

LyX for many purposes

Opportunities with LyX

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Outline

- 1 Documents in general
- 2 Presentations
- 3 Math
- 4 Music
- 5 Software documentation



LyX is useful for writing many kinds of documents

- Letters
- Reports
- Books
 - can make camera-ready PDF for professional printing
- Handles hundreds of pages with ease
- Can split big documents over multiple files



Features making your documents look good

- LyX uses the \LaTeX typesetting software
- Automatic hyphenation, for most languages
- Advanced line breaking
 - straight margins without overly long spaces
- Advanced page breaking
 - never a heading at the bottom of a page!
- Uses advanced font features automatically
 - kerning
 - ligatures
 - small caps



Features making your documents look good

- Styles based, instead of “tweaking font parameters”
 - consistent style throughout long documents
 - little need for “finishing”, saves time
- Structured documents
 - The table of contents is automatic, so it is *never* wrong
 - likewise for cross references, figure numbers
 - support for bibliographies & indexes
- Image support
 - many formats (jpeg, png, svg, fig, eps & more)
 - exact sizing avoids variations from drag-based sizing
 - floating and numbered figures



Making presentations with LyX

- PDF-based presentations
 - such as this one
 - works with any pdf-viewer
- LyX strong points are available in presentations too
 - math
 - graphics
- Stepwise animations using tikz/pgf
 - example on the following page
 - you may skip it by clicking on "Math"



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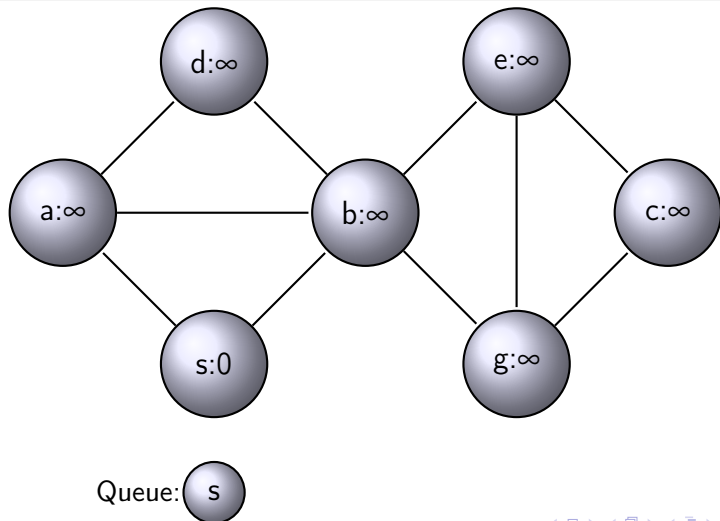


Making presentations with LyX

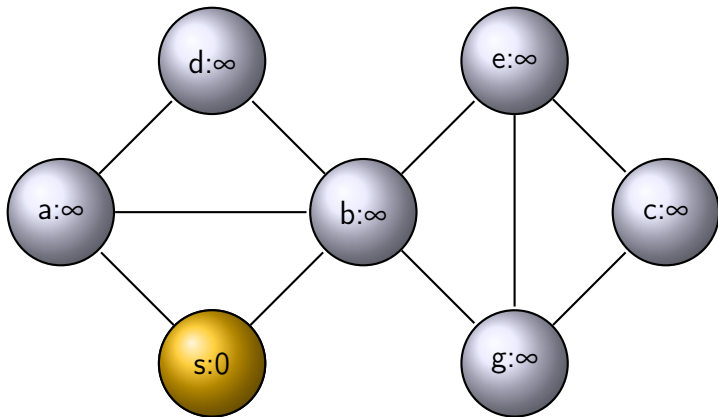
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Stepwise animation of a breadth-first search

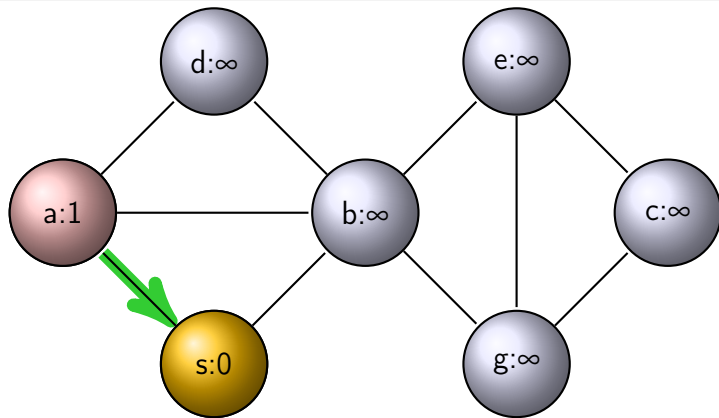


Stepwise animation of a breadth-first search



Queue:

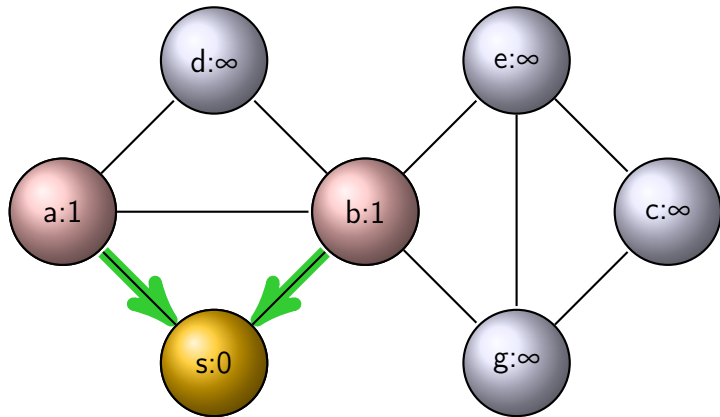
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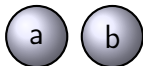
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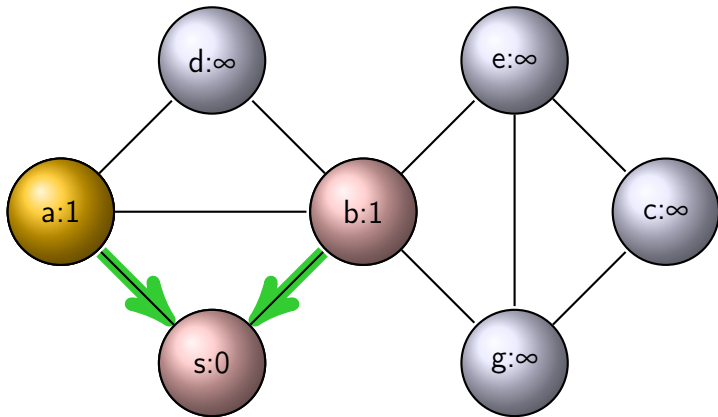
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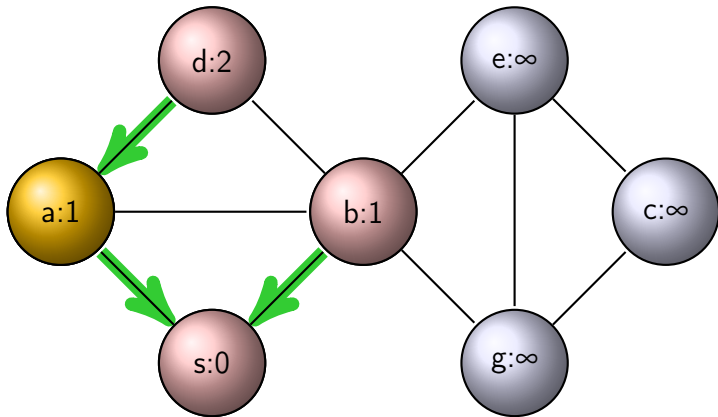
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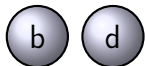
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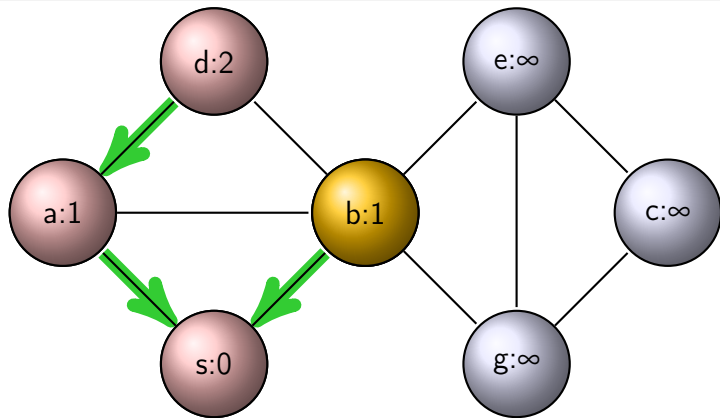
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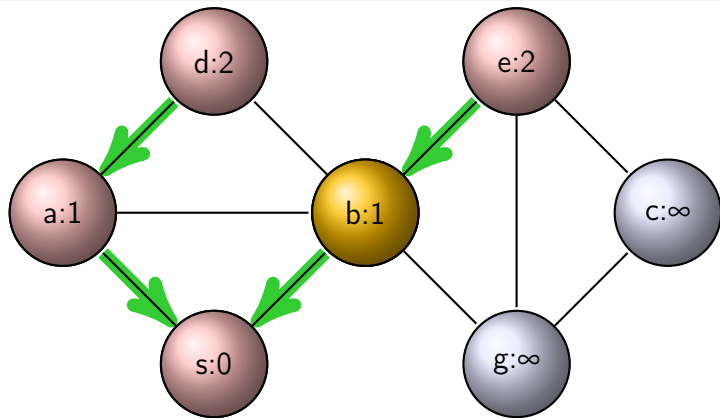
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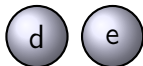
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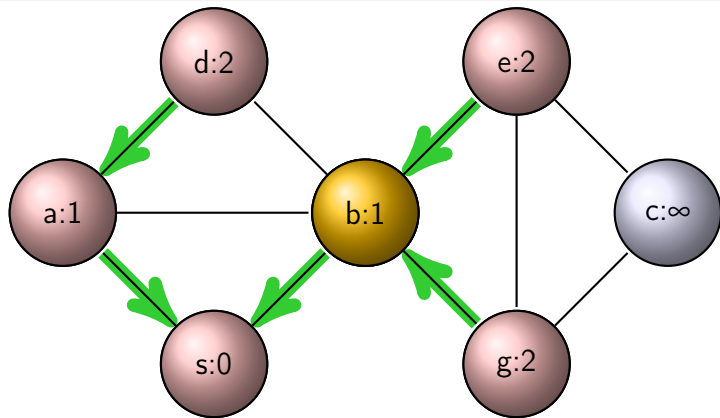
