AcquisitionSetup ◇—— 0..* — View ◇—— 0..* — AbstractPrepareStep

(Simple)CTsystem — 1

- Gantry
- Detector
- Source

view 0
- step 0
- step 1
- ...

view 1
- step 0
- step 1
- step 2
- ...

...

Current system state:

prepareView()

- change focal spot size
- change gantry angle

```
AcquisitionSetup  ◇———— 0..* ——  View  —— 0..* ◇  AbstractPrepareStep
```
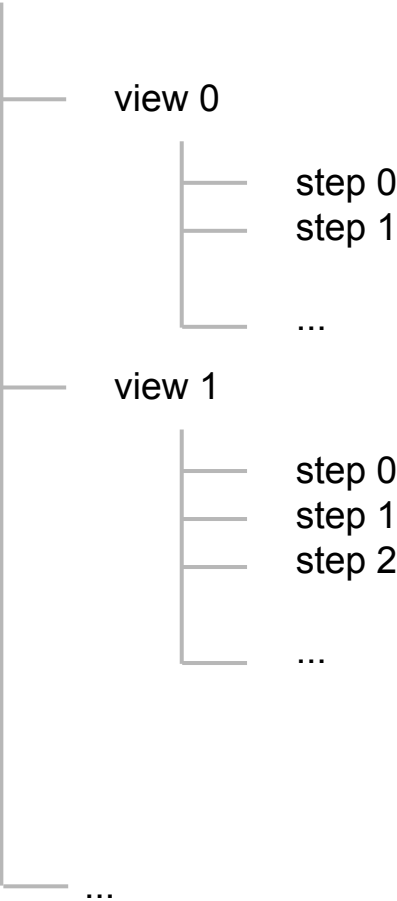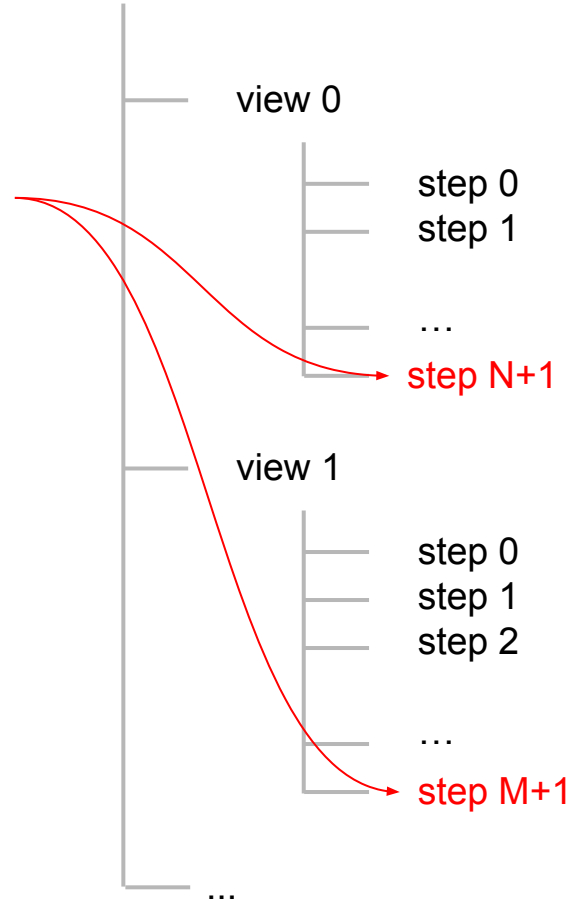
Manipulating the setup:

Most commonly used:

applyPreparationProtocol(const AbstractPreparationProtocol&)

Changing view count:

setNbViews(uint)

addView(View)

removeAllViews()

Manipulating views:

removeAllPrepareSteps(bool)

removeAllPrepareStepsOfType(int)

view 0

    step 0
    step 1

    ...

view 1

    step 0
    step 1
    step 2

    ...

