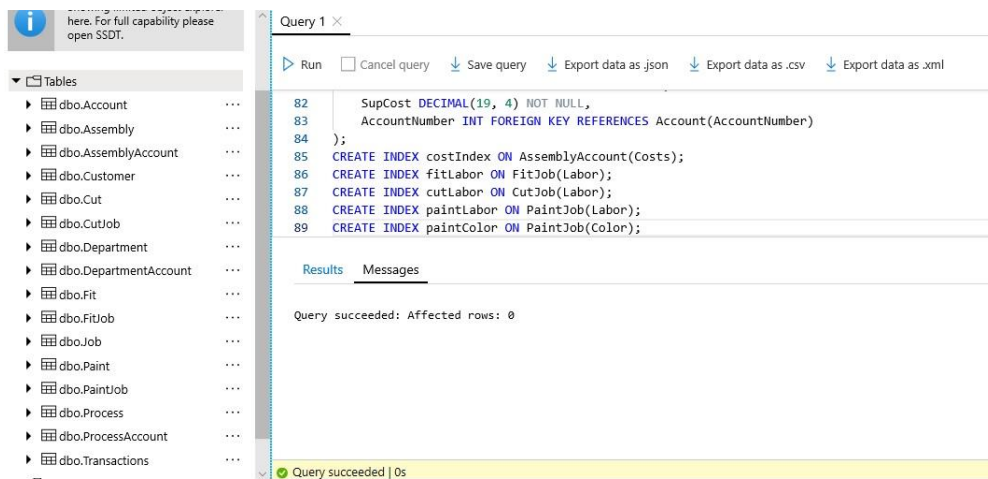
CREATE INDEX fitLabor ON FitJob(Labor);

CREATE INDEX cutLabor ON CutJob(Labor);

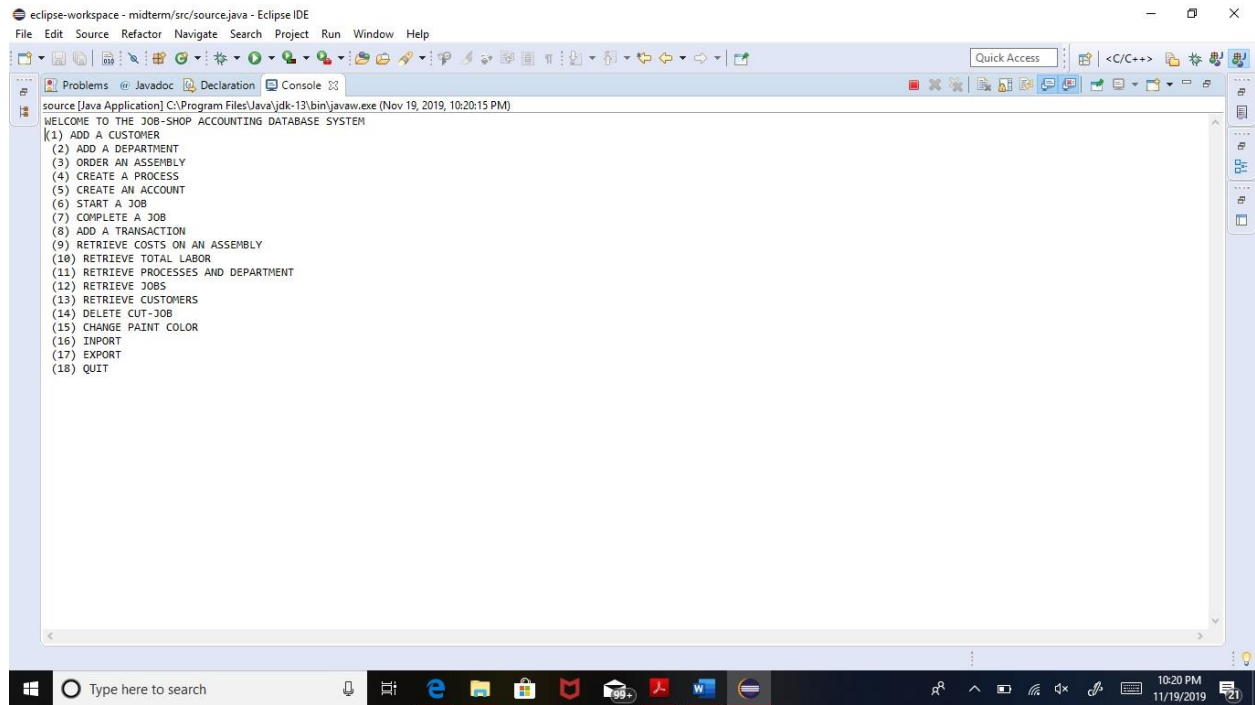
CREATE INDEX paintLabor ON PaintJob(Labor);

