

ColorField

5. mai 2023

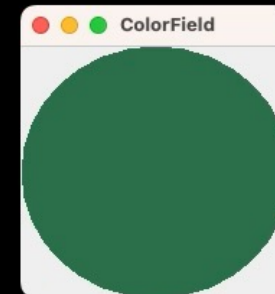
INF101

Oppgave:

Opprett et program som vist.

*Fargen skal gradvis endre seg med tiden,
og skal bytte til en tilfeldig farge ved museklikk.*

*Du får utlevert UML-diagram og sekvensdiagram for en eksempelløsning,
samt et koderepo som inneholder EventBus fra forelesning. Bruk MVC og
følg UML-diagrammet så tett som mulig.*

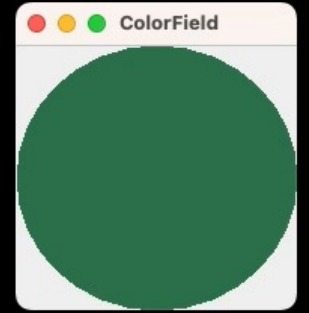


ColorField: løs plan

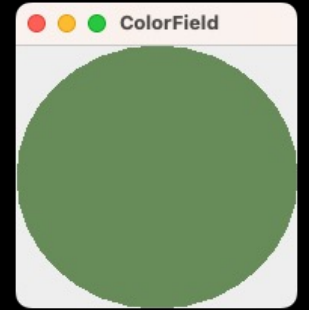
1.0: kun ny farge ved museklikk

2.0: fargen flyter fra én farge til neste farge ved hjelp av timer

3.0: ?



ColorField 1.0: løs plan for modell



Instansvariabler

- Feltvariabel for farge

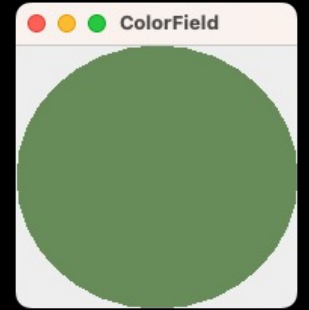
Metoder i modell for visningen

- Metode som returnerer nåværende farge
- Metode for å registrere seg som lytter til endringer

