

Hibernate Spring Framework



FPT UNIVERSITY

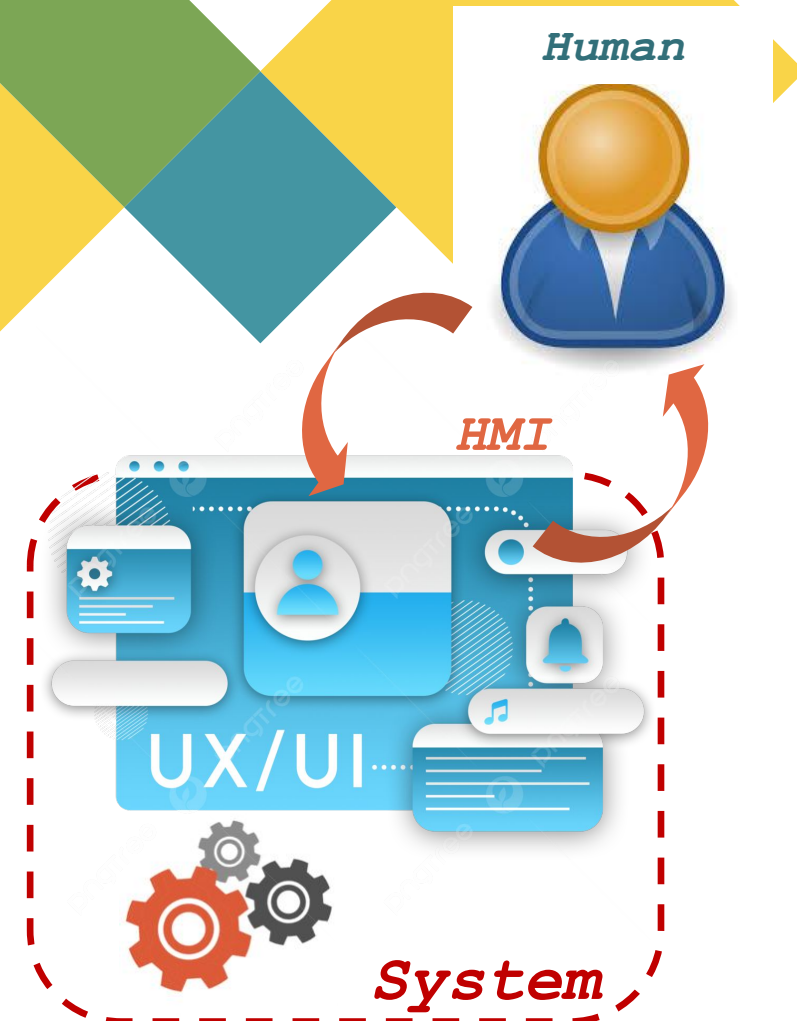
HMI

HMI (**Human-Machine Interaction**) is all about how people and system interact. HMI is a set of physical and cognitive manipulations:

- Click, double click
- Drag & drop, ...
- Gestures
- Multimedia

HMI is also translated as **Human-Machine Interface**. In this viewpoint, HMI is a cooperation of a set of hardware and software components to accomplish the tasks along with system. The components are:

