



The Institute of Internet,  
Broadcasting and Communication

# IJCC 2021

## International Joint Conference on Convergence

<b>Conference Name</b>	The 6 <sup>th</sup> International Joint Conference on Convergence (IJCC 2021)
<b>Date</b>	February 18(Thur) ~ 20(Sum), 2021
<b>Venue</b>	Lotte Cinema World Tower, Seoul, Korea
<b>Hosted by</b>	The International Promotion Agency of Culture Technology (IPACT)
	The Institute of Internet, Broadcasting and Communication(IIBC), Knowledge Forest



Adapting **Design Thinking** to **Software Design** for solving ill-defined requirement problem on **Creative Thinking**

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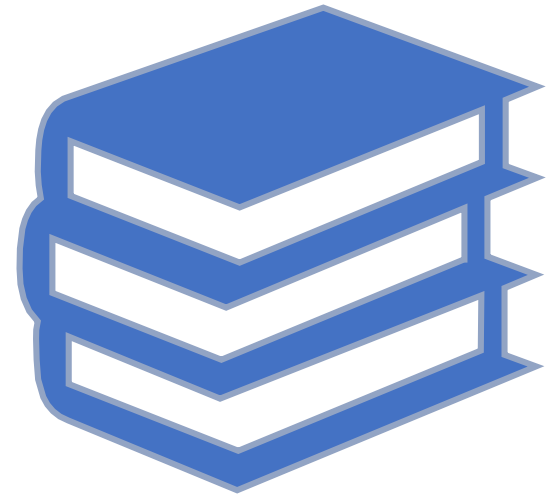
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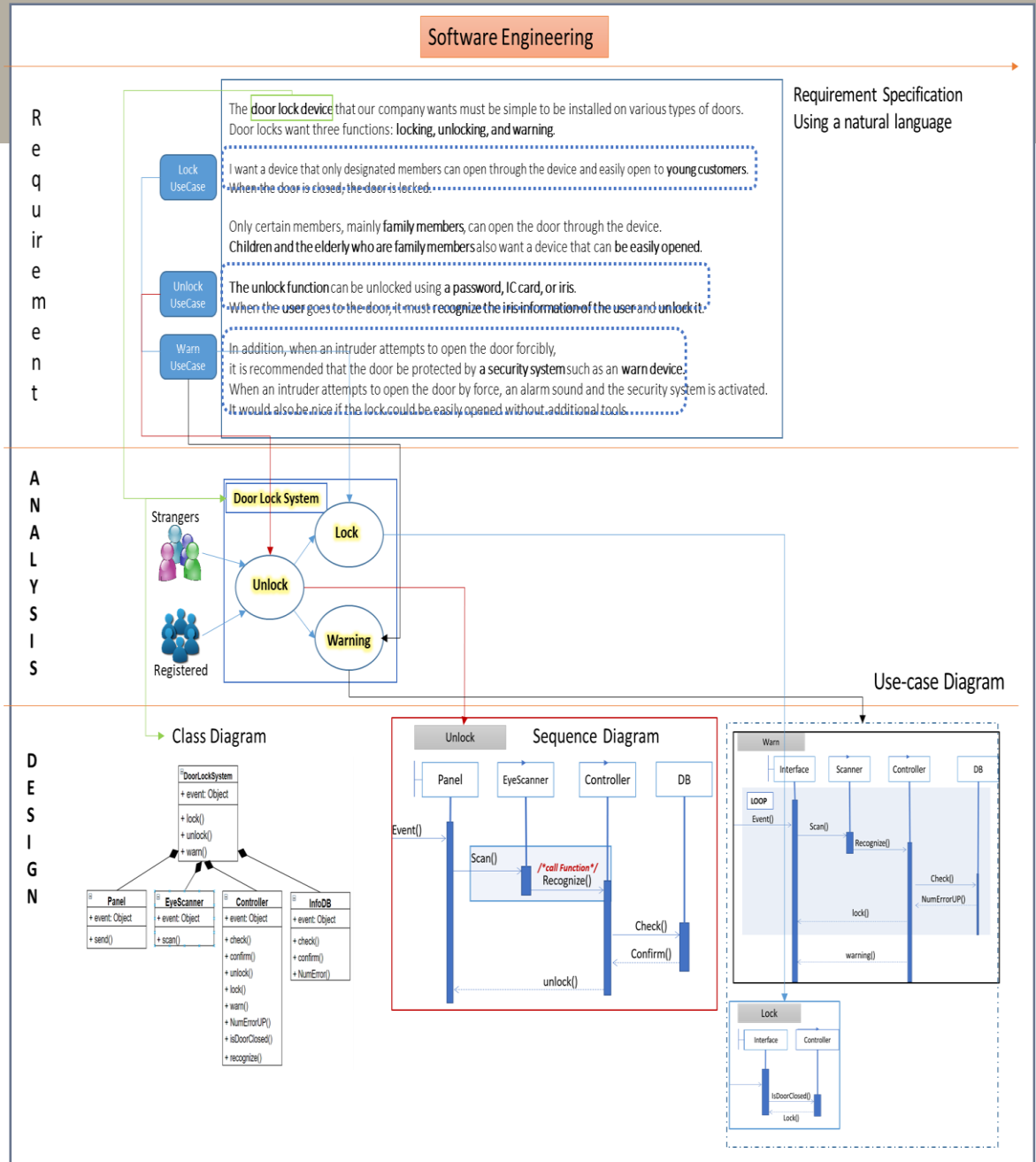
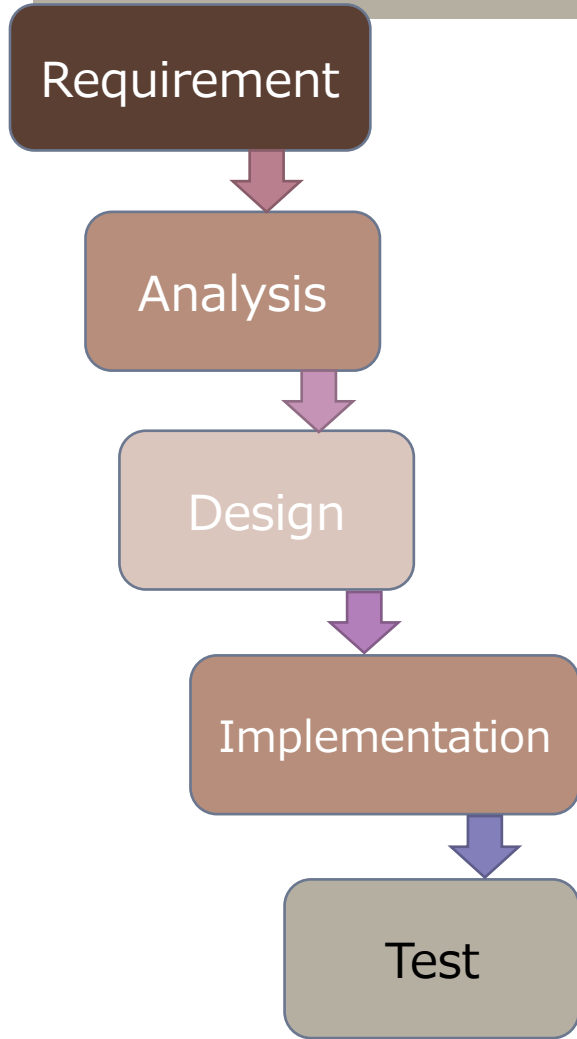
# Background