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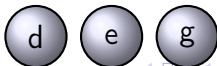
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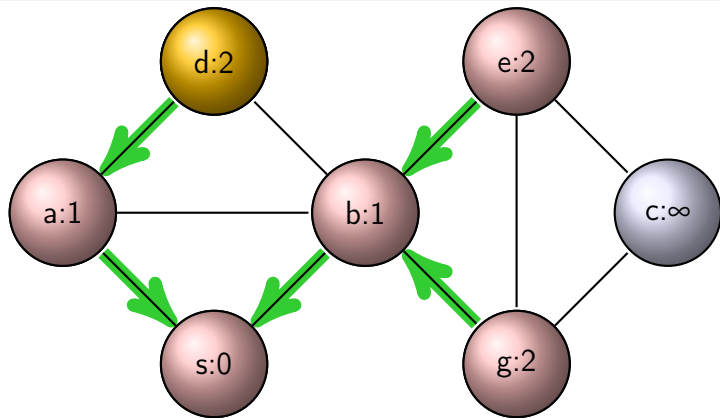
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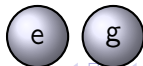
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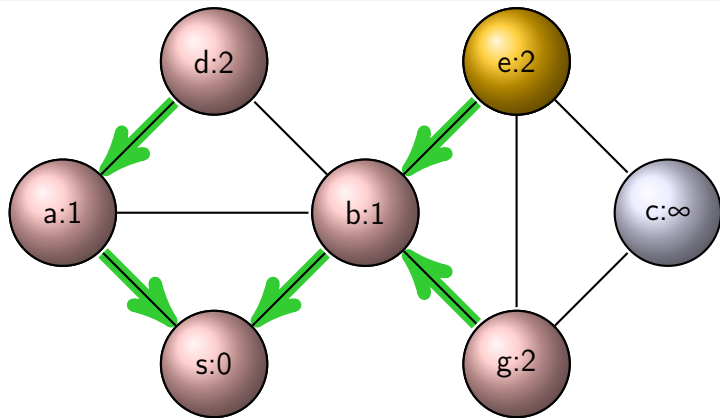
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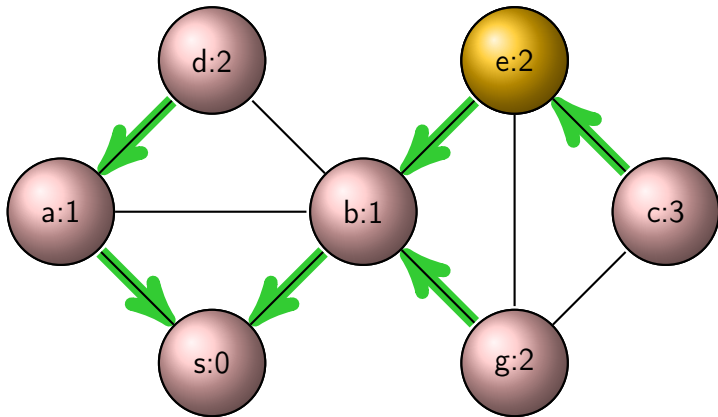
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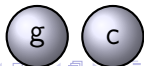
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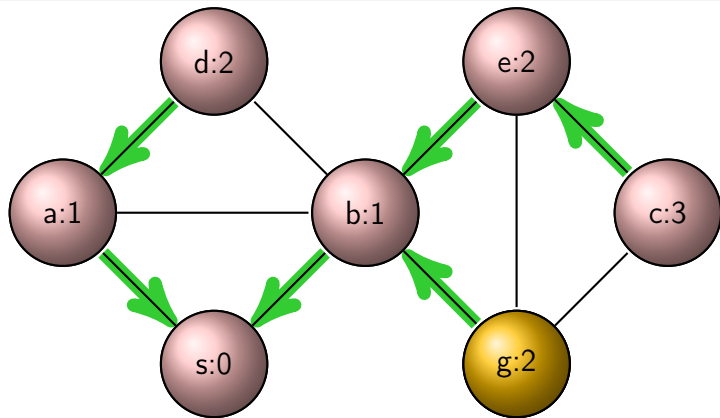
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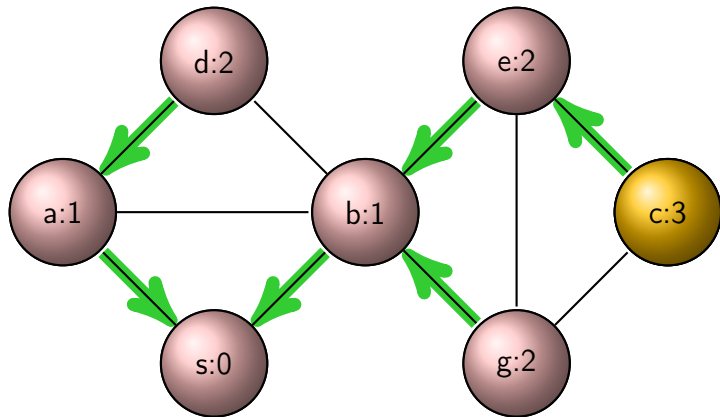
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Math in LyX