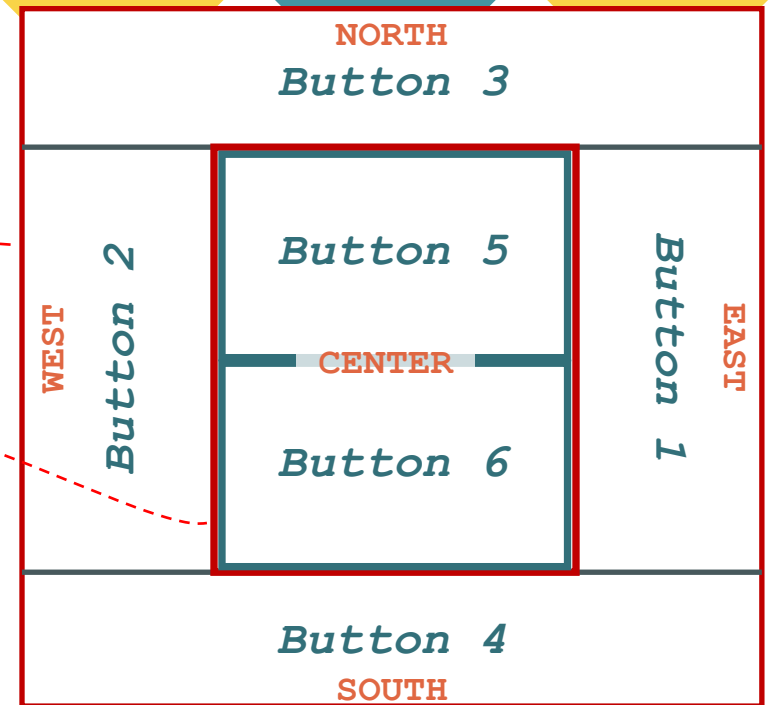
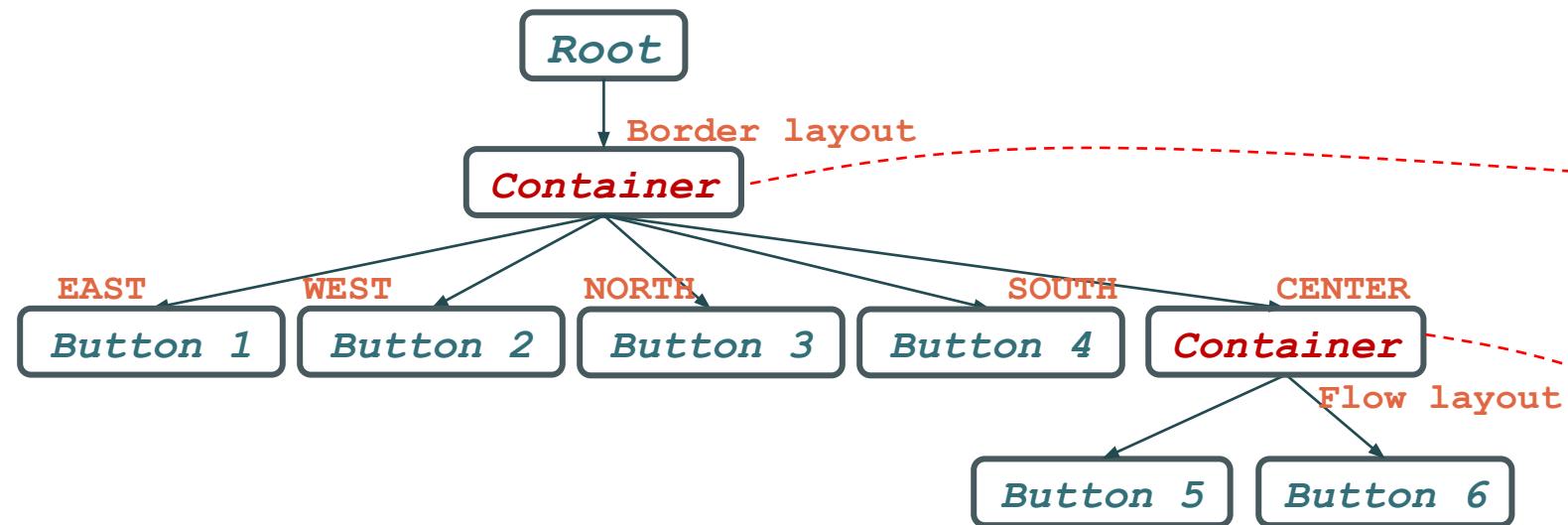
- Container, Panel
- Button, Box, Field, Label
- Event handler,
- Layout, ...