CREATE INDEX paintColor ON PaintJob(Color);

```



TASK 5

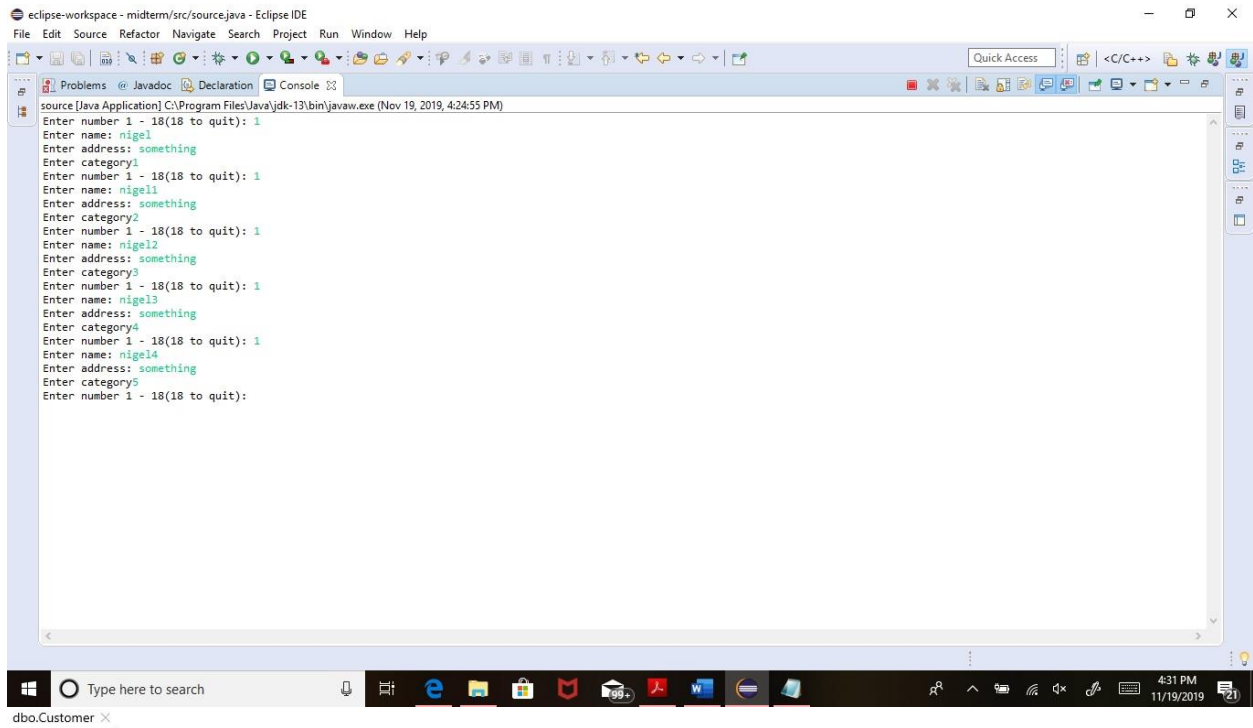


The screenshot shows the Eclipse IDE interface. The top menu bar includes File, Edit, Source, Refactor, Navigate, Search, Project, Run, Window, and Help. Below the menu bar is a toolbar with various icons. The main editor area displays the following text:

```
source [Java Application] C:\Program Files\Java\jdk-13\bin\javaw.exe (Nov 19, 2019, 10:20:15 PM)
WELCOME TO THE JOB-SHOP ACCOUNTING DATABASE SYSTEM
(1) ADD A CUSTOMER
(2) ADD A DEPARTMENT
(3) ORDER AN ASSEMBLY
(4) CREATE A PROCESS
(5) CREATE AN ACCOUNT
(6) START A JOB
(7) COMPLETE A JOB
(8) ADD A TRANSACTION
(9) RETRIEVE COSTS ON AN ASSEMBLY
(10) RETRIEVE TOTAL LABOR
(11) RETRIEVE PROCESSES AND DEPARTMENT
(12) RETRIEVE JOBS
(13) RETRIEVE CUSTOMERS
(14) DELETE CUT-JOB
(15) CHANGE PAINT COLOR
(16) INPORT
(17) EXPORT
(18) QUIT
```

The bottom of the image shows the Windows taskbar with the search bar and several application icons. The system clock in the bottom right corner indicates 10:20 PM on 11/19/2019.

TASK 6



```
eclipse-workspace - midterm/src/source.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help

source [Java Application] C:\Program Files\Java\jdk-13\bin\javaw.exe (Nov 19, 2019, 4:24:55 PM)