Metode i modell for kontrolleren

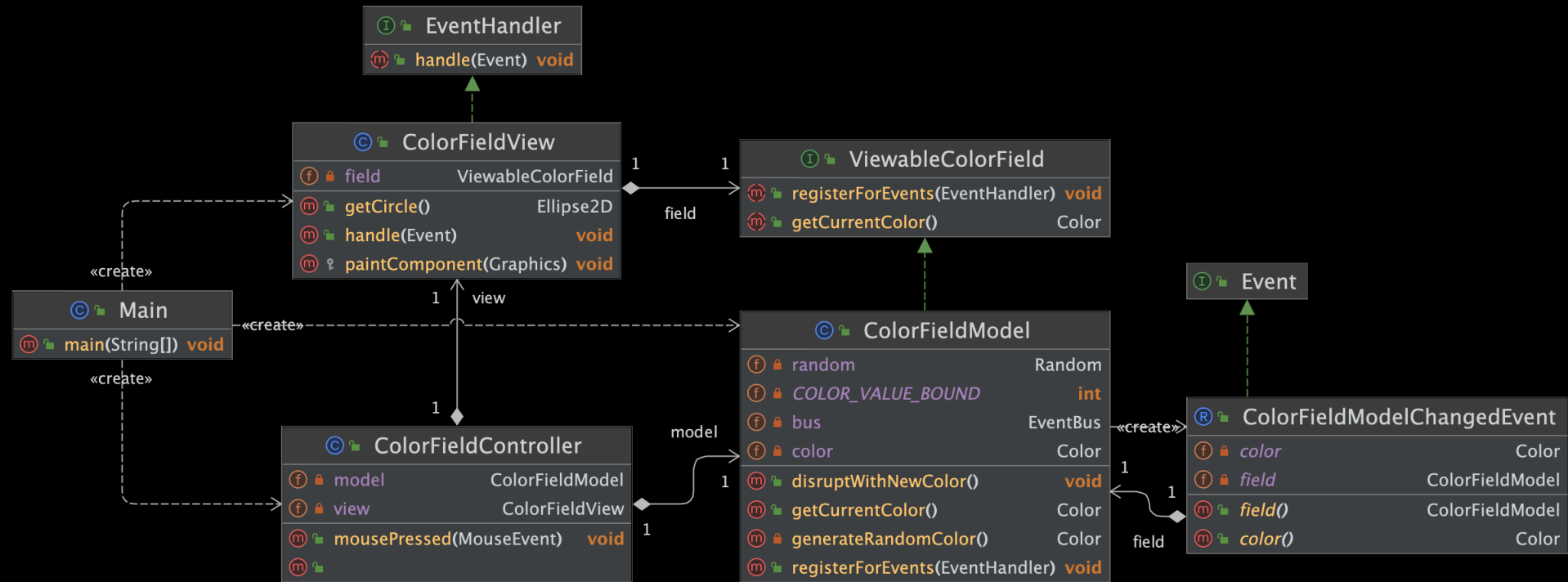
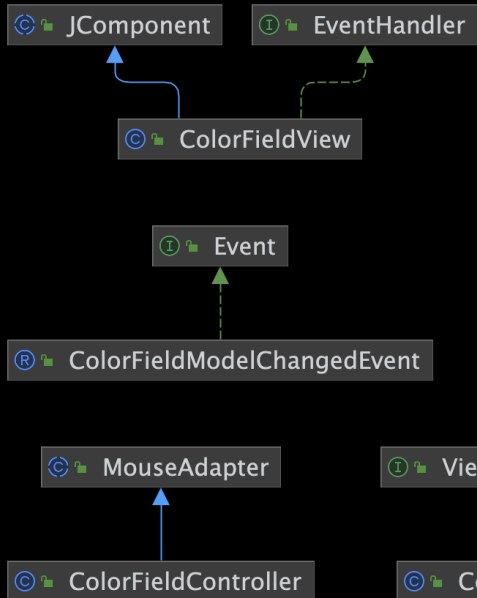
- Metode som setter fargen til en tilfeldig farge

ColorField 1.0

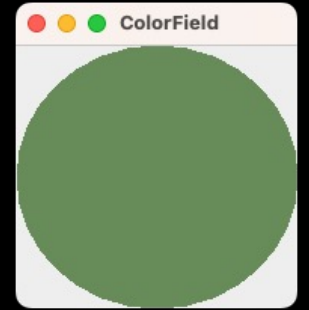


Feltvariabler, avhengigheter og metoder

Typehierarki



ColorField 1.0



Sekvensdiagram for museklikk-hendelser

```
colorFieldController.mousePressed
```

```
colorFieldModel.disruptWithNewColor
```

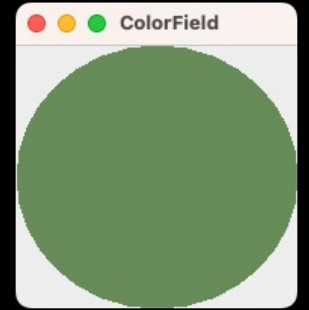
```
eventBus.post
```

```
colorFieldView.handle
```

```
colorFieldView.repaint
```



ColorField 1.0



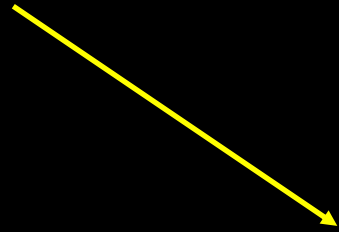
Sekvensdiagram for visning

```
colorFieldView.paintComponent
```

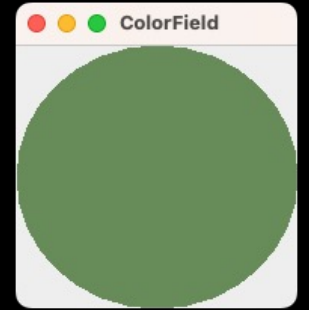
```
    colorFieldView.getCircle
```

```
        colorFieldModel.getCurrentColor
```

```
            colorFieldModel.mix
```