...

```
AcquisitionSetup  ◇——0..*—— View ——0..*——◇ AbstractPrepareStep
```
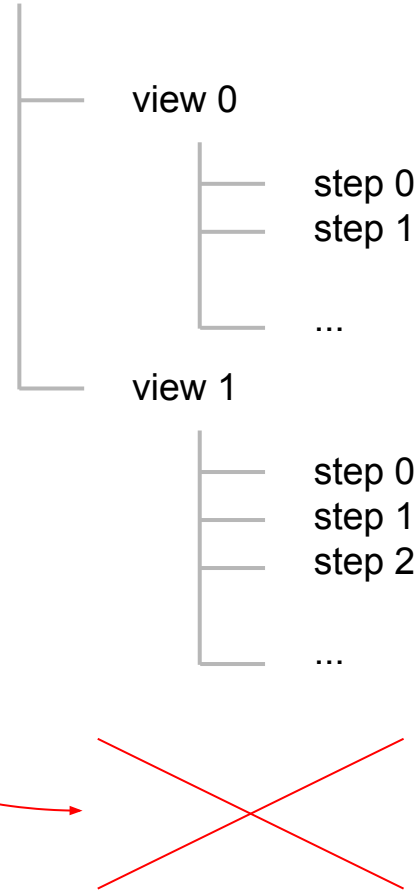
Manipulating the setup:

Most commonly used:

applyPreparationProtocol(const AbstractPreparationProtocol&)

Changing view count:

setNbViews(uint)
addView(View)
removeAllViews()

Manipulating views:

removeAllPrepareSteps(bool)
removeAllPrepareStepsOfType(int)

view 0
    step 0
    step 1

    …
    step N+1

view 1
    step 0
    step 1
    step 2

    …
    step M+1

…

```
AcquisitionSetup  ◇——— 0..* ——— View ——— 0..* ———◇ AbstractPrepareStep
```

Manipulating the setup:

Most commonly used:

applyPreparationProtocol(const AbstractPreparationProtocol&)

Changing view count:

setNbViews(uint)
addView(View)
removeAllViews()

Manipulating views:

removeAllPrepareSteps(bool)
removeAllPrepareStepsOfType(int)

view 0

    step 0
    step 1

    ...

view 1

    step 0
    step 1
    step 2

    ...

```
AcquisitionSetup  0..*  View  0..*  AbstractPrepareStep
```

Manipulating the setup:

Most commonly used:
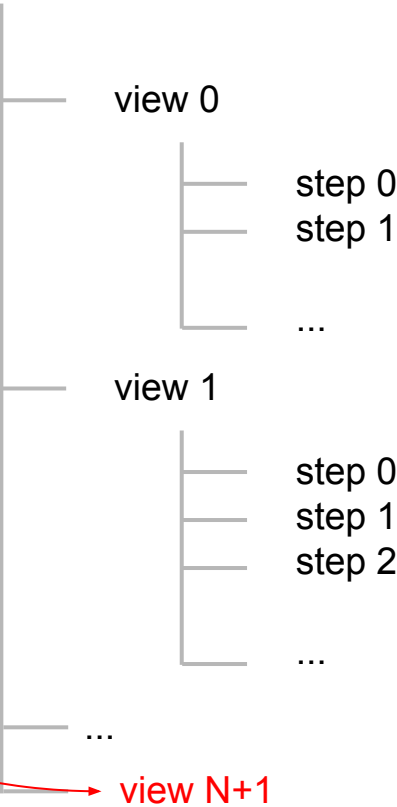
applyPreparationProtocol(const AbstractPreparationProtocol&)

Changing view count:

setNbViews(uint)
addView(View)
removeAllViews()

Manipulating views:

removeAllPrepareSteps(bool)
removeAllPrepareStepsOfType(int)

view 0

    step 0
    step 1

    ...

view 1

    step 0
    step 1
    step 2

    ...

