Notification System
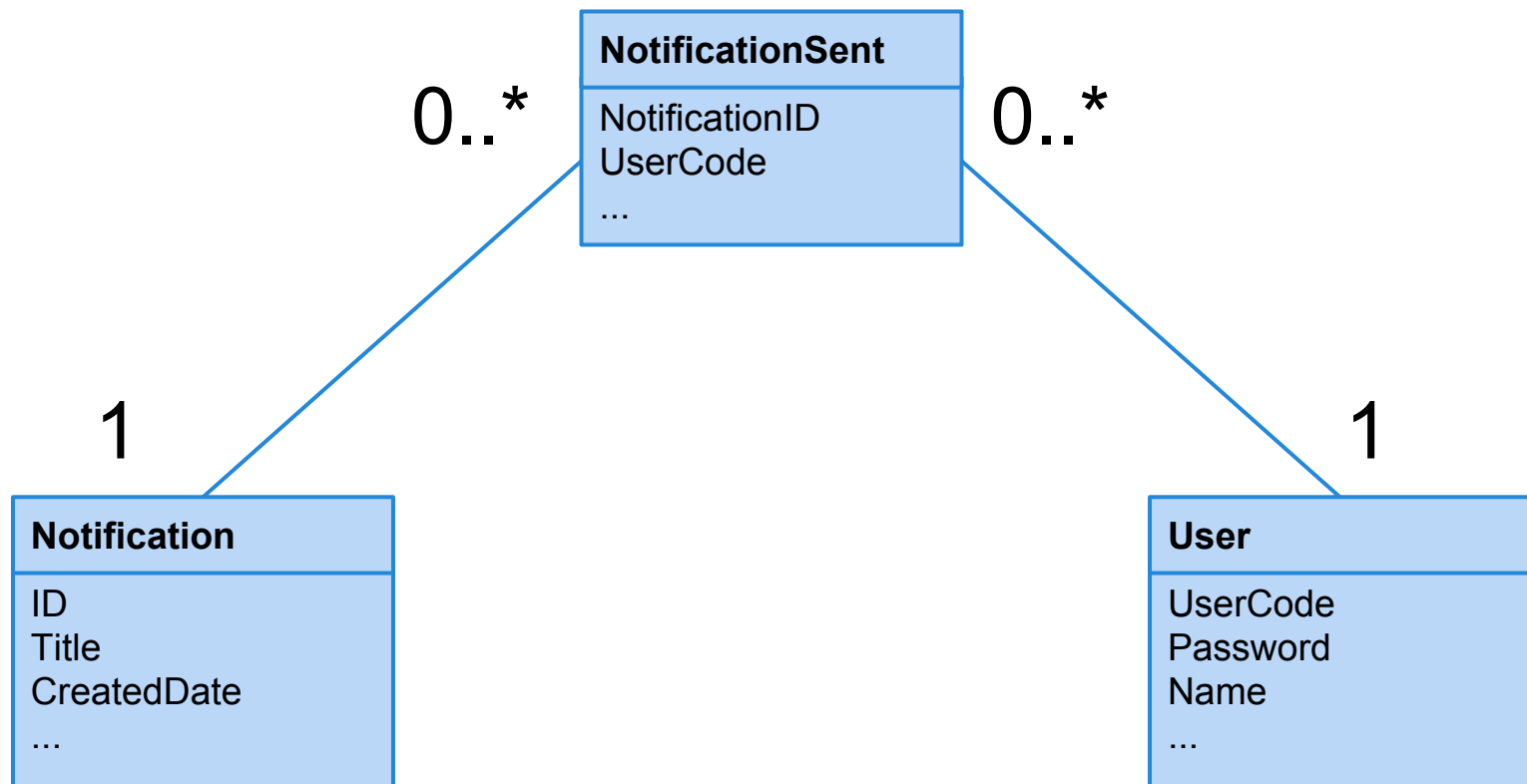