- \LaTeX makes formulas look good printed

$$\sum_{n=1}^k \frac{1}{n} > \int_1^{k+1} \frac{1}{x} dx = \ln(k+1)$$

- LyX has the best formula editor there is
 - pick everything from menus, or
 - write \TeX formulas directly
- Interfaces to computer algebra systems
 - example, using *maxima* to solve an integral:
 - $\int \frac{1}{1-x} dx = -\log(1-x)$
 - the equals sign and the rest were filled in by *maxima*



Sheet music with LyX & Lilypond

- LyX can use the Lilypond music engraving software
- Small snippets such as

- a scale: `{g4 a b c d e f g}`:



- a chord: `{<e g cis e>2}`:



- Larger example on the following page
 - all entered in LyX



Grieg's concerto in A minor

Allegro molto moderato (♩ = 84)

Piano

The image displays a musical score for Grieg's concerto in A minor. The top system is for the piano, with a tempo marking of 'Allegro molto moderato' and a quarter note equal to 84 beats per minute. The piano part begins with a fortissimo (ff) dynamic and includes a 'poco rit' (slightly ritardando) section. The bottom system shows the violin and viola parts, starting at measure 4. The violin part is marked 'a tempo' and 'stringendo' (increasingly), while the viola part is marked 'a tempo' and 'fz' (fortissimo). The score includes various musical notations such as slurs, ties, and dynamic markings.



Source code support

- Enter source code into LyX, or
- Reference source files directly
 - automatic document update when the source change
- Either way, automatic syntax highlighting
 - for any language
 - customizable, if needed
- Example on the following page
 - line numbers & highlighting done automatically

```
int x=42; /* C */  
int x=42; /* C */
```



Source code example, count to 10 in C

```
#include <stdio.h> 1
int main() { 2
    int i;          /* 'i' is a "variable" */ 3
    for (i = 1; i < 10; ++i) { /* loop */ 4
        printf("i=%i\n", i); 5
    } 6
} /* This program ends here */ 7
```