...

view N+1

```
AcquisitionSetup  ◇——— 0..* ———  View  ◇——— 0..* ———  AbstractPrepareStep
```
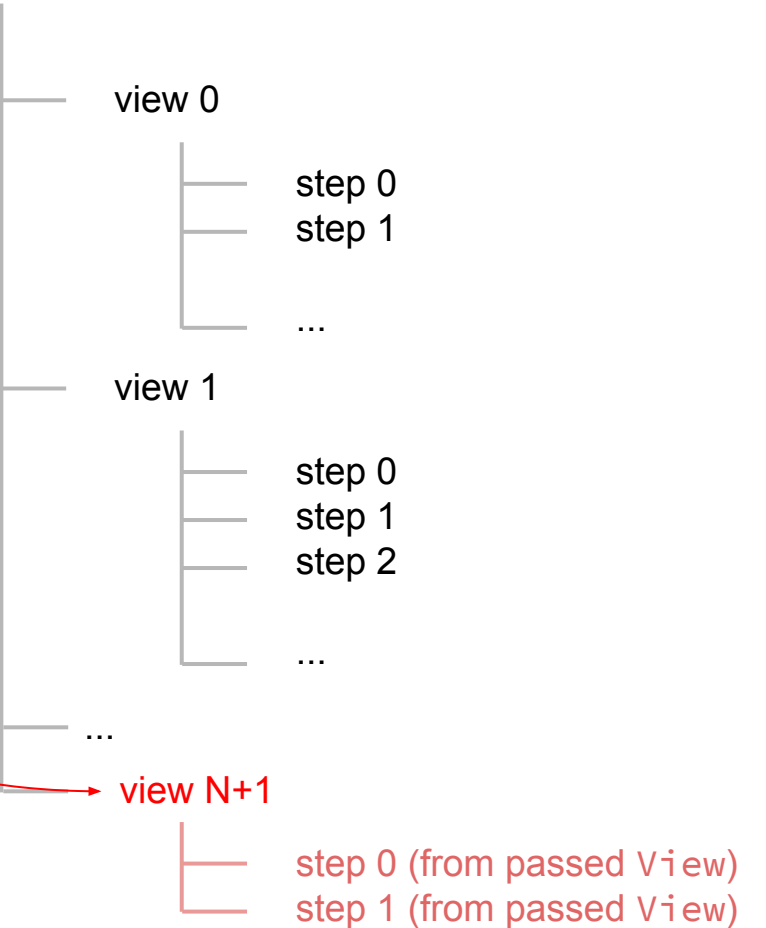
Manipulating the setup:

Most commonly used:

applyPreparationProtocol(const AbstractPreparationProtocol&)

Changing view count:

setNbViews(uint)
addView(View)
removeAllViews()

Manipulating views:

removeAllPrepareSteps(bool)
removeAllPrepareStepsOfType(int)

view 0
    step 0
    step 1
    ...

view 1
    step 0
    step 1
    step 2
    ...

...

view N+1
    step 0 (from passed View)
    step 1 (from passed View)

```
AcquisitionSetup  ◇──── 0..* ──── View ──── 0..* ────◇ AbstractPrepareStep
```

Manipulating the setup:

Most commonly used:
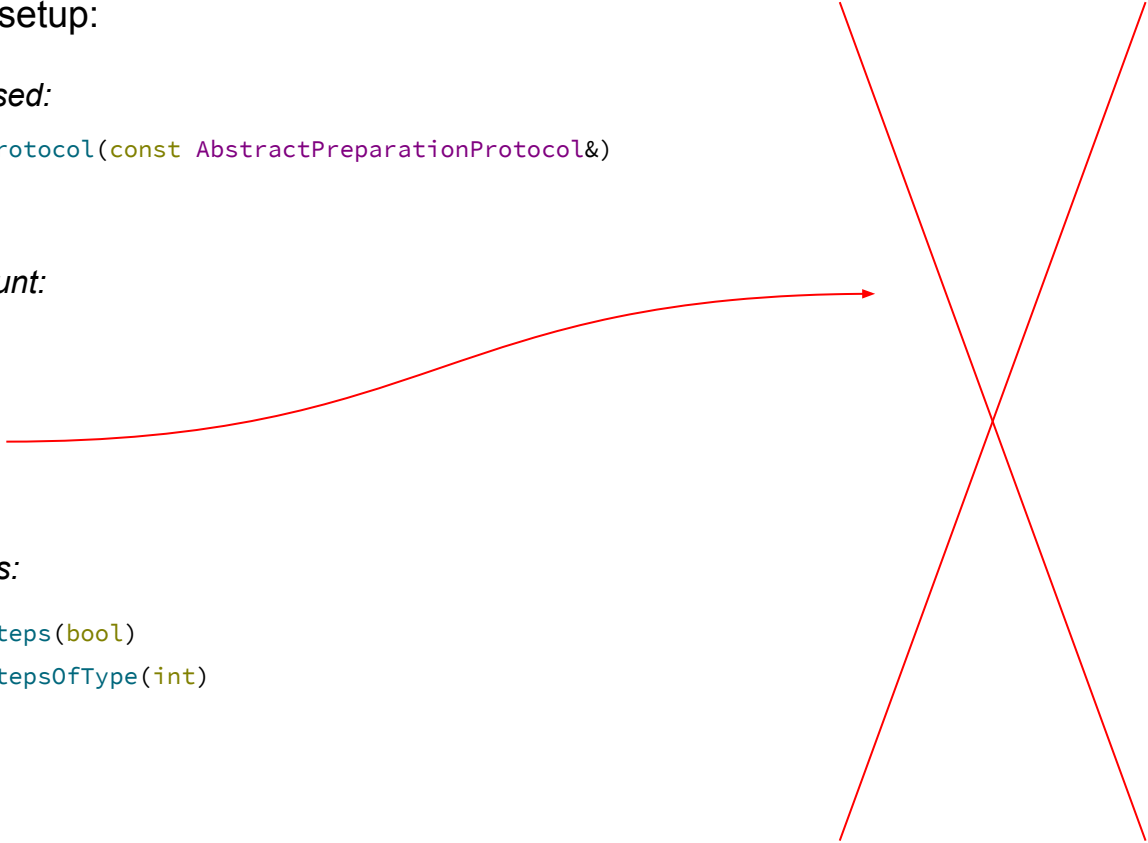
applyPreparationProtocol(const AbstractPreparationProtocol&)

Changing view count:

setNbViews(uint)

addView(View)

removeAllViews()

Manipulating views:

removeAllPrepareSteps(bool)

removeAllPrepareStepsOfType(int)

```
AcquisitionSetup  ◇———0..*  View  ◇———0..*  AbstractPrepareStep
```

Manipulating the setup:

Most commonly used:

applyPreparationProtocol(const AbstractPreparationProtocol&)

Changing view count:

setNbViews(uint)
addView(View)
removeAllViews()

Manipulating views:

removeAllPrepareSteps(bool)
removeAllPrepareStepsOfType(int)