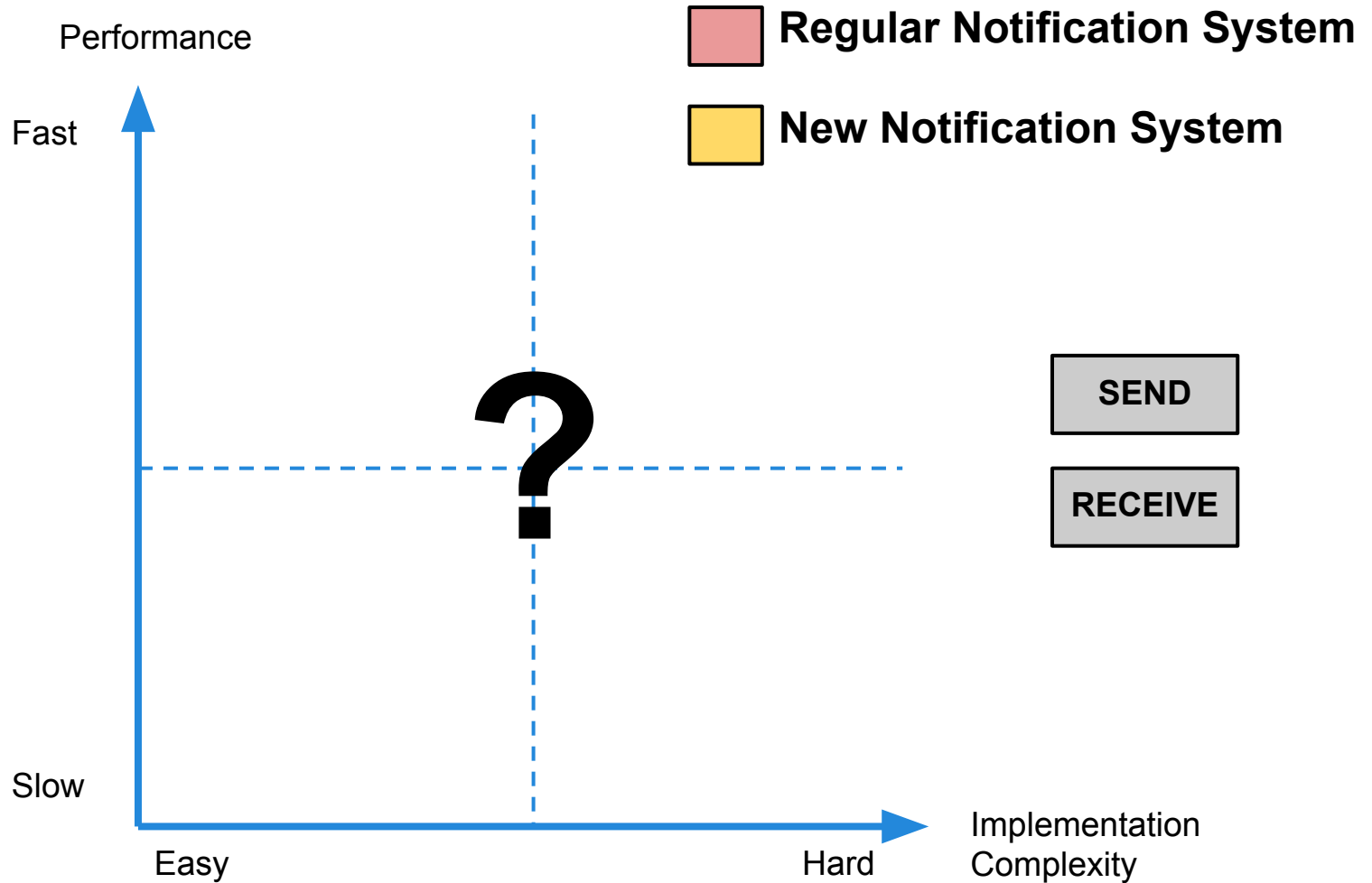
FPT University - Capstone Project
Insurance Card

