

# Demonstration of the refenums package

This document demonstrates the [refenums](#) package with the development documents of a reference manager. The content is a simplified version of [JabRef's](#) requirements and decision records, written in [MADR](#).

Each section starts with an orange box setting up a kind of item; this produces no output. Each green box shows the  $\text{\LaTeX}$  code producing the output right above it. Items are defined and referenced with shorthands such as `\defReq` and `\refReq`, which `\setupRefEnum{Req}` creates for `\defRefEnum{Req}` and `\refEnum{Req}`.

## Contents

|          |                                                               |          |
|----------|---------------------------------------------------------------|----------|
| <b>1</b> | <b>Features</b>                                               | <b>2</b> |
| 1.1      | Feature 1: Save a library . . . . .                           | 2        |
| 1.2      | Feature 2: Autosave . . . . .                                 | 2        |
| <b>2</b> | <b>Risks</b>                                                  | <b>3</b> |
| <b>3</b> | <b>Requirements</b>                                           | <b>3</b> |
| <b>4</b> | <b>Decisions</b>                                              | <b>4</b> |
| 4.1      | Decision Record 1 (ADR-1): Replace files atomically . . . . . | 4        |
| <b>5</b> | <b>Milestones</b>                                             | <b>5</b> |
| <b>6</b> | <b>German requirements</b>                                    | <b>6</b> |
| <b>7</b> | <b>References</b>                                             | <b>6</b> |

# 1 Features

Features print only their short form (e.g., “Feature 1”) and each becomes a subsection.

```
72 \setupRefEnum[separator={ }, enclosing=subsection]{Feature}{ONLYSHORT}  
73 % With the default separator "-", this would print "Feature-1"
```

## 1.1 Feature 1: Save a library

As a researcher, I want to save my library to a .bib file, so that I can cite its entries in L<sup>A</sup>T<sub>E</sub>X.

```
77 \defFeature{Save a library}{save}  
78 As a researcher, I want to save my library to a \texttt{.bib} file, so  
    that I can cite its entries in \LaTeX{ }.
```

## 1.2 Feature 2: Autosave

As a researcher, I want every change to be saved automatically and a backup to be kept, so that I do not lose work after a crash.

```
82 \defFeature{Autosave}{autosave}  
83 As a researcher, I want every change to be saved automatically and a  
    backup to be kept, so that I do not lose work after a crash.
```

## 2 Risks

Risks use no separator (e.g., “Risk 1 (R1)”).

```
90 \setupRefEnum[separator={}]{R}{Risk}
91 % With the default separator "-", this would print "R-1"
```

Risk 1 (R1): *Concurrent modification*. Another process, e.g., a second JabRef instance on a network share, writes the library file while [Feature 1](#) is running.

```
95 \defR{Concurrent modification}{concurrent}
96 Another process, e.g., a second JabRef instance on a network share,
    writes the library file while \refFeature{save} is running.
```

Risk 2 (R2): *Incomplete backup*. A failure while writing a backup during [Feature 2](#) (“[Autosave](#)”) replaces a valid backup.

```
100 \defR{Incomplete backup}{backup}
101 A failure while writing a backup during \refFeatureFull{autosave}
    replaces a valid backup.
```

## 3 Requirements

Requirements use the default separator (e.g., “Requirement 1 (Req-1)”).

```
108 \setupRefEnum{Req}{Requirement}
109 % Titles are set in italics; titleformat={} would set them upright
```

Requirement 1 (Req-1): *Detect concurrent modification*. If the library file changed since the save started, the save is aborted with an error. Mitigates [R1](#) (“[Concurrent modification](#)”).

```

113 \defReq{Detect concurrent modification}{detect}
114 If the library file changed since the save started, the save is
    aborted with an error.
115 Mitigates \refRFull{concurrent}.

```

Requirement 2 (Req-2): *Keep valid backups*. A failure while writing a backup leaves the previous backup untouched. Mitigates R2 (“[Incomplete backup](#)”).

```

119 \defReq{Keep valid backups}{keep}
120 A failure while writing a backup leaves the previous backup untouched.
121 Mitigates \refRFull{backup}.

```

## 4 Decisions

Each decision record becomes a subsection. Decision records and the options they consider use the default separator.

```

128 \setupRefEnum[enclosing=subsection]{ADR}{Decision Record}
129 \setupRefEnum{Opt}{Option}

```

### 4.1 Decision Record 1 (ADR-1): Replace files atomically

**Context and Problem Statement** How do we write a file so that Req-1 (“[Detect concurrent modification](#)”) and Req-2 (“[Keep valid backups](#)”) hold?