view 0

view 1

...

```
AcquisitionSetup        0..*    View    0..*    AbstractPrepareStep
```

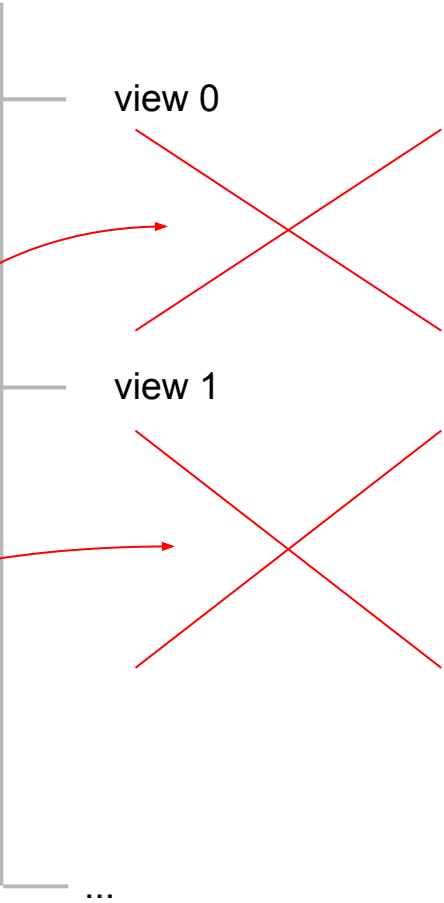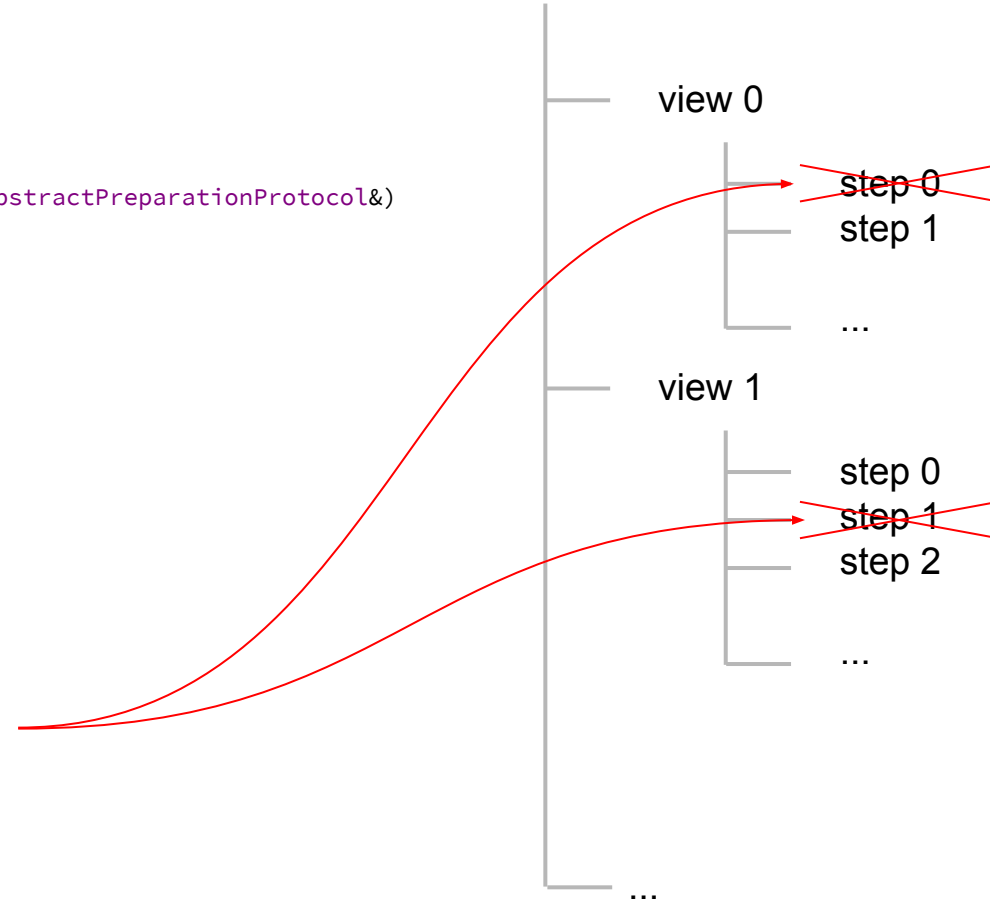Manipulating the setup:

Most commonly used:

```
applyPreparationProtocol(const AbstractPreparationProtocol&)
```

Changing view count:

```
setNbViews(uint)
addView(View)
removeAllViews()
```

Manipulating views:

```
removeAllPrepareSteps(bool)
removeAllPrepareStepsOfType(int)
```
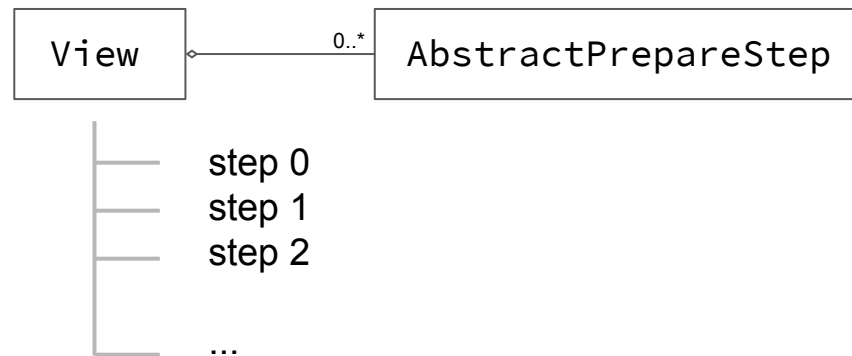
view 0

step 0
step 1

...

view 1

step 0
step 1
step 2

...

...