"Regular" Notification System

NotificationSent

NotificationID
UserCode
...

0..*   0..*

1   1

Notification

ID
Title
CreatedDate
...

User

UserCode
Password
Name
...

Objectives

"Regular" Notification System

Send notifications:

```
INSERT INTO Notification VALUES(...)
```

Create notification

```
INSERT INTO NotificationSent VALUES(1, 1, NOW())
```

Sent notification to all staffs

```
INSERT INTO NotificationSent VALUES(1, 2, NOW())
```

```
INSERT INTO NotificationSent VALUES(1, 3, NOW())
```

n is number of staffs in system

```
INSERT INTO NotificationSent VALUES(1, n, NOW())
```
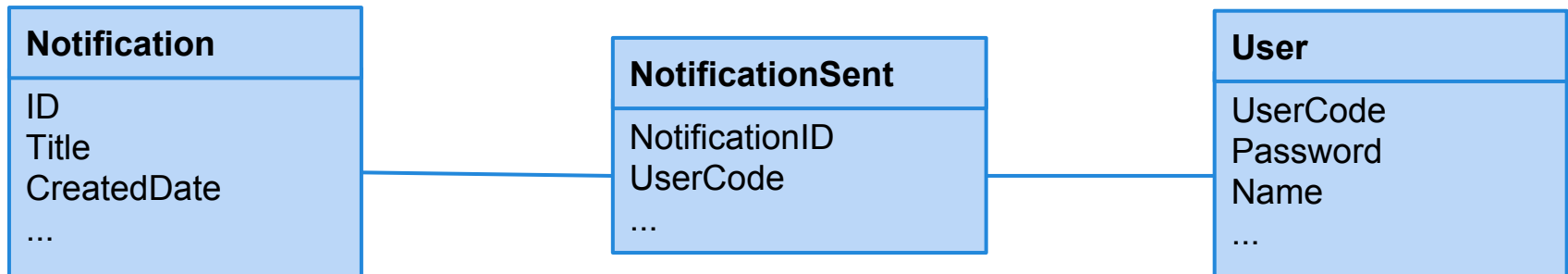
"Regular" Notification System

Receive notifications:

(Example, get all notifications from user with UserCode = NV0001)

```
SELECT n.*

FROM Notification n

JOIN NotificationSent ns

ON n.Id = ns.NotificationId

WHERE ns.UserCode = "NV0001"
```

(Have to join 2 tables)

Notification	NotificationSent	User
ID Title CreatedDate ...	NotificationID UserCode ...	UserCode Password Name ...

New Notification System

Notification

ID
Title
CreatedDate
Receiver
...

User

UserCode
Password
Name
...

Receiver: Regular Expression String

New Notification System

Examples:
- Send to all staffs:

```
^NV[0-9A-Z]{4,8}$
```

- Send to all staffs and customer **KH0005**:

```
^NV[0-9A-Z]{4,8}|KH0005$
```

- Send to staff **NV0001** and customer **KH0006**:

```
^NV0001|KH0006$
```

New Notification System

Send notifications:

Notification

ID
Title
CreatedDate
Receiver
...

```
INSERT INTO Notification VALUES(..., "^NV[0-9A-Z]{4,8}$")
```

Pre-defined expression to send to all staffs

New Notification System

Receive notifications:

(Example, get all notifications from user with UserCode = NV0001)

Notification
ID
Title
CreatedDate
Receiver
...

```
SELECT * FROM Notification WHERE "NV0001" REGEXP Receiver;
```

