Using bardhw.sty Style for Homework Assignments

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Contents

1 Introduction

This manual explains how to use the style file "bardhw.sty." This style file is designed for homework assignments, and takes care of a number of formatting issues such as exercises, definitions and the like, as well as a few miscellaneous items. It is assumed that you already know the basics of LaTeX. Only the specifics of formatting a homework assignement are discussed here.

The file "bardproj.sty" can be obtained from Ethan Bloch (bloch@bard.edu)

2 Document Format

The basic form of the document is

```
\documentclass[11pt, oneside, reqno]{article}
\usepackage{amssymb, amsthm, amsmath, amsfonts}
\usepackage{bardhw}

\begin{document}

<Text of document>

\end{document}
```

3 Information

At the start of your document insert

```
\hwinfo{<Your name>}{<Course name>}{<Date of assignment>}
```

into your text immediately after

```
\begin{document}
```

Make sure you put in your own name, your course name, and the date the assignment is due.

4 Double spacing

If you want to double-space your assignment, insert

```
\doublespace
```

into your text immediately after the homework information.

To undo double-spacing at any point, insert

```
\singlespace
```

into your text.

5 Exercises and the like

When writing a homework exercise, sometimes you might wish to state the exercise first, and then give the solution. You might also wish to state a lemma, theorem, etc. that you made up yourself.

If you wish to state the exercise first, use the format

```
\exer{<Number or name of exercise>}
<Statement of exercise>
\eexer
```

The number or name of the exercise could be anything, for example the number of the exercise (e.g. 9.3), but anything else you might want as well. For example, if you write

```
\exer{9.3}
Prove that all sets are not not-sets.
\eexer
```

you will obtain

Exercise 9.3. *Prove that all sets are not not-sets.*

If you do not wish to give a name or number to the exercise (though that is not a good idea), you can leave the {} empty.

Other environments that work similarly are

```
\prob{}  ... \eprob          (Problem)
\lem{}  ... \elem            (Lemma)
\thm{}  ... \thm             (Theorem)
\prop{} ... \eprop           (Proposition)
\conj{} ... \econj           (Conjecture)
\expl{}  ... \eexpl          (Example)
\remk{}  ... \eremk          (Remark)
\alg{}  ... \ealg            (Algorithm)
\defn{} ... \edefn           (Definition)
\exernum{}  ... \eexernum    (Exercise number only)
```

The example, remark, algorithm and definition environments do not italicize the statement. The exernum environment writes the number or name of the exercise in bold, but without any word such as "Exercise."

6 Proofs and the like

If you first state an exercise, then the environment for the proof is

```
\demo
<The proof>
\edemo
```

If you would rather say "solution" than "proof," then use the format

```
\sol  ... \esol
```

If you are not stating the exercise, but only the proof, then use the following format

```
\demonum{<Number or name of exercise>}
<The proof>
\edemonum
```

If you would rather say "solution" than "proof," then use the format

```
\solnum{<Number of exercise>}  ... \esolnum
```

For example, if you write

```
\demonum{9.3}
If what we were trying to prove is false, then we obtain
a contradiction, so the result must be true.
\eexer
```

you will obtain

Proof of 9.3. If what we were trying to prove is false, then we obtain a contradiction, so the result must be true. □

If you would rather just say the number of the exercise, without the words "proof of" or "solution of," then use the format

```
\ans{<Number or name of exercise>}
<The proof>
\eans
```

7 Numbered Displayed Equations

The format for a numbered displayed equation is

```
\begin{equation}\label{<Equation label>}
<Equation>
\end{equation}
```

The equation label can be any character string starting made of numbers and letters, starting with a letter; a mnemonic would be useful. The equation label is used internally by LaTeX, and does not appear in the printed version. The actual equation numbert is done automatically by LaTeX. You also do not put in $$ ... $$ in this case.

To refer to the equation elsewhere in the text, write

```
Equation~\ref{<Equation label>}
```

8 Miscellaneous Mathematics Symbols

To write the standard symbols for various sets of numbers, we have

```
Real numbers: \rr
Complex numbers: \cc
Rational numbers: \qq
Integers: \zz
n-dimensional space: \rrr{n}
```

To write $f\colon A \to B$ write

```
\func fAB
```

If the name of the function, or the domain or codomain, consist of more than one character, put them in curly brackets.

To write $g \circ f$, write

```
g \rc f
```

All the exressions in this section must be in math mode.

9 Figures

There are two ways to deal with figures. One is to leave spaces for the figures, and then paste them into the printed out copy of your project; the other is to import computer generated figures directly into the .dvi file.

If you want to leave a space for a figure (which you will paste into the printed copy), use the format

```
\figspace{<Space>}{<Figure label>}
```

where the space would be something like "1.5truein," and figure label is the internal reference for the figure that you will use to refer to it. You should not put in the figure number, since that is done automatically by LaTeX. To refer to the figure elsewhere in the text, use the format

```
Figure~\ref{<Figure label>}
```

If you want to import a computer generated figure directly into the .dvi file, the figure needs to be in a format that TeX can work with; such formats include .bmp, .jpg and .eps (encapsulated postscript). The method we use for .bmp and .jpg files are specific to PCTeX.

For .bmp and .jpg files, you must first insert

```
\input setbmp
```

into your file prior to

```
\begin{document}
```

To insert a .bmp file, use the format

```
\figbmp{<Path+filename>}{<Figure label>}
       {<Width>}{<Height>}{<Caption>}
```

where the path+filename have the form

```
c:/mysubdir/mypic.bmp
```

Notice that we use / instead of \ in TeX. The width and height are lengths used to scale the figures, for example "3truein." The caption can be left blank if you do not wish to insert one (though you still need to write {} if you leave the caption blank). You should not write the figure number in the caption, since that is done automatically by LaTeX. To refer to the figure elsewhere in the text, use the format

```
Figure~\ref{<Figure label>}
```

To insert a .jpg files, use the format

```
\figjpg{<Path+filename>}{<Figure label>}
       {<Width>}{<Height>}{<Caption>}
```

For .jpg files, you must use PCTEXin PS mode.

For .eps files, you must first insert

```
\usepackage{graphics}
```

into your file prior to

```
\begin{document}
```

To insert an .eps file, use the format

```
\figeps{<Path+filename>}{<Figure label>}{<Caption>}
```

Notice that we do not need to state the width and height for .eps files.

Sample Homework Assignment

```
\documentclass[11pt, oneside, reqno]{article}
\usepackage{amssymb, amsthm, amsmath, amsfonts}
\usepackage{bardhw}

\begin{document}

\hwinfo{Fred Fredstein}{Math 888}{5/5/2055}

\doublespace

\exer{53.1}
If $A$ is a set, then it is not a not-set.
\eexer

\demo
We use proof by contrapositive.  Suppose that $A$ is not not
a not-set.  Then it must be a not-set.
\edemo

\ans{53.2}
This case is just like the previous case.
\eans

\end{document}
```