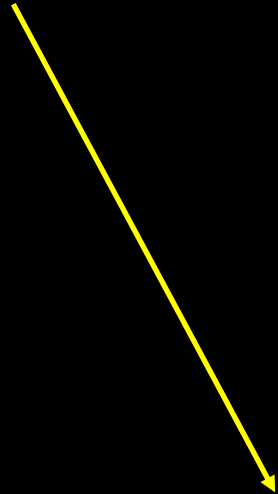
ColorField 1.0



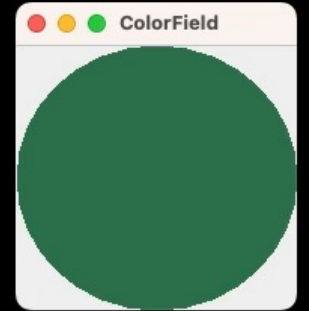
Sekvensdiagram for konstruksjon

Main::main

```
colorFieldModel.new
  eventBus.new
  colorFieldModel.generateRandomColor
colorFieldView.new
  colorFieldModel.registerForEvents
colorFieldController.new
  colorFieldView.addMouseListener
```



ColorField 2.0: løs plan



Instansvariabler

- Gammel farge
- Ny farge
- Tall som representerer forholdet mellom gammel og ny farge

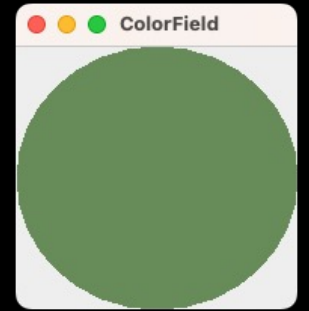
Metoder i modell for visningen

- Metode som returnerer farge er nå basert på forholdstallet mellom ny og gammel

Metode i modell for kontrolleren

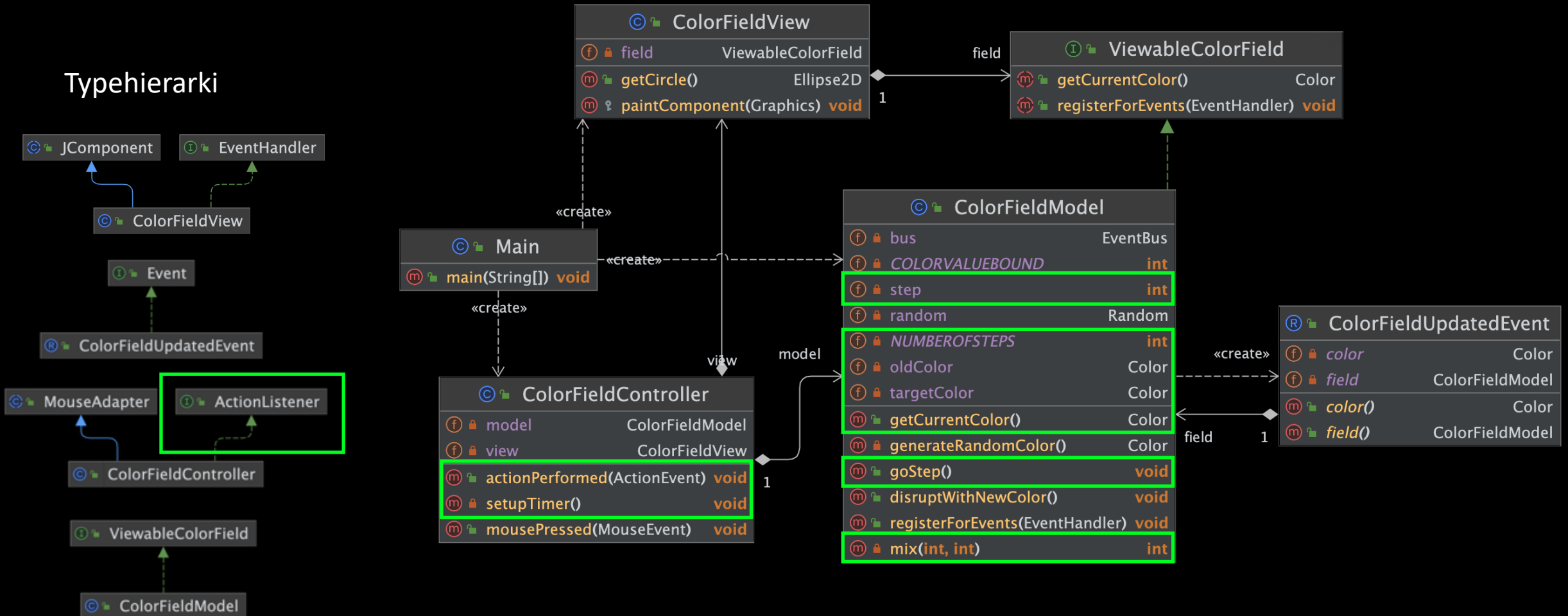
- Metode som endrer forholdstallet slik at fargen blir «nyere»

