

## Part (B). Exercise 2.

### 1. Function check\_login

```
# Check that the user's information exists in the database.  
# The screenshot below is an employee, not manager
```

The screenshot shows a web-based application titled "DEVICE MANAGER". At the top, a green bar displays the message "You have been logged in successfully". Below this, the text "Welcome, Tam Janson" is shown. A table provides employee details: Employee ID (3081), Home Address (10 Jenna Circle), Date Of Birth (1988-05-02), and Departments (empty). Below the table are two links: "Show ALL History" and "Show all used history of my devices". At the bottom, a section titled "My Used Devices" is visible.

### 2. Function is\_manager

```
# Get the department if the employee is a manager.  
# Curry Jakov is manager, with department Services.
```

The screenshot shows a web-based application titled "DEVICE MANAGER". At the top, a green bar displays the message "You have been logged in successfully". Below this, the text "Welcome, Curry Jakov" is shown. A table provides employee details: Employee ID (84), Home Address (08 Shopko Terrace), Date Of Birth (1980-06-08), and Departments (Accounting Engineering). Below the table is the text "Manager of: Services".

### 3. Function get\_devices\_used\_by

```
# Get a list of all the devices used by the employee.
```

Welcome, Ileana Wonfar

Employee ID	12247
Home Address	96 Vermont Junction
Date Of Birth	2000-01-27
Departments	Accounting Support

Show ALL History

Show all used history of my devices

#### My Used Devices

Device ID	Model Number	Manufacturer
1	9854941272	Zoomzone
23	3458131566	Devcast

#### 4. Function employee\_works\_in

```
# Get the departments that the employee works in  
# Shown the department of given employee at Homepage, has been  
included in all previous screenshot.
```

#### 5. Function get\_issued\_devices\_for\_user

```
# Get all devices issued to the user.  
# Click my devices, then can easily see!  
(the screenshot below is empid = 12247 result)
```

The screenshot shows a purple header bar with the text "DEVICE MANAGER". Below it, a white section titled "My Issued Devices". A table displays one device entry:

Device ID	Purchase Date	Manufacturer	Model Number
25	2018-04-17	Izio	5886976558

#### 6. Function get\_all\_models

```
# Get all models available.  
# Click models, then can easily see!  
(the screenshot below is part of empid = 12247 results)
```

# DEVICE MANAGER

my devices models

## Models

Manufacturer	Description	Model Number	Weight(g)
Twinte	Customizable interactive project	8165541412	68.0
Devpulse	De-engineered full-range open system	4030141218	44.0
Gabcube	Centralized discrete middleware	1666158895	40.0
Feednation	Expanded didactic instruction set	2050267274	31.0
Zoombox	Profit-focused global extranet	8860068207	57.0
Shufflebeat	Robust clear-thinking functionalities	0288809602	23.0
Voonyx	Vision-oriented bandwidth-monitored instruction set	5275001460	82.0
Tagpad	Fundamental human-resource migration	3772470904	89.0
Wordpedia	Business-focused tertiary orchestration	0211912271	17.0

## 7. Function `get_device_repairs`

```
# Get all repairs made to a device.
```

Device: Zoomzone-9854941272

Device ID	1
Serial Number	2721153188
Purchase Date	2017-12-19
Purchase Cost	\$1,009.10
Manufacturer	Zoomzone
Model Number	9854941272
Issued To	84

Model information

### Repairs

Repair ID	Fault Report	Start Date	End Date	Cost
10	Superman IV: The Quest for Peace	2018-07-15	2018-09-21	\$669.71
33	SpookyScarySkeletons	2018-07-30	2018-09-21	\$946.20

## 8. Function get\_device\_information

```
# Get related device information in detail.  
# Click any device and see the result
```

## DEVICE MANAGER

Device: Zoomzone-9854941272

Device ID	1
Serial Number	2721153188
Purchase Date	2017-12-19
Purchase Cost	\$1,009.10
Manufacturer	Zoomzone
Model Number	9854941272
Issued To	84

[Model information](#)

## 9. Function get\_device\_model

```
# Get model information about a device.  
# Click the 'model information' for device below
```

## DEVICE MANAGER

Model: Zoomzone-9854941272

Manufacturer	Zoomzone
Model Number	9854941272
Description	Reverse-engineered systemic monitoring
Weight	50.0

## 10. Function get\_repair\_details

```
# Get information about a repair in detail, including service  
information.
```