Human-Machine Interaction

HMI

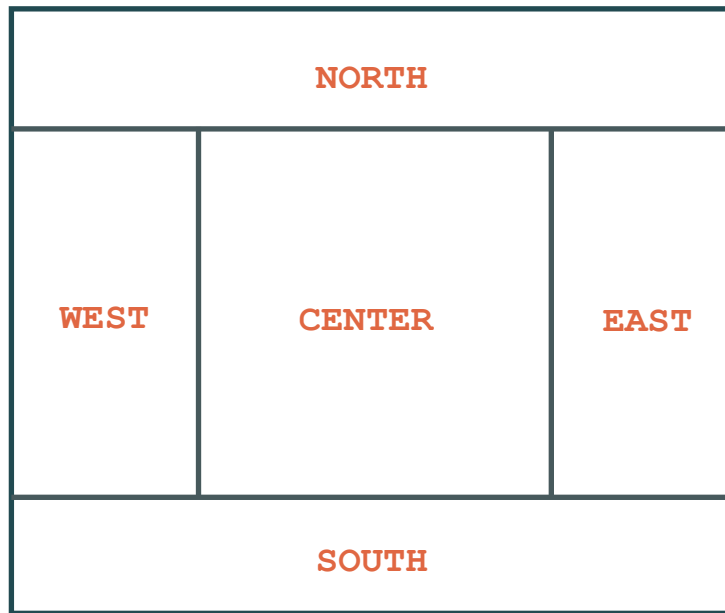
The arrangement of UI can be illustrated in form of a **tree of components**.



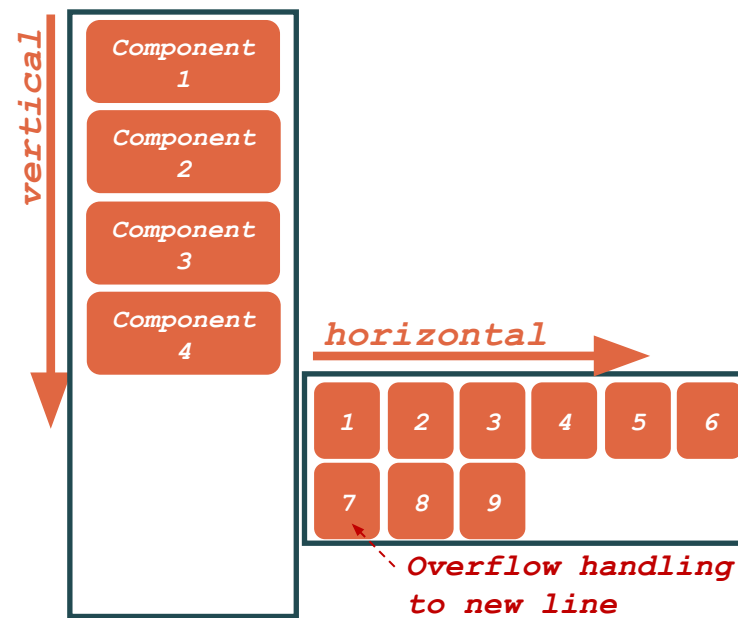
Design method

HMI

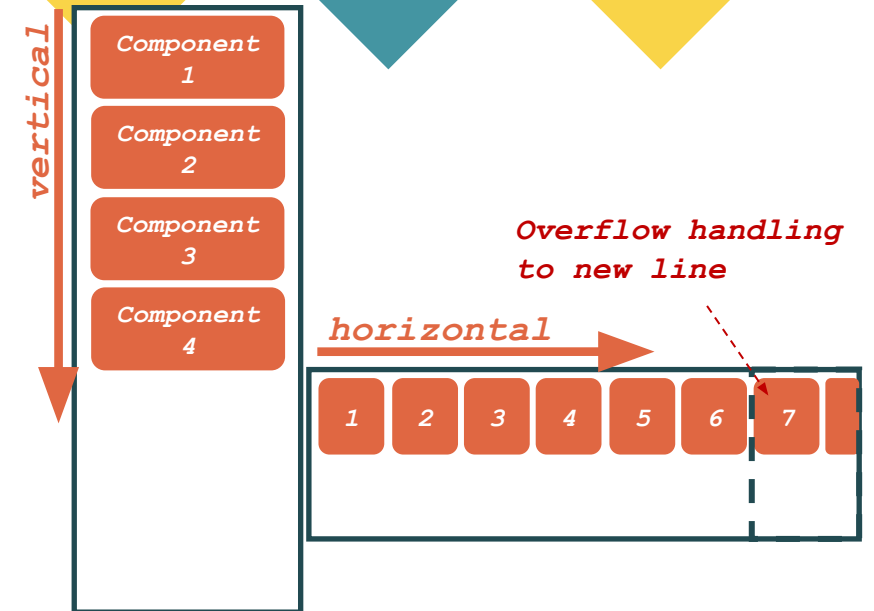
Layout is the relation of parent component (**a container**) to its children, specifying how the children are arranged