MySQL function to matches regular expression value

Implementation complexity impact

Performance impacts

■ **Regular Notification System**

■ **New Notification System**

SEND	>	SEND
1 query		Many queries

Performance impacts

Performance impacts

```
1  SELECT n.*
2  FROM mic_notification n
3  JOIN mic_notification_sent ns
4  ON n.id = ns.notification_id
5  WHERE ns.user_code = "NV0001"
6
```
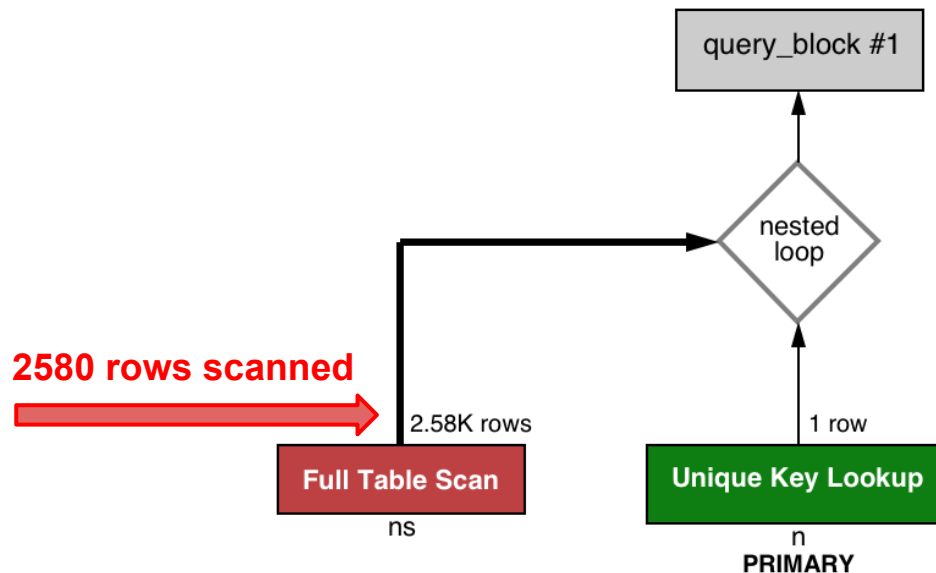
100%   1:8

Visual Explain   Display Info: Read + Eval cost   Overview: View Source:

