

ABBREVIATED MANUAL FOR THE "PROOF" PROGRAM

Starting Proof Tutor: After you have made a working copy, you may start Proof Tutor by putting your working copy in disk drive A: and typing TUTOR.)- for the demonstration program, which you should try the first time or PROOF.)- for the full program. If you want to stop the Proof Tutor before you get to the end of a problem, type QT (for Quit) anytime you are asked for a rule.

Logical Notation: We have special conventions for typing logical formulas:

ENGLISH TERM	TELLER SYSTEM SYMBOL	COMPUTER REPLACEMENT
WHAT TO TYPE		
"and"	&	& ; or &
"or"	v	v or V
"not"	~	~ or `
"if...then"	⊃	> or .
"if and only if"	≡	=
"all"	(∀x)	(x)
"some"	(∃x)	(Ex)
left parenthesis	((or [
right parenthesis)) or]

Notice that the upside-down "A" is not included in the "all" symbol, unlike the Teller system. The only way the biconditional sign '=' can be entered is with the '=' key. When you are doing problems in propositional logic, all letters will be automatically translated to upper case. In predicate logic, the distinction between upper and lower case is significant, but in nearly all cases, the computer will change the case of the characters you enter to whatever is appropriate in the context.

Whenever you are asked to enter a statement, characters that you enter will appear in the box in the upper center of the screen. Most common syntax errors in the statement you are entering will be indicated by a "beep" and an error message. Use the "backspace" key to erase the erroneous characters and type the rest of the statement correctly.

"One Finger" Typing: If you are not a touch typist, you can enter all statements with a single finger, without even touching the "shift" keys. To do this, use the following special keys:

type [for (
type]	for)
type . (period)	for >
type ` (back quote)	for ~
type V	for v
type ; (semi-colon)	for &

Selecting Options: When Proof Tutor starts, you will be able to select from options displayed on the screen. Most choices in the Proof Tutor modules are made by means of "Menus", which offer you a specific list of possible actions to choose from at each point in the program. You will encounter two types of menus. One will offer a list of lettered selections. Simply type the letter listed to the left of the item you have chosen.

The second type menu allows you to select problems or actions by moving a lighted bar on the screen. Use the up and down arrow keys (on the right on the keyboard) to move the lighted bar to the item you select and press the return key to register your selection. In the case of menus that select problems to do, the menu will indicate which problems you have already done and automatically position the lighted bar over the lowest numbered problem not yet done. You may also select the "Quit" or "More Problems" options on "light bar" menus by typing "Q" or "M" respectively.

Once the first option of PROPOSITIONAL CALCULUS or PREDICATE CALCULUS is selected, that choice will be in force until you leave Proof Tutor and restart it. The next option is to select the problems set from Teller's text from which you will be choosing specific problems. You can change problem sets later if you wish, or you can type in your own problems.

Next you may select whether you wish to save your solved problems on disk. If you choose to do this, you will be asked as each problem finishes whether or not you want to save the solution. The first time that you indicate that you do want to save a solution, you will be asked for the name of a disk file to be used to save that problem and all problems subsequently solved until you leave Proof Tutor. You will be able to save only a limited number of problems on your Proof Tutor program disk. Type SAVESET.)- to save problems in the file SAVESET on your disk. Finally, you will be asked whether you want to select a problem from the disk change problem sets, or to type in your own. If you select the "TYPE IN YOUR OWN" option, you will receive instructions on the screen on how to type in your problem. You must enter the premises first, one to a line, type the "/"

symbol (without quote marks) by itself on a line, and then type the conclusion.

Entering Lines in a Proof: Once you have selected a proof problem, you should begin entering the steps of the proof. The basic format for entering rules is the following: begin each line of the proof by entering the one or two letter code for a rule, and press the return key. You will then be asked to enter whatever further information is required for that rule. For examples, see the tutorial section below.

Rules of Inference: The rules that are available in the Proof Tutor include all rules of inference in the Teller system, plus a few procedural rules that make proof construction more convenient. The requirements for each rule are indicated briefly in the following table. In the table each rule is classified by the premises or subordinate derivations ("sub devs") it requires.