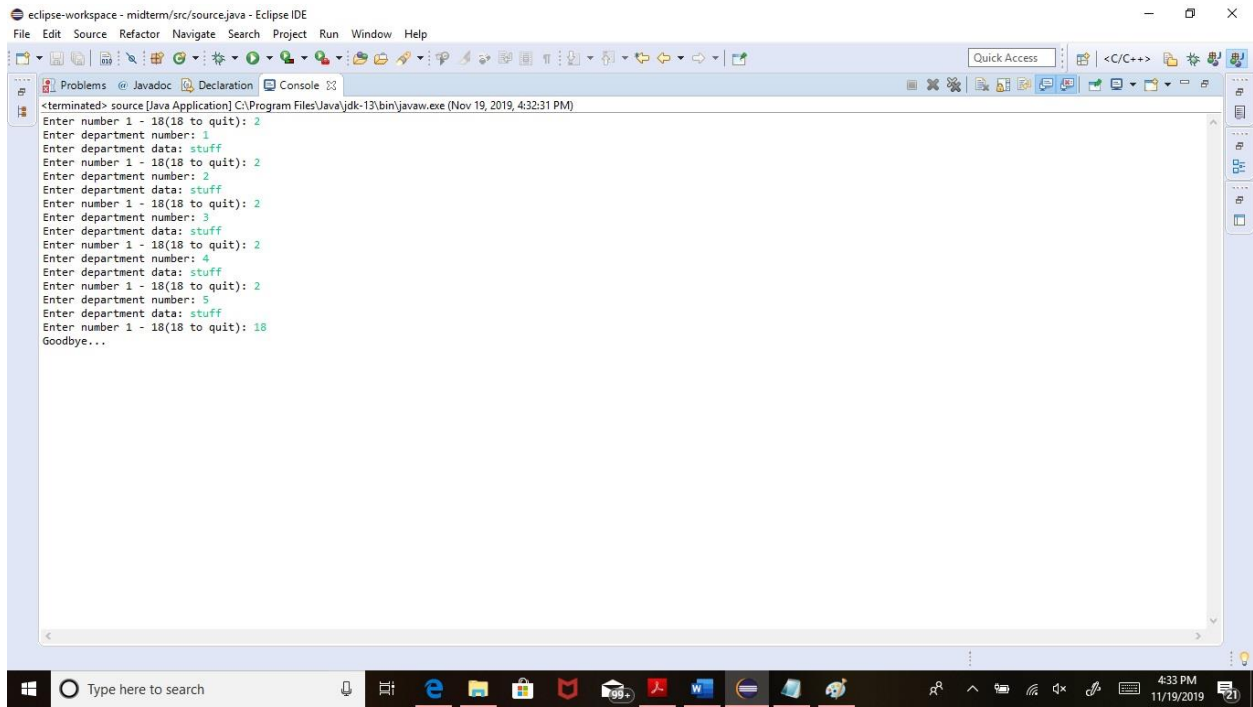
Enter number 1 - 18(18 to quit): 1
Enter name: nigel
Enter address: something
Enter category1
Enter number 1 - 18(18 to quit): 1
Enter name: nigel1
Enter address: something
Enter category2
Enter number 1 - 18(18 to quit): 1
Enter name: nigel2
Enter address: something
Enter category3
Enter number 1 - 18(18 to quit): 1
Enter name: nigel3
Enter address: something
Enter category4
Enter number 1 - 18(18 to quit): 1
Enter name: nigel4
Enter address: something
Enter category5
Enter number 1 - 18(18 to quit):
```

dbo.Customer

Create New Row Save Refresh Discard Delete Row

Search to filter items...

CustomerName	CustomerAddress	Category
nigel	something	1
nigel1	something	2
nigel2	something	3
nigel3	something	4
nigel4	something	5