Border Layout



Flow Layout

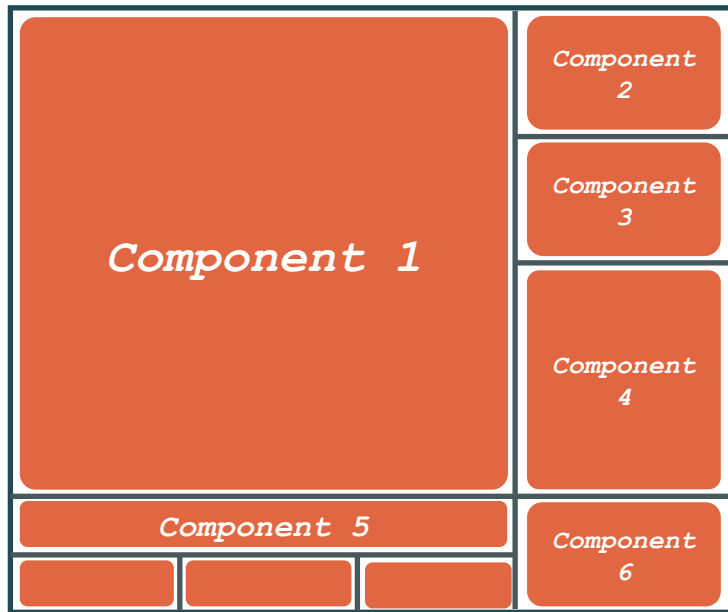


Box Layout

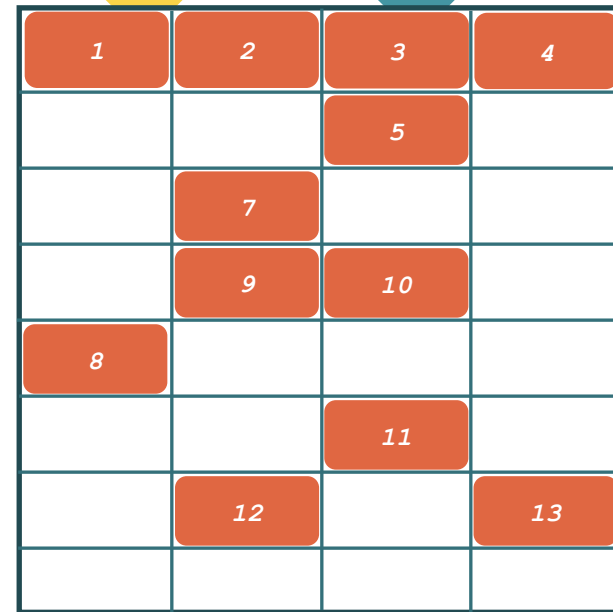
Layout

HMI

*Layout is the relation of parent component (a **container**) to its children, specifying how the children are arranged*