2580 rows scanned

JOIN

Performance impacts

REGEXP

Performance impacts

Regular Notification System

New Notification System

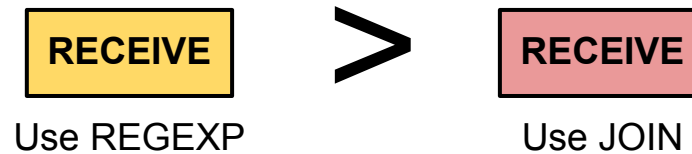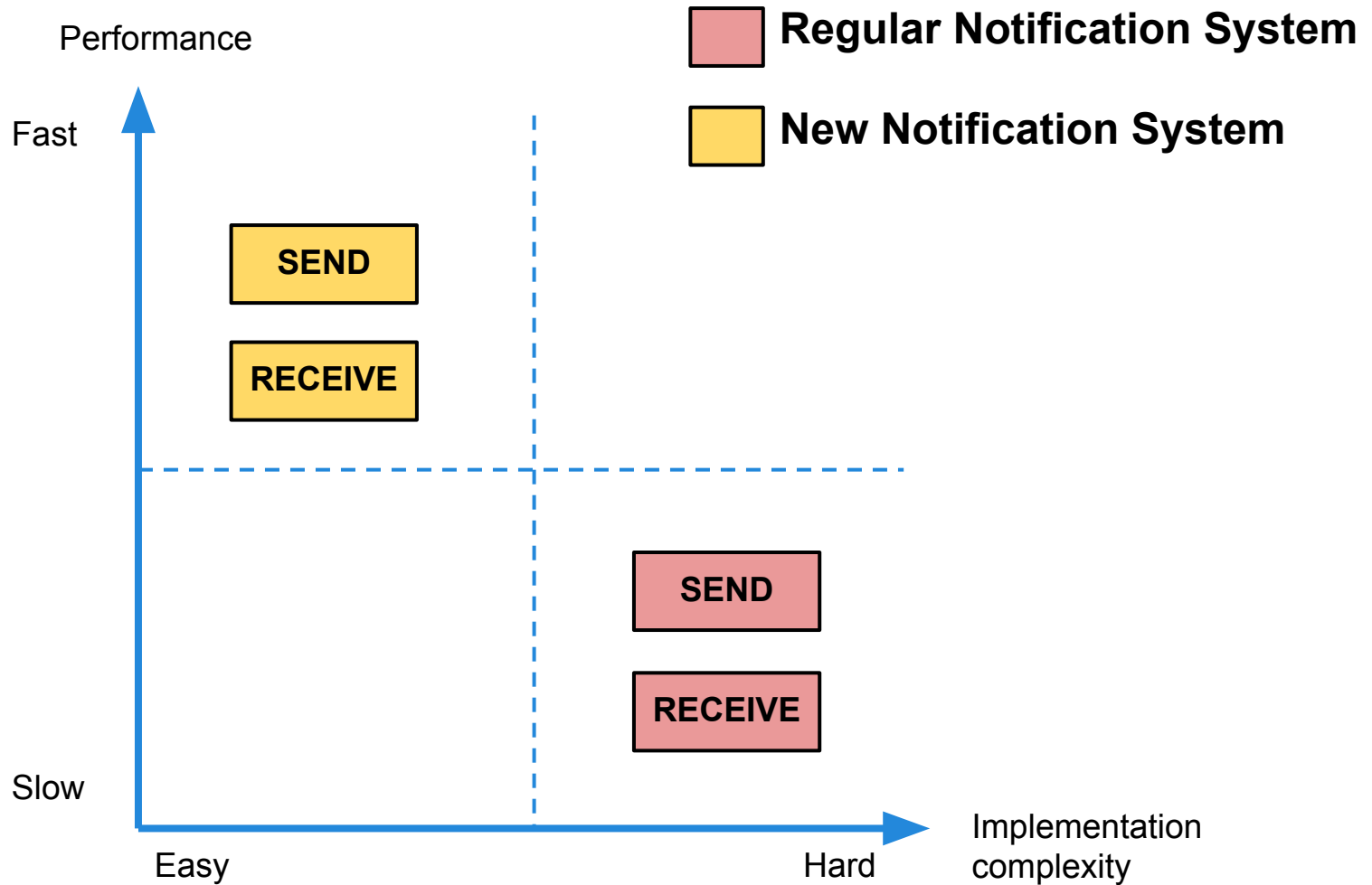| Query_ID	Duration	Query
1	0.00006800	SHOW WARNINGS
2	0.00109100	SELECT n.* FROM mic_notification n JOIN mic_notification_sent ns ON n.id = ns.notification_id...
3	0.00029100	SELECT * FROM mic_notification WHERE "NV0001" REGEXP Receiver LIMIT 0, 10000

JOIN = 1.091 ms

REGEXP = 0.291 ms

Performance impacts

	Regular Notification System
	New Notification System

RECEIVE > **RECEIVE**

Use REGEXP   Use JOIN

Comparison

Advantages / Disadvantages

	◻ Regular Notification System	◻ New Notification System
Pros	- 3NF standards - Easily back-tracking and analyzing notification data	- Better performance - Easily for implementation
Cons	- Complex in implementation - Poor performance	- Very hard to back-tracking data and analyzing notification data

Advantages / Disadvantages

	■ Regular Notification System	■ New Notification System
Pros	- ~~3NF standards~~ - ~~Easily back-tracking and analyzing notification data~~	- **Better performance** - **Easily for implementation**
Cons	- Complex in implementation - Poor performance	- ~~Very hard to back-tracking data and analyzing notification data~~

Conclusion

New notification system is the best choice
for **this project**

Notification
ID Title CreatedDate **Receiver** ...

User
UserCode Password Name ...