```
<terminated> source [Java Application] C:\Program Files\Java\jdk-13\bin\javaw.exe (Nov 19, 2019, 4:32:31 PM)
Enter number 1 - 18(18 to quit): 2
Enter department number: 1
Enter department data: stuff
Enter number 1 - 18(18 to quit): 2
Enter department number: 2
Enter department data: stuff
Enter number 1 - 18(18 to quit): 2
Enter department number: 3
Enter department data: stuff
Enter number 1 - 18(18 to quit): 2
Enter department number: 4
Enter department data: stuff
Enter number 1 - 18(18 to quit): 2
Enter department number: 5
Enter department data: stuff
Enter number 1 - 18(18 to quit): 18
Goodbye...
```

dbo.Department

Create New Row Save Refresh Discard Delete Row

Search to filter items...

DepartmentNumber	DepartmentData
1	stuff
2	stuff
3	stuff
4	stuff
5	stuff

The screenshot shows the Eclipse IDE with two Java applications running. The left application, 'source [Java Application] C:\Program Files\Java\jdk...', has a console output showing a loop where the user enters customer names (nigel, nigel1, nigel2, nigel3, nigel4), assembly details (something, stuff, more, test), and dates (11/18/2019). The right application, '<terminated> source [Java Application] C:\Program...', shows a similar sequence but ends with 'Enter number 1 - 18(18 to quit): 18'. The Windows taskbar at the bottom shows the time as 4:38 PM on 11/19/2019.

bo.Assembly X

Create New Row Save Refresh Discard Delete Row

Search to filter items...

AssemblyID	DateOrdered	AssemblyDetails	CustomerName
1	2019-11-18T00:00:00.0000000	something	nigel
2	2019-11-18T00:00:00.0000000	stuff	nigel
3	2019-11-18T00:00:00.0000000	more	nigel1
4	2019-11-18T00:00:00.0000000	test	nigel1
5	2019-11-18T00:00:00.0000000	test	nigel2
6	2019-11-18T00:00:00.0000000	test	nigel2
7	2019-11-18T00:00:00.0000000	test	nigel3
8	2019-11-18T00:00:00.0000000	test	nigel3
9	2019-11-18T00:00:00.0000000	test	nigel4
10	2019-11-19T00:00:00.0000000	test	nigel4

eclipse-workspace - midterm/src/source.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

source [Java Application] C:\Program Files\Java\jdk-13\bin\javaw.exe (Nov 19, 2019, 4:43:27 PM)

```

enter a process ID: 1
Enter a department number: 1
Enter process type. Fit, Paint, or Cut : Fit
Enter fit type: test
Enter number 1 - 18(18 to quit): 4
Enter a process ID: 2
Enter a department number: 1
Enter process type. Fit, Paint, or Cut : Fit
Enter fit type: test
Enter number 1 - 18(18 to quit): 4
Enter a process ID: 3
Enter a department number: 2
Enter process type. Fit, Paint, or Cut : Paint
Enter paint color: blue
Enter painting method: test
Enter number 1 - 18(18 to quit): 4
Enter a process ID: 4
Enter a department number: 2
Enter process type. Fit, Paint, or Cut : paint
Enter paint color: red
Enter painting method: test
Enter number 1 - 18(18 to quit): 4
Enter a process ID: 5
Enter a department number: 3
Enter process type. Fit, Paint, or Cut : Cut
Enter cutting type: sharp
Enter machine type: loud
Enter number 1 - 18(18 to quit): 4
Enter a process ID: 6
Enter a department number: 3
Enter process type. Fit, Paint, or Cut : Cut
Enter cutting type: test
Enter machine type: test
Enter number 1 - 18(18 to quit): 4
Enter a process ID: 7
Enter a department number: 1
Enter process type. Fit, Paint, or Cut :
Enter fit type: test
Enter number 1 - 18(18 to quit): 4
Enter a process ID: 8
Enter a department number: 4
Enter process type. Fit, Paint, or Cut :
Enter fit type: test
Enter number 1 - 18(18 to quit): 4
Enter a process ID: 9
Enter a department number: 5
Enter process type. Fit, Paint, or Cut :
Enter paint color: green
Enter painting method: test
Enter number 1 - 18(18 to quit): 4
Enter a process ID: 10
Enter a department number: 5
Enter process type. Fit, Paint, or Cut :
Enter fit type: test
Enter number 1 - 18(18 to quit): 18
Goodbye...

```

Type here to search

Job-Shop-Accounting-T Dashboard Mail - Mansell, Nigel C. - Outlook

https://portal.azure.com/#@ou.edu/resource/subscriptions/7936f360-635b-4256-b3c7-6c8e2a569ba9/resourceGroups/cs4513-f19/providers/Microsoft.Sql/ser...

Search to filter items...

ProcessID	DepartmentNumber
1	1
2	1
3	2
4	2
5	3
6	3
7	1
8	4
9	5
10	5

dbo.Fit x dbo.Cut x dbo.Paint x

Create New Row Save Refresh Discard Delete Row

Search to filter items...

FitType	ProcessID
test	1
test	2
test	7
test	8
test	10

dbo.Fit x dbo.Cut x dbo.Paint x

Create New Row Save Refresh Discard Delete Row

Search to filter items...

CuttingType	MachineType	ProcessID
sharp	loud	5
test	test	6

Search to filter items...

PaintType	PaintingMethod	ProcessID
blue	test	3
red	test	4
green	test	9

eclipse-workspace - midterm/src/source.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Problems Javadoc Declaration Console

source [Java Application] C:\Program Files\Java\jdk-13\bin\javaw.exe (Nov 19, 2019, 4:52:59 PM)