Grid Bag Layout



Grid Layout

Layout



ListView

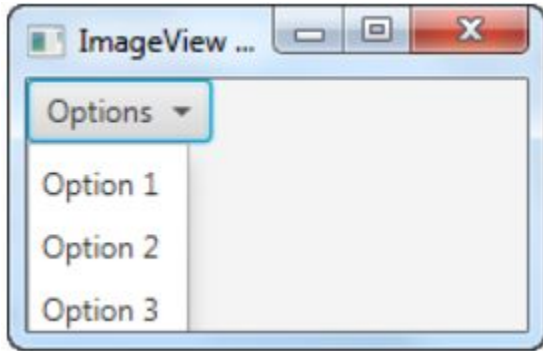
TableView



ImageView

Toolboxes

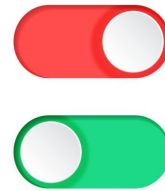
HMI



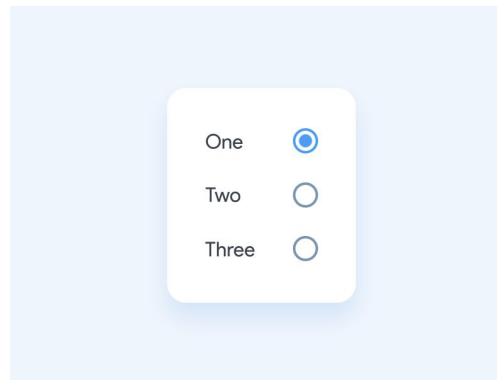
Menu Button



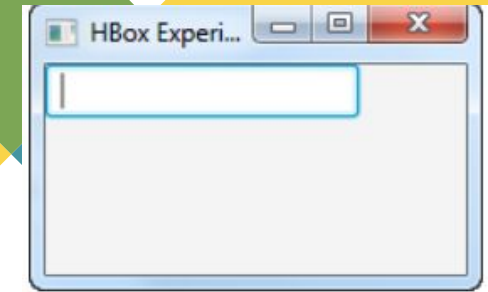
Button



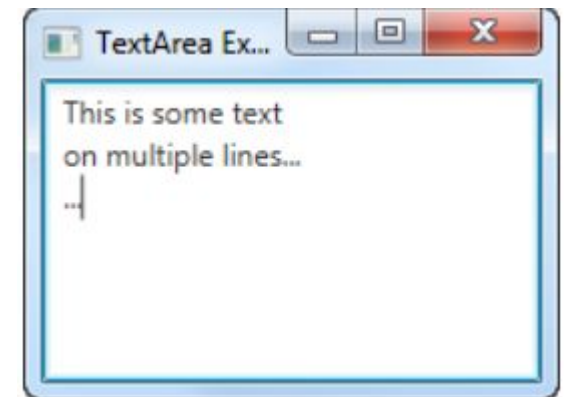
Toggle Button



Radio Button



Text Field



Text Area

Toolboxes

HMI

1. Mouse events

- Mouse pressed
- Mouse Released
- Mouse entered
- Mouse exited
- Mouse clicked

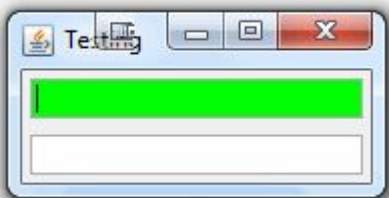


2. Text field events

- Text changed
- Key pressed
- Key released
- Key typed
- On Action: trigger when user clicks **Enter** after typing

3. Focus events

- Focus gained
- Focus lost



| | |
|------------|----------------------|
| First Name | <input type="text"/> |
| Last Name | <input type="text"/> |
| Company | <input type="text"/> |
| Email | <input type="text"/> |