#### Considered Options

- (*Opt-1*) *Overwrite in place*
- (*Opt-2*) *Write a temporary file and move it over the target*

**Decision Outcome** Chosen option: [Opt-2](#): “[Write a temporary file and move it over the target](#)”, because a failed write leaves the original file untouched and the target can

be checked for changes right before the move.

```
133 \defADR{Replace files atomically}{atomic}
134
135 \paragraph{Context and Problem Statement}
136 How do we write a file so that \refReqFull{detect} and
    \refReqFull{keep} hold?
137
138 \paragraph{Considered Options}
139 \begin{itemize}
140 \item \defOptInline{Overwrite in place}{inplace}
141 \item \defOptInline{Write a temporary file and move it over the
    target}{tmp}
142 \end{itemize}
143
144 \paragraph{Decision Outcome}
145 Chosen option: \refOptFullColon{tmp}, because a failed write leaves
    the original file untouched and the target can be checked for
    changes right before the move.
```

## 5 Milestones

Milestones combine print name and short name (e.g., “Milestone M1”).

```
152 \setupRefEnum[combined]{M}{Milestone}
153 % Without combined, this would print "Milestone 1 (M-1)"
```

Milestone M1: *Safe saving*. Reached when [Req-1](#) and [Req-2](#) are implemented as decided in [ADR-1](#) and covered by unit tests. This mitigates Risks [R1](#) and [R2](#).

```
157 \defM{Safe saving}{safe}
158 Reached when \refReq{detect} and \refReq{keep} are implemented as
    decided in \refADR{atomic} and covered by unit tests.
159 This mitigates \zcref{enum:R:concurrent,enum:R:backup}.
```

## 6 German requirements

The plural of the print name defaults to the print name with an “s” appended (e.g., “Requirements”). German needs its own plural. `\zcref` follows the language of the text, here set with `babel`.

```
166 \setupRefEnum[plural=Anforderungen]{Anf}{Anforderung}
167 % Without plural, \zcref would print "Anforderungs"
```

Anforderung 1 (Anf-1): *Bibliothek speichern*. Die Bibliothek wird als `.bib`-Datei gespeichert.

```
171 \selectlanguage{ngerman}
172 \defAnf{Bibliothek speichern}{speichern}
173 Die Bibliothek wird als \texttt{.bib}-Datei gespeichert.
```

Anforderung 2 (Anf-2): *Sicherung behalten*. Ein fehlgeschlagenes Schreiben lässt die vorherige Sicherung unverändert.

```
177 \defAnf{Sicherung behalten}{sicherung}
178 Ein fehlgeschlagenes Schreiben lässt die vorherige Sicherung
    unverändert.
```

Diese Version erfüllt Anforderungen [Anf-1](#) und [Anf-2](#).

```
182 Diese Version erfüllt \zcref{enum:Anf:speichern,enum:Anf:sicherung}.
183 \selectlanguage{english}
```

## 7 References

The package `refenums` offers several ways to reference an item. They differ in how much of the item they show: its kind, its identifier, its title, or a combination. The following table shows each of them for [Req-2](#) from [Section 3](#).

| Aim                              | Command                              | Output                                                   |
|----------------------------------|--------------------------------------|----------------------------------------------------------|
| Identifier                       | <code>\refReq{keep}</code>           | <a href="#">Req-2</a>                                    |
| Identifier (title)               | <code>\refReqFull{keep}</code>       | <a href="#">Req-2</a> (“Keep valid backups”)             |
| Identifier: title                | <code>\refReqFullColon{keep}</code>  | <a href="#">Req-2</a> : “Keep valid backups”             |
| Title                            | <code>\refReqTitle{keep}</code>      | <a href="#">Keep valid backups</a>                       |
| <i>With the kind of the item</i> |                                      |                                                          |
| Identifier                       | <code>\refReq*{keep}</code>          | <a href="#">Requirement Req-2</a>                        |
| Identifier (title)               | <code>\refReqFull*{keep}</code>      | <a href="#">Requirement Req-2</a> (“Keep valid backups”) |
| Identifier: title                | <code>\refReqFullColon*{keep}</code> | <a href="#">Requirement Req-2</a> : “Keep valid backups” |

Each shorthand has a long form, which takes the kind of the item as first argument. For instance, `\refReqFull{keep}` is short for `\refEnumFull{Req}{keep}`. The command `\refReq*{keep}` is also short for `\zcref{enum:Req:keep}` of [zref-clever](#), which also references several items at once, as in [Section 5](#).

The following list references every item of this document in the form “Identifier (title)”.

- Features: [Feature 1](#) (“Save a library”), [Feature 2](#) (“Autosave”)
- Risks: [R1](#) (“Concurrent modification”), [R2](#) (“Incomplete backup”)
- Requirements: [Req-1](#) (“Detect concurrent modification”), [Req-2](#) (“Keep valid backups”)
- Decision records: [ADR-1](#) (“Replace files atomically”)
- Options: [Opt-1](#) (“Overwrite in place”), [Opt-2](#) (“Write a temporary file and move it over the target”)
- Milestones: [M1](#) (“Safe saving”)

```

221 \begin{itemize}
222 \item Features: \refFeatureFull{save}, \refFeatureFull{autosave}
223 \item Risks: \refRFull{concurrent}, \refRFull{backup}
224 \item Requirements: \refReqFull{detect}, \refReqFull{keep}
225 \item Decision records: \refADRFull{atomic}
226 \item Options: \refOptFull{inplace}, \refOptFull{tmp}
227 \item Milestones: \refMFull{safe}
228 \end{itemize}

```