```

Enter number 1 - 18(18 to quit): 5
Enter account number: 1
Enter established date: 11/18/2019
Enter which type of account. Assembly, Department, or Process: Assembly
Enter assembly ID: 1
Enter cost: $20.00
Enter number 1 - 18(18 to quit): 5
Enter account number: 2
Enter established date: 11/18/2019
Enter which type of account. Assembly, Department, or Process: assembly
Enter assembly ID: 1
Enter cost: $30.00
Enter number 1 - 18(18 to quit): 5
Enter account number: 3
Enter established date: 11/18/2019
Enter which type of account. Assembly, Department, or Process: department
Enter department number: 1
Enter cost: $11.00
Enter number 1 - 18(18 to quit): 5
Enter account number: 4
Enter established date: 11/18/2019
Enter which type of account. Assembly, Department, or Process: department
Enter department number: 1
Enter cost: $12.00
Enter number 1 - 18(18 to quit): 5
Enter account number: 5
Enter established date: 11/18/2019
Enter which type of account. Assembly, Department, or Process: process
Enter process ID: 1
Enter cost: $5.00
Enter number 1 - 18(18 to quit):

```

<terminated> source [Java Application] C:\Program Files\Java\jdk-13\bin\javaw.exe (Nov 19, 2019, 4:56:06 PM)

```

Enter number 1 - 18(18 to quit): 5
Enter account number: 6
Enter established date: 11/18/2018
Enter which type of account. Assembly, Department, or Process: Assembly
Enter assembly ID: 2
Enter cost: $15.00
Enter number 1 - 18(18 to quit): 5
Enter account number: 7
Enter established date: 10/10/2019
Enter which type of account. Assembly, Department, or Process: Assembly
Enter assembly ID: 2
Enter cost: $4.00
Enter number 1 - 18(18 to quit): 5
Enter account number: 8
Enter established date: 11/19/2019
Enter which type of account. Assembly, Department, or Process: department
Enter department number: 2
Enter cost: $6.00
Enter number 1 - 18(18 to quit): 5
Enter account number: 9
Enter established date: 11/20/2019
Enter which type of account. Assembly, Department, or Process: Department
Enter department number: 2
Enter cost: $2.00
Enter number 1 - 18(18 to quit): 5
Enter account number: 10
Enter established date: 11/18/2019
Enter which type of account. Assembly, Department, or Process: Process
Enter process ID: 2
Enter cost: $3.00
Enter number 1 - 18(18 to quit): 18
Goodbye...

```

Type here to search

4:55 PM 11/19/2019

dbo.Account × dbo.AssemblyAccount × dbo.DepartmentAccount × dbo.ProcessAccount

Create New Row Save Refresh Discard Delete Row

Search to filter items...

AccountNumber	EstablishDate
1	2019-11-18T00:00:00.0000000
2	2019-11-18T00:00:00.0000000
3	2019-11-18T00:00:00.0000000
4	2019-11-18T00:00:00.0000000
5	2019-11-18T00:00:00.0000000
6	2019-11-18T00:00:00.0000000
7	2019-10-10T00:00:00.0000000
8	2019-11-19T00:00:00.0000000
9	2019-11-20T00:00:00.0000000
10	2019-11-18T00:00:00.0000000

dbo.Account × dbo.AssemblyAccount × dbo.DepartmentAccount × dbo.ProcessAccount

Create New Row Save Refresh Discard Delete Row

Search to filter items...

Costs	AccountNumber	AssemblyID
20.0000	1	1
30.0000	2	1
15.0000	6	2
4.0000	7	2

dbo.Account × dbo.AssemblyAccount × dbo.DepartmentAccount × dbo.ProcessAccount

Create New Row Save Refresh Discard Delete Row

Search to filter items...

Costs	AccountNumber	DepartmentNumber
11.0000	3	1
12.0000	4	1
6.0000	8	2
2.0000	9	2

dbo.Account × dbo.AssemblyAccount × dbo.DepartmentAccount × dbo.ProcessAccount

Create New Row Save Refresh Discard Delete Row

Search to filter items...

Costs	AccountNumber	ProcessID
5.0000	5	1
3.0000	10	2

eclipse-workspace - midterm/src/source.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access <C/C++>

Problems Javadoc Declaration Console

```

<terminated> source [Java Application] C:\Program Files\Java\jdk-13\bin\j
Enter number 1 - 18(18 to quit): 6
Enter a job number: 1
Enter assembly ID: 1
Enter process ID: 1
Enter start date of job: 11/18/2019
Enter number 1 - 18(18 to quit): 6
Enter a job number: 2
Enter assembly ID: 1
Enter process ID: 1
Enter start date of job: 11/19/2019
Enter number 1 - 18(18 to quit): 6
Enter a job number: 3
Enter assembly ID: 2
Enter process ID: 2
Enter start date of job: 11/20/2019
Enter number 1 - 18(18 to quit): 6
Enter a job number: 4
Enter assembly ID: 2
Enter process ID: 2
Enter start date of job: 11/21/2019
Enter number 1 - 18(18 to quit): 6
Enter a job number: 5
Enter assembly ID: 3
Enter process ID: 3
Enter start date of job: 11/22/2019
Enter number 1 - 18(18 to quit): 18
Goodbye...

