

The First Programming Assignment

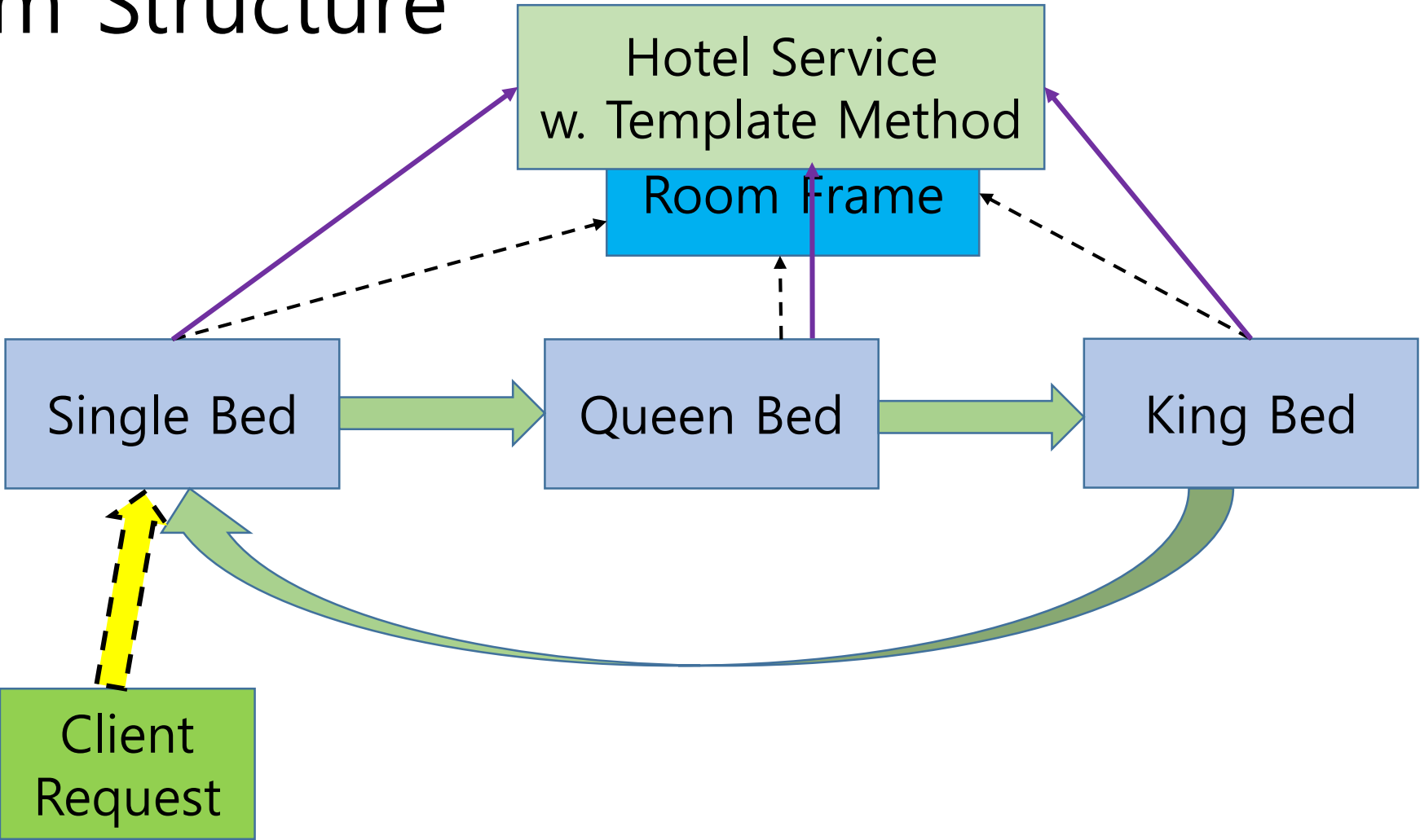
with
the **Chain of Responsibility** Pattern and
Template Method

You are given 2 weeks.
Due date will be posted.

Level 1: Use the chain of responsibility pattern.

- You are simulating a room booking program.
- Your system checks room availability.
- There are three types of room – single bedroom, queen bedroom, and king bedroom.
- The availability of each type of room is changed randomly.
- Your system checks availability of each room continually until a room request is satisfied.