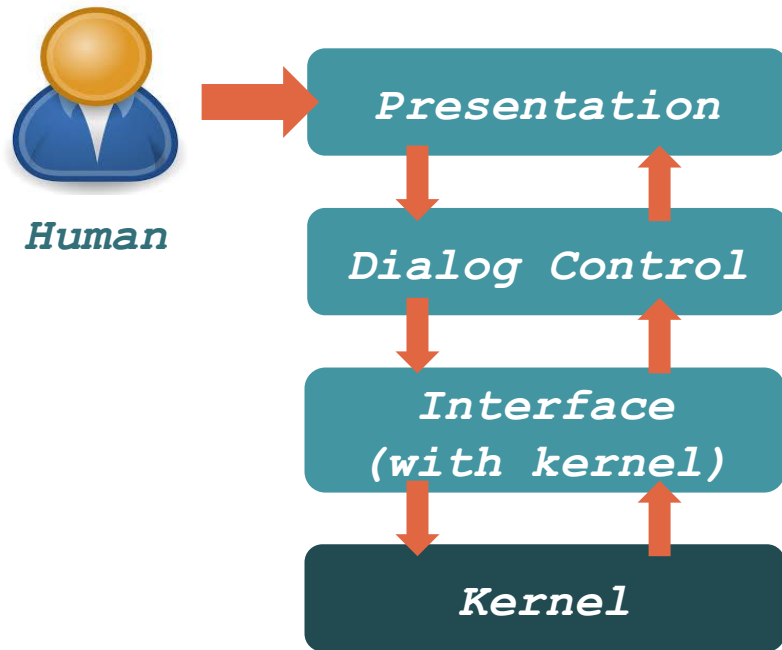


4. Drag&drop events

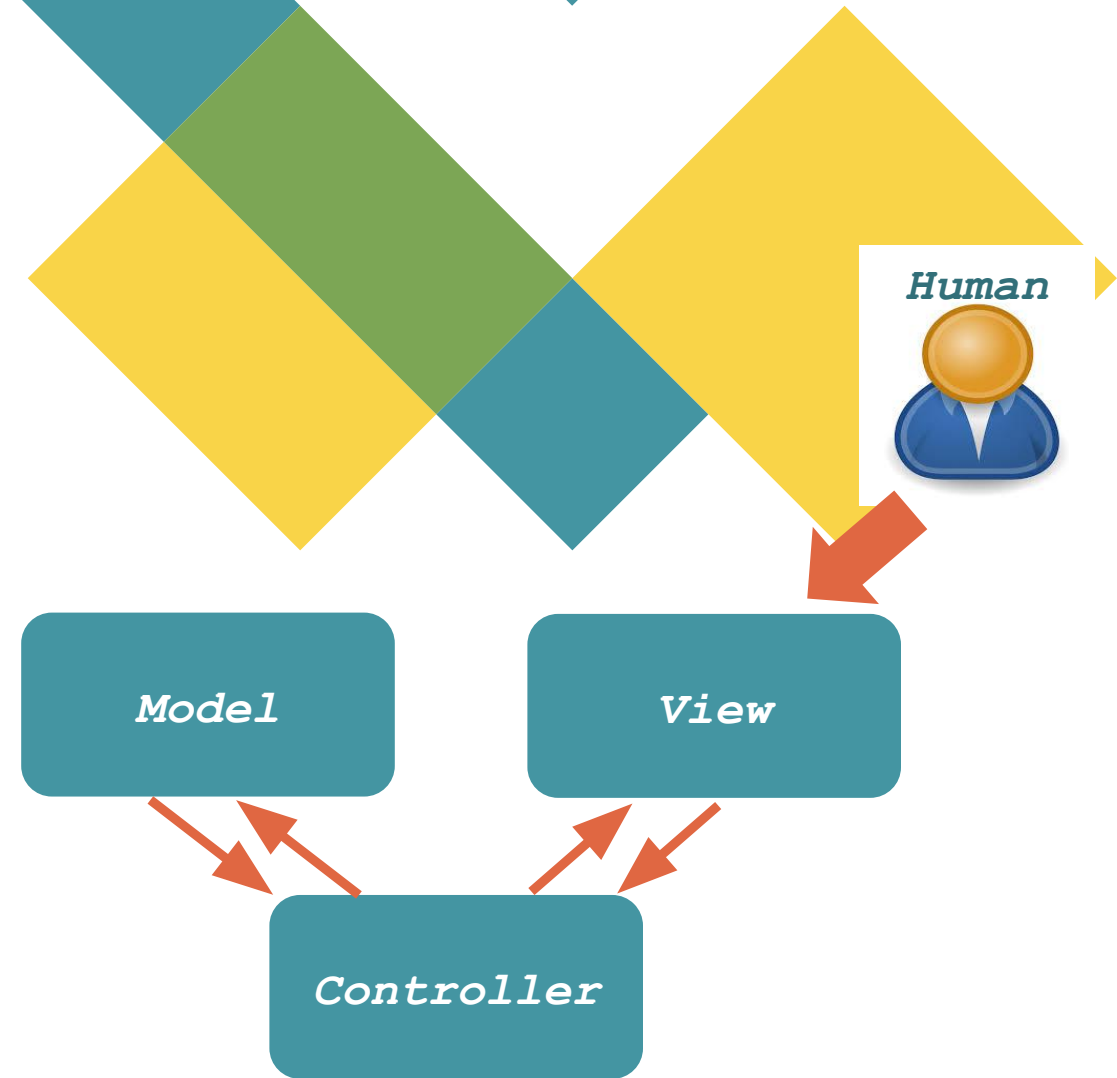
- Drag detected
- Drag done
- Drag dropped
- Drag entered
- Drag exited
- Drag over