Enter number 1 - 18(18 to quit): 6
Enter a job number: 5
Enter assembly ID: 3
Enter process ID: 3
Enter start date of job: 11/11/2019
Enter number 1 - 18(18 to quit): 6
Enter a job number: 7
Enter assembly ID: 4
Enter process ID: 4
Enter start date of job: 11/12/2019
Enter number 1 - 18(18 to quit): 6
Enter a job number: 8
Enter assembly ID: 4
Enter process ID: 4
Enter start date of job: 11/13/2019
Enter number 1 - 18(18 to quit): 6
Enter a job number: 9
Enter assembly ID: 5
Enter process ID: 5
Enter start date of job: 11/14/2019
Enter number 1 - 18(18 to quit): 6
Enter a job number: 10
Enter assembly ID: 5
Enter process ID: 5
Enter start date of job: 11/15/2019
Enter number 1 - 18(18 to quit): 18
Goodbye...

```

Type here to search

Query 1 X dbo.Job X

Create New Row Save Refresh Discard Delete Row

Search to filter items...

JobNumber	AssemblyID	ProcessID	StartDate	CompletionDate
1	1	1	2019-11-18T00:00:00.0...	
2	1	1	2019-11-19T00:00:00.0...	
3	2	2	2019-11-20T00:00:00.0...	
4	2	2	2019-11-21T00:00:00.0...	
5	3	3	2019-11-22T00:00:00.0...	
6	3	3	2019-11-11T00:00:00.0...	
7	4	4	2019-11-12T00:00:00.0...	
8	4	4	2019-11-13T00:00:00.0...	
9	5	5	2019-11-14T00:00:00.0...	
10	5	5	2019-11-15T00:00:00.0...	

Reorder

eclipse-workspace - midterm/src/sourcejava - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Problems Javadoc Declaration Console

```
<terminated> source [Java Application] C:\Program Files\Java\jdk-13\bin\javaw.exe (Nov 19, 2019, 5:15:27 PM)
Enter number 1 - 18(18 to quit): 7
Enter the job number: 1
Enter the completion date: 11/20/2019
Enter the job type. Cut-Job, Paint-Job, Fit-Job: cut-job
Enter machine used: test
Enter how long machine was used: 12:00
Enter materials used: test
Enter labor time: 5.5
Enter number 1 - 18(18 to quit): 7
Enter the job number: 2
Enter the completion date: 11/21/2019
Enter the job type. Cut-Job, Paint-Job, Fit-Job: paint-job
Enter color: blue
Enter volume: high
Enter labor time: 6.6
Enter number 1 - 18(18 to quit): 7
Enter the job number: 3
Enter the completion date: 11/22/2019
Enter the job type. Cut-Job, Paint-Job, Fit-Job: fit-job
Enter labor time: 2.2
Enter number 1 - 18(18 to quit): 7
Enter the job number: 4
Enter the completion date: 11/23/2019
Enter the job type. Cut-Job, Paint-Job, Fit-Job: cut-job
Enter machine used: test
Enter how long machine was used: 13:00
Enter materials used: test
Enter labor time: 2.2
Enter number 1 - 18(18 to quit): 7
Enter the job number: 5
Enter the completion date: 11/24/2019
Enter the job type. Cut-Job, Paint-Job, Fit-Job: paint-job
Enter color: red
Enter volume: low
Enter labor time: 7.7
Enter number 1 - 18(18 to quit): 18
Goodbye...
```