# DEVICE MANAGER

devices models add model manage department issue devices

## Repair 10

Repair ID	10
Fault Report	Superman IV: The Quest for Peace
Start Date	2018-07-15
End Date	2018-09-21
Cost	\$669.71
Service ABN	7
Service Name	Jabbersphere
Service Email	tubank6@instagram.com
Done to Device	1

## 11. Function get\_department\_models

```
# Return all models assigned to a department.
```

# DEVICE MANAGER

devices models add model manage department issue devices

## Models for: Services

Manufacturer	Model Number	Max Number
Voonyx	5275001460	264
Topicware	5798231046	197
Devcast	3458131566	32
Oodoo	1001159551	177

## 12. Function get\_employee\_department\_model\_device

```
# Get Number of Devices of the chosen Model owned by Employee in Department
```

# Employee Counts

**Model: 5798231046**

**Manufacturer: Topicware**

Employee ID	Name	Count of Devices
39804	Archaimbaud Poyntz	1
81716	Alane Della	1

## 13. Function get\_model\_device\_assigned

```
# Get a list of devices for a certain model and show True/False  
showing if the employee has it issued.
```

### DEVICE MANAGER

Employee ID: 39804

**Department: Services**

**Model: 5798231046**

**Manufacturer: Topicware**

Device ID	Issued (?)	Revoke (Click to Revoke)
8	True	●
15	False	●

## 14. Function get\_unassigned\_devices\_for\_model

```
# Get a list of devices for this model and manufacturer that have  
not been assigned (shown in the drop-down list of Device ID).
```

# DEVICE MANAGER

## Issue Device

Employee ID:	Obadiah Coppard
Manufacturer	Zoomzone
Model Number	9854941272
Device ID	<input type="button" value="1"/> <input type="button" value="1"/> <input type="button" value="34"/>

```
15. Function get_employees_in_department  
# Return all the employees' IDs and names in a given department  
(shown in the drop-down list of Employee ID).
```

# DEVICE MANAGER

## Issue Device

Employee ID:	Julia Norville
Manufacturer	Oodoo
Model Number	3458131566
Device ID	<input type="button" value="1"/>

```
16. Function issue_device_to_employee  
# Issue the device to the chosen employee.
```

## DEVICE MANAGER

my devices models add model manage department issue device logout

Device successfully issued

### Issue Device

Employee ID:	Obadias Coppard
Manufacturer	Zoomzone
Model Number	9854941272
Device ID	1

**Issue Device**

17. Function `revoke_device_from_employee`  
# Revoke the device from the employee.  
# Screenshot in Q13  
# Before revocation:

## DEVICE MANAGER

my devices models add model manage department issue device logout

Employee ID: 37844

Department: Human Resources

Model: 8429506128

Manufacturer: Chatterbridge

Device ID	Issued (?)	Revoke (Click to Revoke)
37	True	●

# After revocation:

## DEVICE MANAGER

my devices models add model manage department issue device logout

Device Revoked

Employee ID: 37844

Department: Human Resources

Model: 8429506128

Manufacturer: Chatterbridge

Device ID	Issued (?)	Revoke (Click to Revoke)
37	False	●

# If employee not assigned to device (or device already revoked):

The screenshot shows a web-based application titled "DEVICE MANAGER". At the top, there is a navigation bar with links: "my devices", "models", "add model", "manage department", "issue device", and "logout". Below the navigation bar, a red header bar displays the message "Employee not assigned to device". The main content area shows the employee details for "Employee ID: 12247": "Department: Human Resources", "Model: 5886976558", and "Manufacturer: Izio". A table lists two devices assigned to this employee:

Device ID	Issued (?)	Revoke (Click to Revoke)
17	False	
25	False	

## Part (C). Exercise 3 Extensions.

### Extension 1. Used History

Link the 'Show All History' screen to the home page(index.html) so as to show all used history of devices issued to this employee.

For sql, return all users of each device, which is issued to this employee.

Input: the given employee id, *employee\_id*

```

SELECT deviceID, empid, name
  FROM Device JOIN DeviceUsedBy USING (deviceID)
    JOIN Employee      USING (empID)
 WHERE deviceID IN (
    SELECT deviceID
      FROM Device JOIN Deviceusedby using
(deviceID)
     WHERE issuedTo = employee_id
 );
  
```

In terms of employees who have issued devices, add a section 'Show ALL History' in the home page 'index.html' and add a button called '[Show all used history of my devices](#)' in this section.