Event Handler

HMI



SEEHEIM



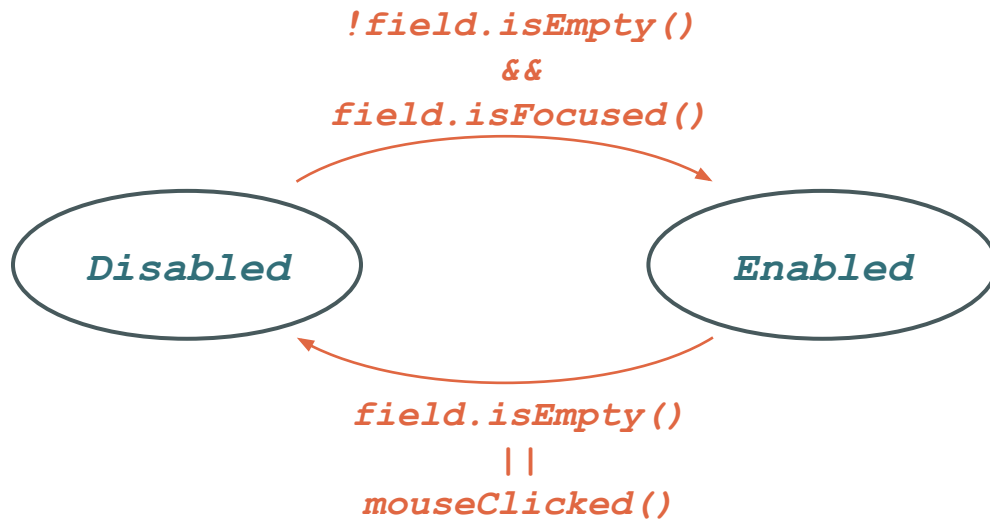
MVC

Architecture

HMI

Create application to calculate exchange value from vnd to usd and reverse.

- When input field are empty, no button is enabled
- When input field is filled, the button is enabled
- The button is disabled after being clicked



Button state machine

Exercise

The screenshot shows the application window titled "Franc / Euro Exchange". It contains two input fields: "Input Value" and "Output Value". Between them are two buttons: "F -> E" and "E -> F". Both input fields are currently empty, and the buttons are disabled.