```
<terminated> source [Java Application] C:\Program Files\Java\jdk-13\bin\javaw.exe
Enter number 1 - 18(18 to quit): 7
Enter the job number: 6
Enter the completion date: 11/25/2019
Enter the job type. Cut-Job, Paint-Job, Fit-Job: fit-job
Enter labor time: 8.8
Enter number 1 - 18(18 to quit): 7
Enter the job number: 7
Enter the completion date: 11/26/2019
Enter the job type. Cut-Job, Paint-Job, Fit-Job: fit-job
Enter labor time: 3.4
Enter number 1 - 18(18 to quit): 7
Enter the job number: 8
Enter the completion date: 11/18/2019
Enter the job type. Cut-Job, Paint-Job, Fit-Job: paint-job
Enter color: yellow
Enter volume: high
Enter labor time: 7.8
Enter number 1 - 18(18 to quit): 7
Enter the job number: 9
Enter the completion date: 11/19/2019
Enter the job type. Cut-Job, Paint-Job, Fit-Job: fit-job
Enter labor time: 4.5
Enter number 1 - 18(18 to quit): 7
Enter the job number: 10
Enter the completion date: 11/20/2019
Enter the job type. Cut-Job, Paint-Job, Fit-Job: fit-job
Enter labor time: 2.3
Enter number 1 - 18(18 to quit): 18
Goodbye...
```

Windows Taskbar: Type here to search, Job-Shop-Accounting-T, Dashboard, Mail - Mansell, Nigel C. - Outlook, 5:19 PM 11/19/2019

Browser: https://portal.azure.com/#@ou.edu/resource/subscriptions/7936f360-635b-4256-b3c7-6c8e2a569ba9/resourceGroups/cs4513-f19/providers/Microsoft.Sql/servers/...

JobNumber	AssemblyID	ProcessID	StartDate	CompletionDate
1	1	1	2019-11-18 00:00:00.000	2019-11-20 00:00:00.000
2	1	1	2019-11-18 00:00:00.000	2019-11-21 00:00:00.000
3	2	2	2019-11-20 00:00:00.000	2019-11-22 00:00:00.000
4	2	2	2019-11-21 00:00:00.000	2019-11-23 00:00:00.000
5	3	3	2019-11-22 00:00:00.000	2019-11-24 00:00:00.000
6	3	3	2019-11-23 00:00:00.000	2019-11-25 00:00:00.000
7	4	4	2019-11-24 00:00:00.000	2019-11-26 00:00:00.000
8	4	4	2019-11-25 00:00:00.000	2019-11-28 00:00:00.000
9	5	5	2019-11-26 00:00:00.000	2019-11-27 00:00:00.000
10	5	5	2019-11-27 00:00:00.000	2019-11-29 00:00:00.000

Search to filter items...

Machine	MachineTime	Material	Labor	JobNumber
test	12:00:00	test	5.5	1
test	13:00:00	test	2.2	4

dbo.Job X dbo.CutJob X **dbo.FitJob X** dbo.PaintJob X

Create New Row Save Refresh Discard Delete Row

Search to filter items...

Color	Volume	Labor	JobNumber
blue	high	6.6	2
red	low	7.7	5
yellow	high	7.8	8

Search to filter items...

Labor	JobNumber
2.2	3
8.8	6
3.4	7
4.5	9
2.3	10

Job-Shop-Accounting-C Dashboard Mail - Mansell, Nigel C. - O...

https://portal.azure.com/#@ou.edu/resource/subscriptions/7936f360-635b-4256-b3c7-6c8e2a569ba9/resourceGroups/cs4513-f19/providers/Microsoft.Sql/ser...

eclipse-workspace - midterm/src/source.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

source [Java Application] C:\Program Files\Java\jdk-13\bin\javaw.exe (Nov 19, 2019, 5:27:27 PM)

```

Enter sup cost: 10
Enter number 1 - 18(18 to quit): 8
Enter transaction ID: 2
Enter account number: 2
Enter sup cost: 11
Enter number 1 - 18(18 to quit): 8
Enter transaction ID: 3
Enter account number: 3
Enter sup cost: 12
Enter number 1 - 18(18 to quit): 8
Enter transaction ID: 4
Enter account number: 4
Enter sup cost: 13
Enter number 1 - 18(18 to quit): 8
Enter transaction ID: 5
Enter account number: 5
Enter sup cost: 14
Enter number 1 - 18(18 to quit): 8
Enter transaction ID: 6
Enter account number: 1
Enter sup cost: 11
Enter number 1 - 18(18 to quit): 8
Enter transaction ID: 7
Enter account number: 2
Enter sup cost: 12
Enter number 1 - 18(18 to quit): 8
Enter transaction ID: 8
Enter account number: 3
Enter sup cost: 13
Enter number 1 - 18(18 to quit): 8
Enter transaction ID: 9
Enter account number: 4
Enter sup cost: 14
Enter number 1 - 18(18 to quit): 8
Enter transaction ID: 10
Enter account number: 5
Enter sup cost: 15
Enter number 1 - 18(18 to quit):

```

dbo.AssemblyAccount x dbo.DepartmentAccount x dbo.ProcessAccount x

Create New Row Save Refresh Discard Delete Row

transactionNumber	SupCost
1	10.0000
2	11.0000
3	12.0000
4	13.0000
5	14.0000
6	11.0000
7	12.0000
8	13.0000
9	14.0000
10	15.0000

Search to filter items...

Costs	AccountNumber	AssemblyID
41.0000	1	1
53.0000	2	1
15.0000	6	2
4.0000	7	2

Search to filter items...

Costs	AccountNumber	DepartmentNumber
36.0000	3	1
39.0000	4	1
6.0000	8	2
7.0000	9	2

Search to filter items...

Costs	AccountNumber	ProcessID
34.0000	5	1
3.0000	10	2

Create New Row Save Refresh Discard Delete Row

The image displays two screenshots of the Eclipse IDE's console window, showing the execution of a Java application. The application prompts the user to enter a number (1-18) and an assembly ID, then calculates and displays costs.

First Screenshot (Nov 19, 2019, 5:34:56 PM):