# DEVICE MANAGER

You have been logged in successfully

Welcome, Amelia Chesser

Employee ID	8090
Home Address	1 Bunker Hill Pass
Date Of Birth	1999-04-01
Departments	Accounting Sales

Manager of: Sales

Show ALL History

[Show all used history of my devices](#)

Click the button ‘[Show all used history of my devices](#)’ and go to the ‘Show All History’ page (`used_history.html`).

## Show All History

Device ID	Employee ID	Employee Name
3	27933	Kore Andersen

Then, click each line of the table, go to the detailed information of clicked device.

# DEVICE MANAGER

Device: Cogibox-6700815444

Device ID	3
Serial Number	7984964890
Purchase Date	2017-09-13
Purchase Cost	\$667.32
Manufacturer	Cogibox
Model Number	6700815444
Issued To	8090

[Model information](#)

## Repairs

Repair ID	Fault Report	Start Date	End Date	Cost

If no one used the device, the interface ‘Show All History’ would show nothing.

(Note: compared with original data, we removed all users of his devices)

## DEVICE MANAGER

[my devices](#) [models](#) [add model](#) [manage department](#) [issue device](#) [logout](#)

You have been logged in successfully

Welcome, Kean Worham

Employee ID	22214
Home Address	95919 Commercial Place
Date Of Birth	1984-02-29
Departments	Product Management

Manager of: Training

[Show ALL History](#)

[Show all used history of my devices](#)

## DEVICE MANAGER

[my devices](#) [models](#) [add model](#) [manage department](#) [issue device](#) [logout](#)

Show All History

Device ID

Employee ID

Employee Name

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If the employee does not have issued devices, the section ‘Show ALL History’ won’t show on the home page.

(Note: compared with original data, we revoked the issued device from this employee)

**DEVICE MANAGER**

You have been logged in successfully

Welcome, Ileana Wonfar

Employee ID	12247
Home Address	96 Vermont Junction
Date Of Birth	2000-01-27
Departments	Accounting Support

#### My Used Devices

Device ID	Model Number	Manufacturer
23	3458131566	Devcast
1	9854941272	Zoomzone

For sql, the input can also be an employee's name, such as 'Nara Melton'.

Return all users of each device, which is issued to 'Nara Melton'.

Input: '[Nara Melton](#)'.

```
SELECT deviceID, empid, name
  FROM Device JOIN DeviceUsedBy USING (deviceID)
    JOIN Employee USING (empID)
 WHERE deviceID IN (
  SELECT deviceID
    FROM DeviceUsedBy JOIN Employee
      USING (empID)
 WHERE name = 'Nara Melton'
 );
```

For sql, a query can return a list of devices that is nobody used.

Input: no input.

```
SELECT *
  FROM (
  ( SELECT DeviceID
    FROM Device )
 EXCEPT
  ( SELECT DeviceID
    FROM Device JOIN DeviceUsedBy USING (DeviceID) )
 ) AS s
 ORDER BY s.DeviceID;
```

#### Extension 2. Add model - only for department managers

The managers can add a new model for the department they managed. Input 'manufacturer', 'model number', and 'description' are NOT NULL and have word

limits according to the the max length of VARCHAR in the table given. ‘Type’ is NOT NULL as well and up to 2 decimal place.

Not input enough information, a message ‘Please fill out this field.’ would appear.

DEVICE MANAGER

my devices models add model manage department issue device logout

## Add Model

Department: Services

Manufacturer: manufacturer(required)

Model Number: Please fill out this field. required

Description: description

Weight: (upto 2 decimal place):

Max Number: maxNumber(required)

Add Model

If the manufacturer and model number of the new model are the same as manufacturer and model number of a model already stored in the database. The system would prompt ‘Manufacturer and model number have already existed.’ and refuse add action.

For sql, check if the model already existed.

Input: *manu\_facturer, model\_Number*

```
SELECT *
FROM model
WHERE modelNumber = model_Number
AND manufacturer = manu_facturer;
```

# DEVICE MANAGER

my devices models add model manage department issue device logout

Manufacturer and model number have already existed.

## Add Model

Department: Services

Manufacturer: Wordpedia

Model Number: 0211912271

Description: some description

Weight: 23.23

Max Number: 30

Add Model

For sql, add a new model for the department the manager managed if the model was not stored in the DBMS.