Program Structure



Single Bed Object Creatd
Queen Bed Object Creatd
King Bed Object Creatd

One king bed room is requested.

Next room is being checked

Next room is being checked

Checking a king bed room : 1 time

king bed room is not available.

Next room is being checked

Next room is being checked

Next room is being checked

Checking a king bed room : 2 time

king bed room is not available.

Next room is being checked

Next room is being checked

Next room is being checked

Checking a king bed room : 3 time

king bed room is not available.

Next room is being checked

Next room is being checked

Next room is being checked

King → single → queen → king

This example program is not perfect.
However, follow the general sequence
of output. A slight change of output
may be allowed.

king bed room is **available now. One King Bed Reserved**

One single bed room is requested.

single bed room available. **One Single Bed Reserved**

One queen bed room is requested.

Next room is being checked

Queen bed room is **available now! One Queen Bed**

Reserved!

One king bed room is requested.

Next room is being checked

Next room is being checked

king bed room is **available now. One King Bed Reserved**

Single Bed Object Creatd
Queen Bed Object Creatd
King Bed Object Creatd

One king bed room is requested.

Next room is being checked

Next room is being checked

Checking a king bed room : 1 time

king bed room is **not available**.

Next room is being checked

Next room is being checked

Next room is being checked

king bed room is **available now. One King Bed Reserved**

One **single bed room is requested.**

single bed room **available. One Single Bed Reserved**

One queen bed room is requested.

Next room is being checked

Checking a **queen bed room : 1 time**

Queen bed room is **not available** now!

Next room is being checked

Next room is being checked

Next room is being checked

King → single → queen → king
2nd running

Checking a queen bed room : 2 time

Queen bed room is **not available** now!

Next room is being checked

Next room is being checked

Next room is being checked

Checking a queen bed room : 3 time

Queen bed room is not available now!

Next room is being checked

Next room is being checked

Next room is being checked

Queen bed room is available now! One Queen Bed Reserved!

One king bed room is requested.

Next room is being checked

Next room is being checked

king bed room is **available now. One King Bed Reserved**

Single Bed Object Creatd
Queen Bed Object Creatd
King Bed Object Creatd

One king bed room is requested.

Next room is being checked

Next room is being checked

Checking a king bed room : 1 time

king bed room is not available.

Next room is being checked

Next room is being checked

Next room is being checked

Checking a king bed room : 2 time

king bed room is not available.

Next room is being checked

Next room is being checked

Next room is being checked

king bed room is available now. One King Bed Reserved

One **single bed room is requested.**

single bed room **available. One Single Bed Reserved**

One queen bed room is requested.

Next room is being checked

Checking a queen bed room : 1 time

Queen bed room is not available now!

King → single → queen → king
3rd running

Queen bed room is available now! One Queen Bed Reserved!

One king bed room is requested.

Next room is being checked

Next room is being checked

Checking a king bed room : 1 time

king bed room is not available.

Next room is being checked

Next room is being checked

Next room is being checked

Checking a king bed room : 2 time

king bed room is not available.

Next room is being checked

Next room is being checked

Next room is being checked

king bed room is available now. One King Bed Reserved

Single Bed Object Creatd
Queen Bed Object Creatd
King Bed Object Creatd

One king bed room is requested.

Next room is being checked

Next room is being checked

Checking a king bed room : 1 time

king bed room is not available.

Next room is being checked

Next room is being checked

Next room is being checked

Checking a king bed room : 2 time

king bed room is not available.

Next room is being checked

Next room is being checked

Next room is being checked

King → single → queen → king
4th running

Checking a king bed room : 3 time

king bed room is not available.

Next room is being checked

Next room is being checked

Next room is being checked

king bed room is available now. One King Bed Reserved

One single bed room is requested.

single bed room available. One Single Bed Reserved

One queen bed room is requested.

Next room is being checked

Queen bed room is available now! One Queen Bed Reserved!

One king bed room is requested.

Next room is being checked

Next room is being checked

king bed room is available now. One King Bed Reserved

Single Bed Object Creatd
Queen Bed Object Creatd
King Bed Object Creatd

One king bed room is requested.

Next room is being checked

Next room is being checked

Checking a king bed room : 1 time

king bed room is not available.

Next room is being checked

Next room is being checked

Next room is being checked

king bed room is available now. One King Bed Reserved

One single bed room is requested.

single bed room available. One Single Bed Reserved

One queen bed room is requested.