- **Highly creative process to address human needs, which use design thinking to tackle ill-defined/unknown requirement specification problems.**
- **Reframe in better human-centric ways than Ivan Jacobson's Use case approach of Objects Oriented Software Engineering (OOSE).**
- **We may consider creative design with Ill-defined/unknown requirement specifications given from customer needs.**
- **To achieve this, we propose adapting design thinking to software design on creative thinking.**

# Related works

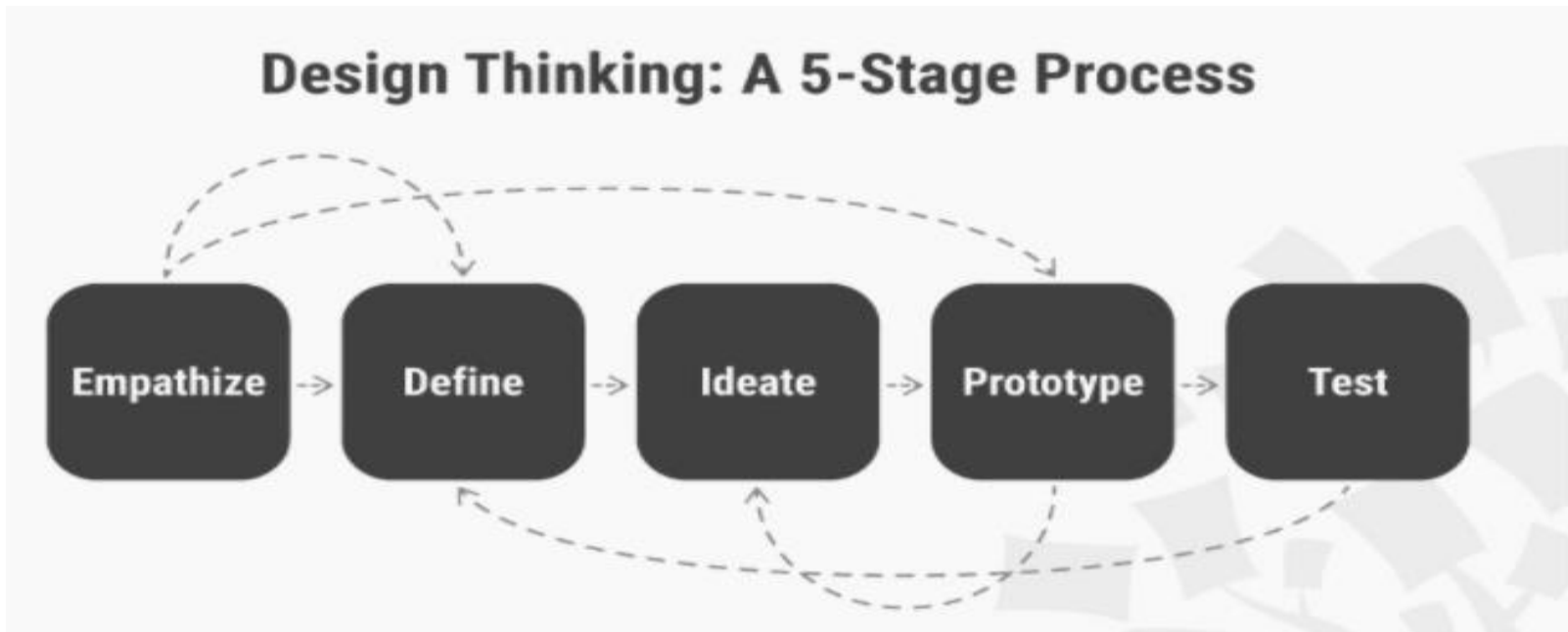


# Software Development Process

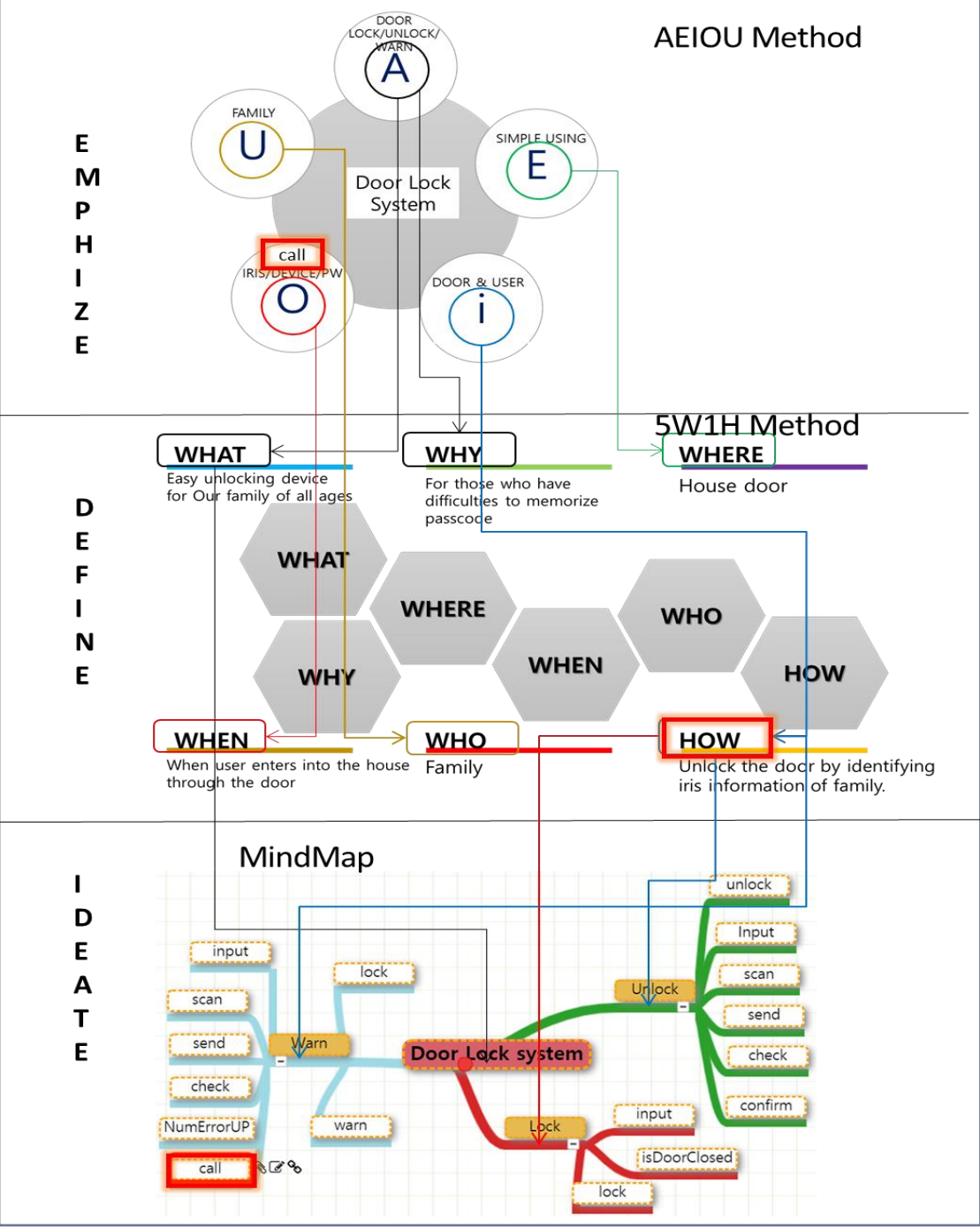


# Design Thinking

- **In 1967, Herbert A. Simon first mentioned design thinking in the Sciences of the Artificial book.**
- **Design thinking process**