Manipulating a `View`:

Changing prepare step count:

```cpp
void addPrepareStep(PrepareStep);
void clearPrepareSteps();

void removeAllPrepareSteps(int);
void removeLastPrepareStep();
void removePrepareStep(int, bool);
```

Replacing / finding prepare steps:

```cpp
bool replacePrepareStep(int, PrepareStep);
bool replacePrepareStep(PrepareStep, bool);
```

```
┌──────────┐  0..*  ┌─────────────────────┐
│   View   │◇───────│ AbstractPrepareStep │
└──────────┘        └─────────────────────┘
     │
     ├──── step 0
     ├──── step 1
     ├──── step 2
     │
     └──── ...
```

```
View ◇——0..* AbstractPrepareStep
```

step 0
step 1
step 2

...

step N+1

Manipulating a `View`:

Changing prepare step count:

```
void addPrepareStep(PrepareStep);
void clearPrepareSteps();

void removeAllPrepareSteps(int);
void removeLastPrepareStep();
void removePrepareStep(int, bool);
```

Replacing / finding prepare steps:

```
bool replacePrepareStep(int, PrepareStep);
bool replacePrepareStep(PrepareStep, bool);
```
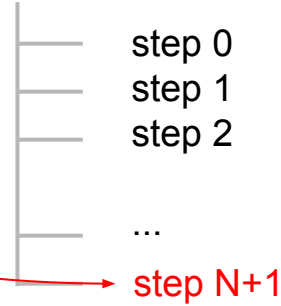
```
                                        View  ◇——0..*——  AbstractPrepareStep
```

Manipulating a `View`:

Changing prepare step count:

```
void addPrepareStep(PrepareStep);
void clearPrepareSteps();

void removeAllPrepareSteps(int);
void removeLastPrepareStep();
void removePrepareStep(int, bool);
```

Replacing / finding prepare steps:

```
bool replacePrepareStep(int, PrepareStep);
bool replacePrepareStep(PrepareStep, bool);
```

Manipulating a `View`:

Changing prepare step count:

```
void addPrepareStep(PrepareStep);
void clearPrepareSteps();

void removeAllPrepareSteps(int);
void removeLastPrepareStep();
void removePrepareStep(int, bool);
```

Replacing / finding prepare steps:

```
bool replacePrepareStep(int, PrepareStep);
bool replacePrepareStep(PrepareStep, bool);
```

View

0..*

AbstractPrepareStep

step<A> 0
~~step<B> 1~~
step<C> 2
~~step<B> 3~~
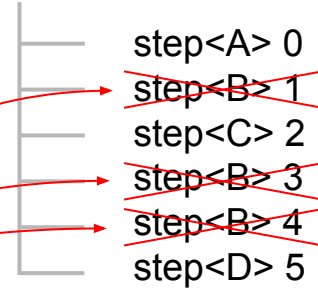~~step<B> 4~~
step<D> 5

"B"

Manipulating a `View`:

Changing prepare step count:

```
void addPrepareStep(PrepareStep);
void clearPrepareSteps();

void removeAllPrepareSteps(int);
void removeLastPrepareStep();
void removePrepareStep(int, bool);
```

Replacing / finding prepare steps:

```
bool replacePrepareStep(int, PrepareStep);
bool replacePrepareStep(PrepareStep, bool);
```

| View | 0..* | AbstractPrepareStep |

step<A> 0
step<B> 1
step<C> 2
step<B> 3
step<B> 4
step<D> 5

Manipulating a `View`:

Changing prepare step count:

```
void addPrepareStep(PrepareStep);
void clearPrepareSteps();

void removeAllPrepareSteps(int);
void removeLastPrepareStep();
void removePrepareStep(int, bool);
```

Replacing / finding prepare steps:

```
bool replacePrepareStep(int, PrepareStep);
bool replacePrepareStep(PrepareStep, bool);
```
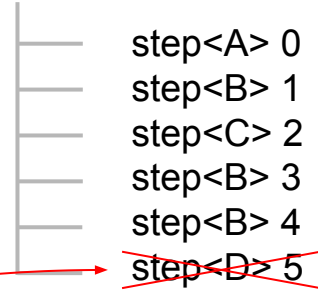
"B", true

View

0..* AbstractPrepareStep

step<A> 0
step<B> 1
step<C> 2
step<B> 3
step<B> 4
step<D> 5

Manipulating a `View`:

Changing prepare step count:

```
void addPrepareStep(PrepareStep);
void clearPrepareSteps();

void removeAllPrepareSteps(int);
void removeLastPrepareStep();
void removePrepareStep(int, bool);
```

Replacing / finding prepare steps:

```
bool replacePrepareStep(int, PrepareStep);
bool replacePrepareStep(PrepareStep, bool);
```
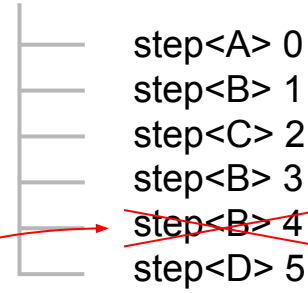
"B", false

| View | 0..* | AbstractPrepareStep |

step<A> 0
step<B> 1
step<C> 2
step<B> 3
step<B> 4
step<D> 5

```
          ┌─────────────┐              ┌─────────────────────────┐
          │    View     │◇────── 0..* ─│   AbstractPrepareStep   │
          └─────────────┘              └─────────────────────────┘
```
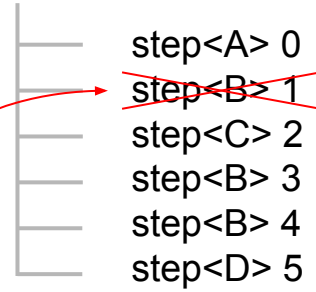
Manipulating a `View`:

Changing prepare step count:

```
void addPrepareStep(PrepareStep);
void clearPrepareSteps();

void removeAllPrepareSteps(int);
void removeLastPrepareStep();
void removePrepareStep(int, bool);
```

step\<A\> 0
step\<B\> 1
step\<E\> 6
step\<B\> 3
step\<B\> 4
step\<D\> 5

Replacing / finding prepare steps:

```
bool replacePrepareStep(int, PrepareStep);
bool replacePrepareStep(PrepareStep, bool);
```

2, step\<E\> 6

```
          ┌──────────┐                    ┌─────────────────────┐
          │   View   │◇─────────── 0..*    │ AbstractPrepareStep │
          └──────────┘                    └─────────────────────┘
```
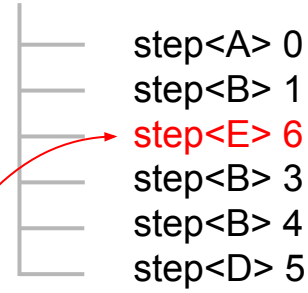
Manipulating a `View`:

Changing prepare step count:

```
void addPrepareStep(PrepareStep);
void clearPrepareSteps();

void removeAllPrepareSteps(int);
void removeLastPrepareStep();
void removePrepareStep(int, bool);
```

Replacing / finding prepare steps:

```
bool replacePrepareStep(int, PrepareStep);
bool replacePrepareStep(PrepareStep, bool);
```

step<A> 0
step<B> 1
step<C> 2
step<B> 3
step<B> 7
step<D> 5

step<B> 7, true

```
                                              ┌─────────┐  0..*  ┌──────────────────────┐
                                              │  View   │◇───────│  AbstractPrepareStep │
                                              └─────────┘        └──────────────────────┘
```

Manipulating a `View`:

                                                          step<A> 0
Changing prepare step count: step<B> 7
                                                          step<C> 2
    void addPrepareStep(PrepareStep);   step<B> 3
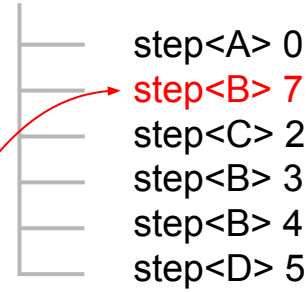   void clearPrepareSteps();   step<B> 4
                                                          step<D> 5
    void removeAllPrepareSteps(int);
    void removeLastPrepareStep();
    void removePrepareStep(int, bool);

Replacing / finding prepare steps:

    bool replacePrepareStep(int, PrepareStep)
    bool replacePrepareStep(PrepareStep, bool)   step<B> 7, false

    const PrepareStep& prepareStep(int, bool)
    int indexOfPrepareStep(int, bool)
```