Input: *manu\_facturer, model\_Number, d\_escription, w\_eight* entered  
*d\_epartment, max\_Number*

If description is none,

```
INSERT INTO Model(manufacturer, modelNumber, description, weight)
VALUES(manu_facturer, model_Number, NULL, w_eight);
```

```
INSERT INTO ModelAllocations(manufacturer, modelNumber, department,
maxNumber) VALUES(manu_facturer, model_Number, d_epartment, max_Number);
```

# DEVICE MANAGER

my devices models add model manage department issue device logout

Model successfully added

## Add Model

Department: Services

Manufacturer: Parker

Model Number: 023421321

Description: description

Weight: 23.33

Max Number: 30

Add Model

otherwise, description given

```
INSERT INTO Model(manufacturer, modelNumber, description, weight)
VALUES(manu_facturer, model_Number, d_escription, w_eight);
```

```
INSERT INTO ModelAllocations(manufacturer, modelNumber, department,
maxNumber) VALUES(manu_facturer, model_Number, d_epartment,
max_Number);
```

**DEVICE MANAGER**

my devices models add model manage department issue device logout

Model successfully added

## Add Model

Department: Services

Manufacturer:	Steve
Model Number:	0982321
Description:	some description
Weight:	23.33
Max Number:	30

**Add Model**

### Extension 3. Average Cost of the Chosen Model

By clicking each model (line) in ‘Models’ page, the user would go to a new page ‘Model Cost’, which shows the average cost spent on the chosen model per month per year (models in the old ‘Models’ page are not clickable).

**DEVICE MANAGER**

my devices models logout

## Models

Manufacturer	Description	Model Number	Weight(g)
Twinte	Customizable interactive project	8165541412	68.0
Devpulse	De-engineered full-range open system	4030141218	44.0
Gabcube	Centralized discrete middleware	1666158895	40.0
Feednation	Expanded didactic instruction set	2050267274	31.0
Zoombox	Profit-focused global extranet	8860068207	57.0
Shufflebeat	Robust clear-thinking functionalities	0288809602	23.0
Voonyx	Vision-oriented bandwidth-monitored instruction set	5275001460	82.0
Tagpad	Fundamental human-resource migration	3772470904	89.0
Wordpedia	Business-focused tertiary orchestration	0211912271	17.0

For sql, return the average cost spent on the chosen model per month per year.  
Input: *manu\_facturer, model\_Number* are from the given model

```

SELECT CAST(EXTRACT(year FROM purchaseDate) AS int)
      AS year,
      CAST(EXTRACT(month FROM purchaseDate) AS int)
      AS month,
      CAST(round(AVG(purchaseCost::numeric),2) AS money)
      AS average_cost
FROM Device
WHERE manufacturer = manu_facturer
  AND modelNumber = model_Number
GROUP BY year, month
ORDER BY year desc, month desc;

```

The screenshot shows a purple header bar with the text "DEVICE MANAGER". To the right of the header are three small white links: "my devices", "models", and "logout". Below the header, the main content area has a light gray background. At the top left of this area, the text "Model Cost" is displayed. Below it, the model number "Model: 2050267274" is shown in bold black font. Underneath the model number, the manufacturer name "Manufacturer: Feednation" is also in bold black font. Further down, there is a blue link labeled "Model information". Below this link is a table with three columns: "Year", "Month", and "Average Cost". The table contains two rows of data.

Year	Month	Average Cost
2018	4	\$746.33
2018	2	\$1,320.42

A new button 'Model information' in the 'Model Cost' page was added. After clicking, get more information for this model.

For sql, return more details of the chosen model.

*Input: manu\_facturer, model\_Number are from the given model*

```

SELECT manufacturer, modelNumber, description, weight
  FROM Model
 WHERE modelNumber = model_Number
   AND manufacturer = manu_factur

```

# DEVICE MANAGER

## Model Cost

**Model: 2050267274**

**Manufacturer: Feednation**

[Model information](#)

Year	Month
2018	4

Then the new model would show at the end of the ‘Models’ page and it also has a single ‘Model Information’ page.

## DEVICE MANAGER

[my devices](#)   [models](#)   [logout](#)

### Model: Feednation-2050267274

Manufacturer	Feednation
Model Number	2050267274
Description	Expanded didactic instruction set
Weight	31.0