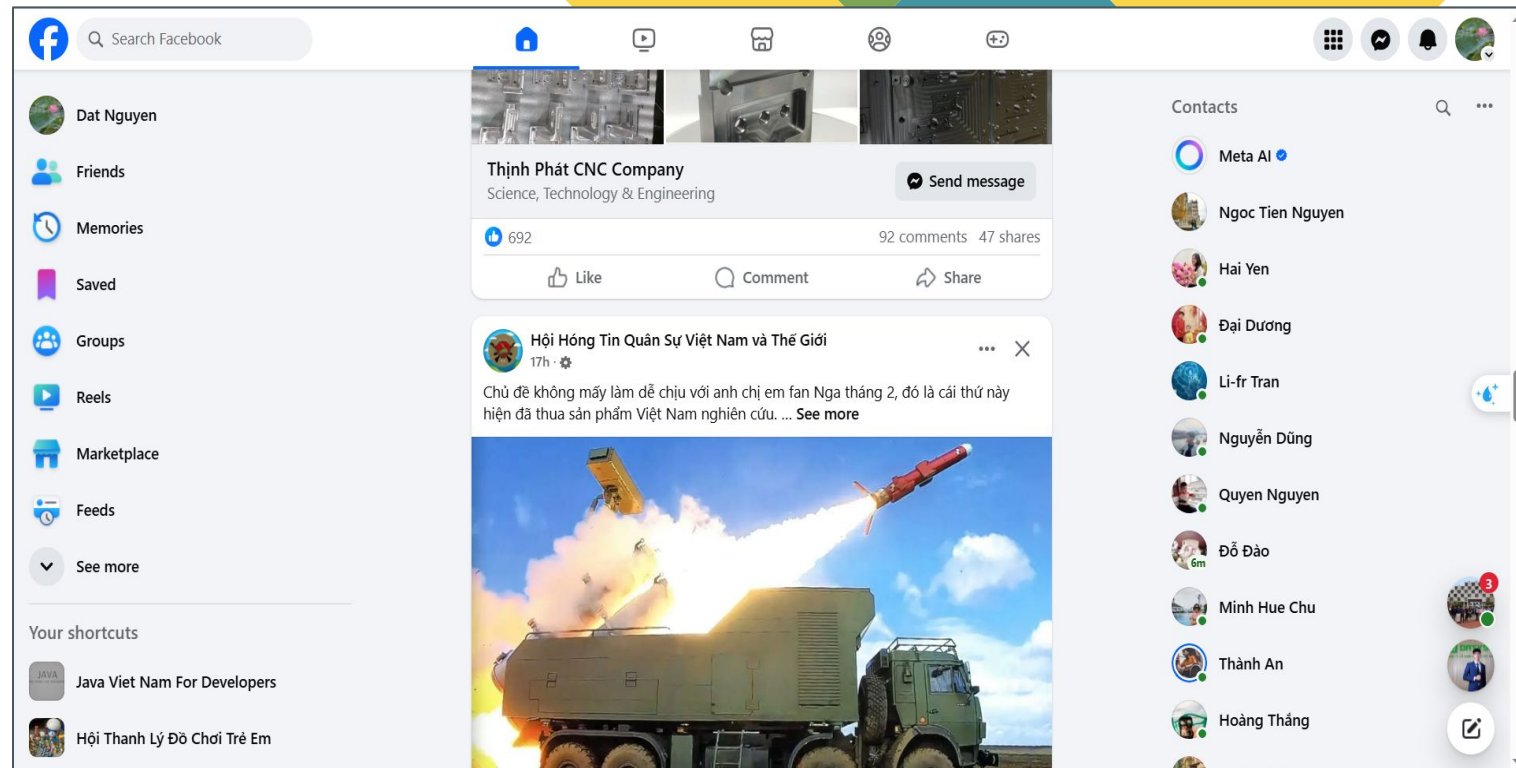
The screenshot shows the application window with the "Input Value" field now containing the number "1". The "Output Value" field remains empty. The buttons "F -> E" and "E -> F" are now enabled.

The screenshot shows the application window with the "Input Value" field containing "1" and the "Output Value" field displaying "6,55957". The buttons "F -> E" and "E -> F" are still enabled.

HMI

*Clone Facebook interface using
JavaFx*

- 1. Analyze structure of this interface
using **tree of components***
- 2. Separate concerns into module*
- 3. Each group implement a module*



Exercise