ColorField 2.0

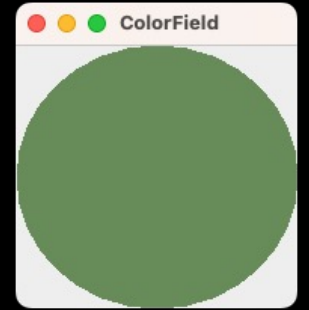


Feltvariabler, avhengigheter og metoder

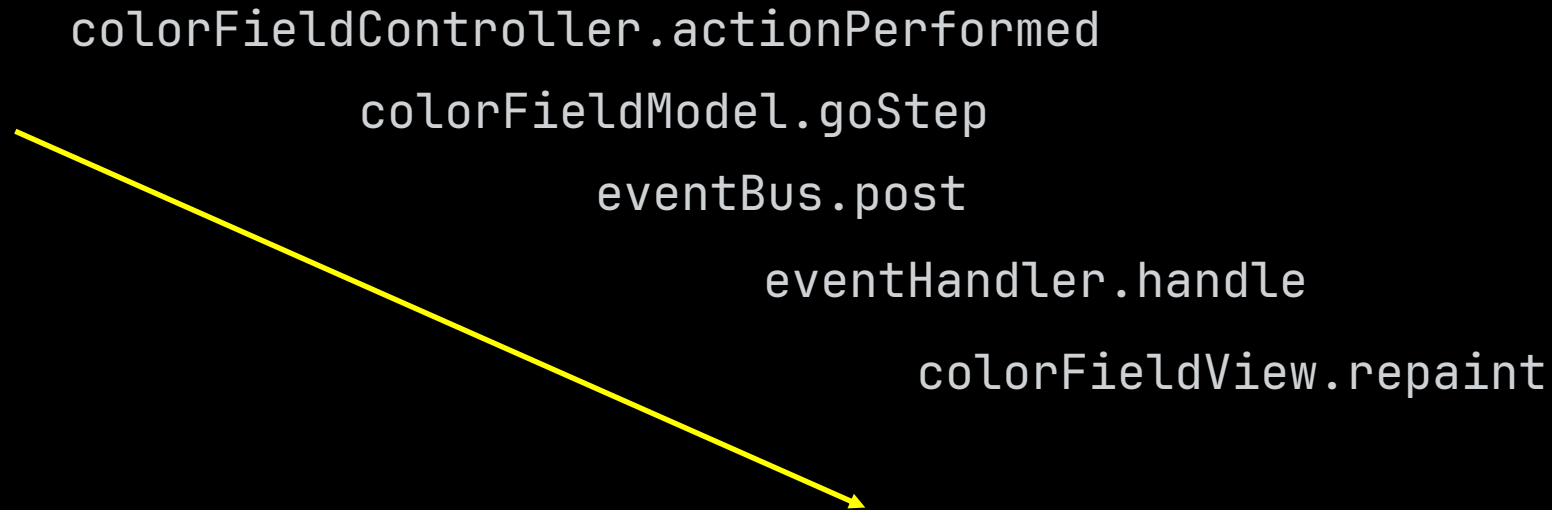
Typehierarki



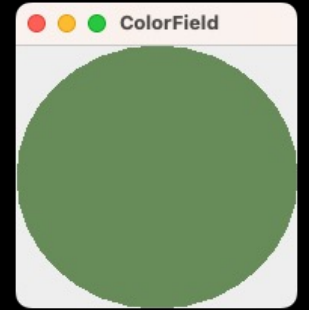
ColorField 2.0



Sekvensdiagram for timer-baserte hendelser



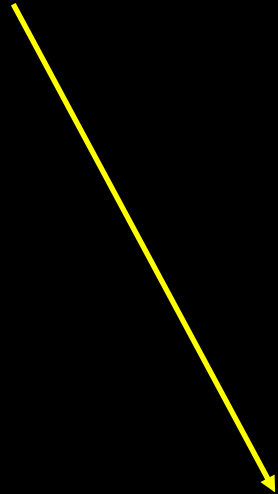
ColorField 2.0



Sekvensdiagram for konstruksjon

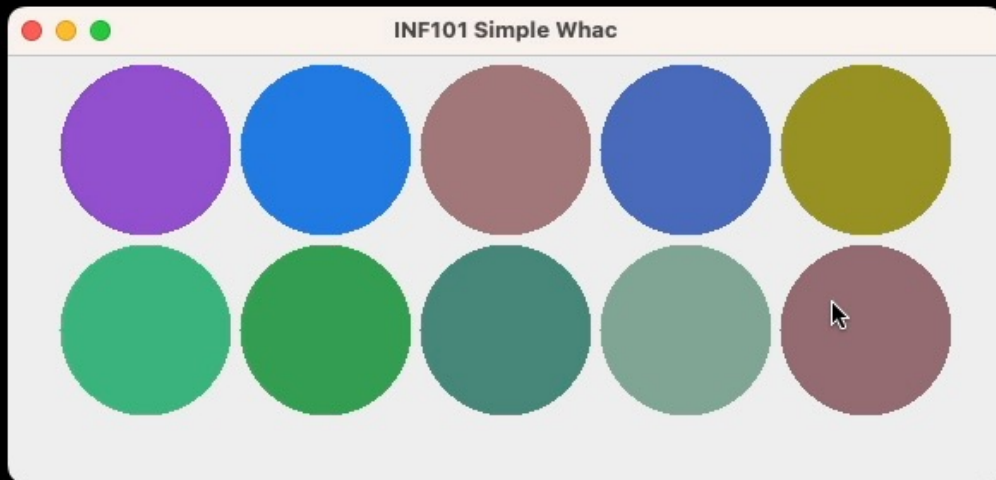
Main::main

```
colorFieldModel.new
    colorFieldModel.generateRandomColor
colorFieldView.new
    colorFieldModel.registerForEvents
colorFieldController.new
    colorFieldController.setupTimer
colorFieldView.addMouseListener
```

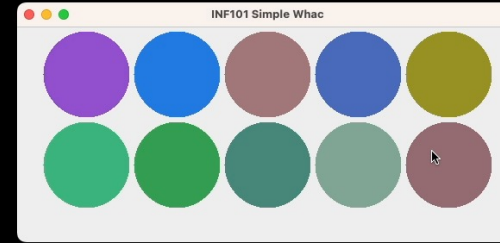


ColorField 3.0

- Med minimale endringer i koden for 2.0 og maksimalt gjenbruk lag dette:



ColorField 3.0: løs plan



- Opprett egen Main-klasse for 3.0
- Modell-klassen: inneholder en liste av ColorFieldModel
- Visning-klassen:
 - oppretter en ColorFieldView for hver ColorFieldModel i modellen
 - lagre i et `Map<ColorFieldModel, ColorFieldView>`
 - metode for å hente ColorFieldView for en gitt ColorFieldModel
- Kontrolleren:
 - For hver ColorFieldModel, hent visningen og opprett en ColorFieldController