Next room is being checked

Checking a queen bed room : 1 time

Queen bed room is not available now!

Next room is being checked

Next room is being checked

Next room is being checked

King → single → queen → king
5th running

Queen bed room is available now! One Queen Bed Reserved!

One king bed room is requested.

Next room is being checked

Next room is being checked

Checking a king bed room : 1 time

king bed room is not available.

Next room is being checked

Next room is being checked

Next room is being checked

Checking a king bed room : 2 time

king bed room is not available.

Next room is being checked

Next room is being checked

Next room is being checked

king bed room is available now. One King Bed Reserved

Level 2 – Chain of Responsibility and Template Method

For Template Method

- Define abstract HotelService class
- Define the following services for HotelService class:

Wifi Service

BathRoom Service

Dining Room Service

Parking Service

Provide various services for each room service – single, queen, and king bed rooms

Single Bed Object Creatd

Queen Bed Object Creatd

King Bed Object Creatd

One king bed room is requested.

Next room is being checked

Next room is being checked

Checking a king bed room : 1 time

king bed room is not available.

Next room is being checked

Next room is being checked

Next room is being checked

king bed room is available now. One King Bed Reserved

**** Room Service Provided ****

WIFI : 3 Giga per one night ready

4 face towel, 2 shower gown, 2 cosmetic available

2 free breakfast buffet service

parking spaces for two car available

One single bed room is requested.

Checking a single bed room : 1 time

single bed room is Not available.

Next room is being checked

Next room is being checked

Next room is being checked

Checking a single bed room : 2 time

single bed room is Not available.

Next room is being checked

Next room is being checked

Next room is being checked

single bed room available. One Single Bed Reserved

**** Room Service Provided ****

WIFI : 1 Giga per one night ready

2 face towel, 1 shower gown, 1 cosmetic available
breakfast buffet for \$10

parking spaces for one car available

One queen bed room is requested.

Next room is being checked

Checking a queen bed room : 1 time

Queen bed room is not available now!

Next room is being checked

Next room is being checked

Next room is being checked

Checking a queen bed room : 2 time

Queen bed room is not available now!

Next room is being checked

Next room is being checked

Next room is being checked

Queen bed room is available now! One Queen Bed Reserved!

**** Room Service Provided ****

WIFI : 2 Giga per one night ready

4 face towel, 2 shower gown, 1 cosmetic available

1 free breakfast buffet service

parking spaces for one car available

One king bed room is requested.

Next room is being checked

Next room is being checked

king bed room is available now. One King Bed Reserved

**** Room Service Provided ****

WIFI : 3 Giga per one night ready

4 face towel, 2 shower gown, 2 cosmetic available

2 free breakfast buffet service

parking spaces for two car available

Single Bed Object Creatd
Queen Bed Object Creatd
King Bed Object Creatd

One king bed room is requested.

Next room is being checked

Next room is being checked

king bed room is available now. One King Bed Reserved

** Room Service Provided **

WIFI : 3 Giga per one night ready

4 face towel, 2 shower gown, 2 cosmetic available

2 free breakfast buffet service

parking spaces for two car available

Time being elapsed for checking room
availability is expressed...

One single bed room is requested.

Checking a single bed room : **1 time**

.....Single bed room is not ready!

Next room is being checked

Next room is being checked

Next room is being checked

single bed room available. One Single Bed Reserved

** Room Service Provided **

WIFI : 1 Giga per one night ready

2 face towel, 1 shower gown, 1 cosmetic available

breakfast buffet for \$10

parking spaces for one car available

One queen bed room is requested.

Next room is being checked

Checking a queen bed room : 1 time

.....Queen bed room is not ready!

Next room is being checked

Next room is being checked

Next room is being checked

Queen bed room is available now! One Queen Bed Reserved!

** Room Service Provided **

WIFI : 2 Giga per one night ready

4 face towel, 2 shower gown, 1 cosmetic available

1 free breakfast buffet service

parking spaces for one car available

One king bed room is requested.

Next room is being checked

Next room is being checked

king bed room is available now. One King Bed Reserved

** Room Service Provided **

WIFI : 3 Giga per one night ready

4 face towel, 2 shower gown, 2 cosmetic available

2 free breakfast buffet service

parking spaces for two car available