# Design Thinking Process





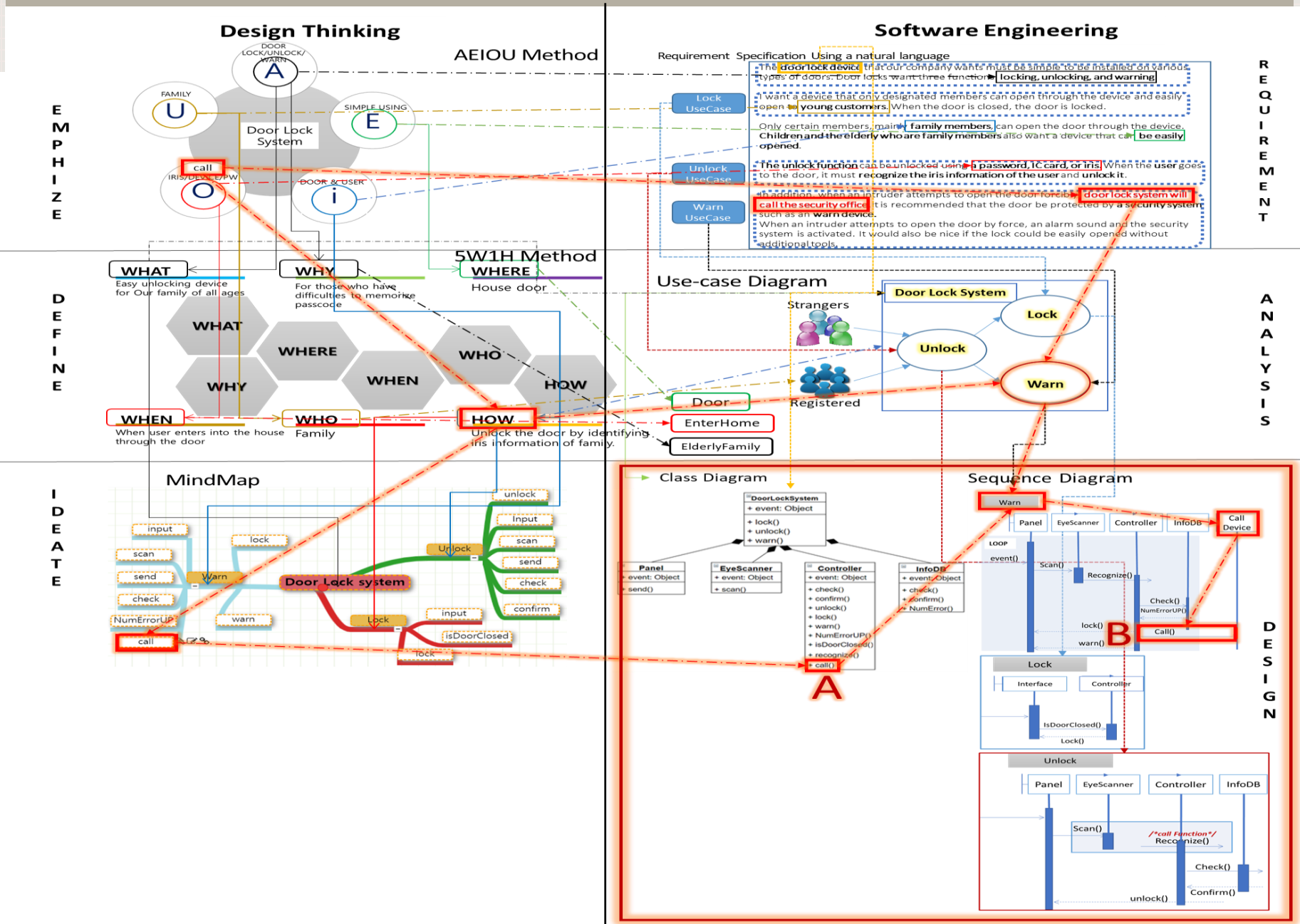


# Research

```
mirror_mod = modifier_ob.  
set mirror object to mirror.  
mirror_mod.mirror_object =  
operation == "MIRROR_X":  
mirror_mod.use_x = True  
mirror_mod.use_y = False  
mirror_mod.use_z = False  
operation == "MIRROR_Y":  
mirror_mod.use_x = False  
mirror_mod.use_y = True  
mirror_mod.use_z = False  
operation == "MIRROR_Z":  
mirror_mod.use_x = False  
mirror_mod.use_y = False  
mirror_mod.use_z = True  
selection at the end -ad  
mirror_ob.select= 1  
modifier_ob.select=1  
context.scene.objects.act  
("Selected" + str(modifi  
mirror_ob.select = 0  
= bpy.context.selected_o  
data.objects[one.name].s  
print("please select exac  
-- OPERATOR CLASSES --  
types.Operator):  
X mirror to the sele  
object.mirror_mirror_x"  
mirror X"  
context):  
context.active_object is not
```

# Adapting Design Thinking to Software Process

# Adapting Design Thinking to Software Process



# Conclusion

- **Software engineers attempt to develop software based on customer requirements with software engineering approaches, they may have an ill-defined or unknown problem of requirements given from the customer.**
- **We adapt software engineering with design thinking at requirement and design stage because of reframe these in human-centric ways.**
- **We are considering more sophisticated and creative thinking at software development lifecycle. We will guarantee how to make quality of software based on creative design in 4th Industrial revolution**
- **We are going to develop a development system for majored college students.**