```
source [Java Application] C:\Program Files\Java\jdk-13\bin\javaw.exe (Nov 19, 2019, 5:34:56 PM)
Enter number 1 - 18(18 to quit): 9
Enter an assembly ID: 1
Costs
-----
41.0
Costs
-----
53.0
Enter number 1 - 18(18 to quit): 9
Enter an assembly ID: 2
Costs
-----
15.0
Costs
-----
4.0
Enter number 1 - 18(18 to quit): 9
Enter an assembly ID: 3
Enter number 1 - 18(18 to quit):
```

Second Screenshot (Nov 19, 2019, 5:37:15 PM):

```
<terminated> source [Java Application] C:\Program Files\Java\jdk-13\bin\javaw.exe (Nov 19, 2019, 5:37:15 PM)
Enter number 1 - 18(18 to quit): 10
Enter a completion date: 11/18/2019
7.8
Enter number 1 - 18(18 to quit): 10
Enter a completion date: 11/22/2019
2.2
Enter number 1 - 18(18 to quit): 10
Enter a completion date: 11/15/2019
0.0
Enter number 1 - 18(18 to quit): 18
Goodbye...
```


The image displays two screenshots of the Eclipse IDE console window, showing the execution of a Java application. The application is titled "source [Java Application] C:\Program Files\Java\jdk-13\bin\javaw.exe (Nov 19, 2019, 5:38:40 PM)".

Top Screenshot: The console output shows a loop for department numbers. The user enters "11" for "Enter number 1 - 18(18 to quit):". The program prints "Process IDs AND Department numbers" and then "Process ID: 1| Department Number: 1". The user enters "2" for "Enter Assembly-id: ". The program prints "Process ID: 2| Department Number: 1". The user enters "3" for "Enter Assembly-id: ". The program prints "Process ID: 3| Department Number: 2". The user enters "18" for "Enter number 1 - 18(18 to quit):". The program prints "Goodbye..." and terminates.

Bottom Screenshot: The console output shows a loop for names. The user enters "13" for "Enter number 1 - 18(18 to quit):". The program prints "Names-----" and then "nigel1". The user enters "1" for "Enter lower bound: ". The program prints "Names-----" and then "nigel11". The user enters "5" for "Enter upper bound: ". The program prints "Names-----" and then "nigel12". The user enters "13" for "Enter number 1 - 18(18 to quit):". The program prints "Names-----" and then "nigel1". The user enters "1" for "Enter lower bound: ". The program prints "Names-----" and then "nigel11". The user enters "7" for "Enter upper bound: ". The program prints "Names-----" and then "nigel12". The user enters "18" for "Enter number 1 - 18(18 to quit):". The program prints "Goodbye..." and terminates.

The image shows two screenshots of the Eclipse IDE interface. The top screenshot shows the console output of a Java application and a database table view. The bottom screenshot shows the same application after more input, with the database table view updated.

Top Screenshot:

Console Output:

```
source [Java Application] C:\Program Files\Java\jdk-13\bin\javaw.exe (Nov 19, 2019, 5:40:46 PM)
Enter number 1 - 18(18 to quit): 14
Enter lower bounds: 1
Enter upper bounds: 5
Enter number 1 - 18(18 to quit):
```

Database Table View (dbo.CutJob):

Machine	MachineTime	Material	Labor	JobNumber
No results				

Bottom Screenshot:

Console Output:

```
source [Java Application] C:\Program Files\Java\jdk-13\bin\javaw.exe (Nov 19, 2019, 5:44:30 PM)
Enter number 1 - 18(18 to quit): 15
Enter a job number: 2
Enter paint color: orange
Enter number 1 - 18(18 to quit): 15
Enter a job number: 5
Enter paint color: pink
Enter number 1 - 18(18 to quit): 15
Enter a job number: 8
Enter paint color: purple
Enter number 1 - 18(18 to quit):
```

Database Table View (dbo.PaintJob):

Color	Volume	Labor	JobNumber
orange	high	6.6	2
pink	low	7.7	5
purple	high	7.8	8

TASK 7

localhost/query13_form2.html	localhost/query13.php
Category Range 1: <input type="text" value="1"/>	nigel nigel1 nigel2 nigel3 nigel4
Customer Range 2: <input type="text" value="12"/>	
<input type="button" value="Submit"/>	

localhost/query1_form1.html	localhost/query13.php
Customer name: <input type="text" value="nigel6"/>	nigel nigel1 nigel2 nigel3 nigel4 nigel6
Customer Address: <input type="text" value="something"/>	
Catagory: <input type="text" value="6"/>	
<input type="button" value="Submit"/>	