TELLER SYSTEM RULE LIST

PROPOSITIONAL RULES		
NAME	MEANING	REQUIREMENTS OF THE RULE
>I	> INTRODUCTION	ONE SUB DEV
>E	> ELIMINATION	TWO PREMISES
&I	& INTRODUCTION	TWO PREMISES
&E	& ELIMINATION	ONE PREMISE
vI	v INTRODUCTION	ONE PREMISE
vE	v ELIMINATION	TWO PREMISES
=I	= INTRODUCTION	TWO PREMISES OR TWO SUB DEVS
=E	= ELIMINATION	BOTH TYPES NEED 2 PREMISES. IF ONLY ONE PREMISE # USED, IT MUST BE ENTERED TWICE.
NAME	MEANING	REQUIREMENTS OF THE RULE
~I	~ INTRODUCTION	ONE SUB DEV AND ONE PREMISE. IF TWO STATEMENTS CONTRADICT EACH OTHER, ONE SHOULD BE THE LAST STATEMENT IN THE SUB DEV, AND THE OTHER WILL BE THE PREMISE. IF THE CONTRADICTION IS A SINGLE CONJUNCTION, IT SHOULD BE THE PREMISE ASKED FOR.
~E	~ ELIMINATION	ONE PREMISE
R	REITERATION	ONE PREMISE
A	ASSUMPTION	ONE STATEMENT
AC	ARG BY CASES	THREE PREMISES OR ONE PREMISE AND TWO SUB DEVS.
DC	DENYING CONS.	TWO PREMISES
RD	REDUCTIO	SEE ~I COMMENT
DM	DE MORGAN'S	ONE PREMISE
CP	CONTRAPOSITION	ONE PREMISE
C	CONDITIONAL	ONE PREMISE
W	WEAKENING	ONE PREMISE
CD	CONTRADICTION	TWO PREMISES

QUANTIFIER RULES

NAME	MEANING	REQUIREMENTS OF THE RULE
UI	(x) INTRODUCTION	ONE PREMISE
UE	(x) ELIMINATION	ONE PREMISE
EI	(Ex) INTRODUCTION	ONE PREMISE
EE	(Ex) ELIMINATION	ONE SUB DEV, ONE PREMISE # FOR EXIST. STAT, AND ONE FOR POSITION OF CONCLUSION WITHIN SUB DEV.
~U	~ UNIVERSAL	ONE PREMISE
~X	~ EXISTENTIAL	ONE PREMISE
U~	UNIVERSAL ~	ONE PREMISE
X~	EXISTENTIAL ~	ONE PREMISE

CONTROL RULES

NAME	MEANING	REQUIREMENTS OF THE RULE
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RULE SUMMARY FOR TELLER PROOF SYSTEM																																			
5	CD	5	A,	~A	/	B	5	>E	5	A,	A	>	B	/	B	5	R	5	Repeat Statement																
5	&I	5	A,	B	/	A	&	B	5	&E	5	A	B	/	A	(or B)	5	~E	5	~A / A															
5	vI	5	A	(or B)	/	A	v	B	5	vE	5	A	v	B,	~B	/	A	5	vE	5	A v B,	~B	/	A											
5	QT	5	Quit	5	BK	5	Back to Line #	5	DC	5	A	>	B,	~B	/	~A	5	DC	5	A	>	~B,	B	/	~A										
5	~U	5	~(x)Fx	/	(Ex)~Fx	5	~X	5	~(Ex)Fx	/	(x)~Fx	5	DC	5	A	>	~B,	B	/	~A	5	DC	5	~A	>	B,	~B	/	A						
5	U~	5	(x)~Fx	/	~(Ex)Fx	5	X~	5	(Ex)~Fx	/	~(x)Fx	5	DC	5	~A	>	B,	~B	/	A	5	ST	5	End AC or	=I	5	DM	5	~(AvB) ≈ (~A&~B)						
5	UE	5	(x)Fx	/	Fa	5	EI	5	Fa	/	(Ex)Fx	5	ST	5	End AC or	=I	5	DM	5	~(AvB) ≈ (~A&~B)	5	DM	5	~(AvB) ≈ (~A&~B)	5	CP	5	(A > B) ≈ (~B > ~A)	5	CP	5	(A > ~B) ≈ (~B > ~A)			
5	UI	5	Fa	/	(x)Fx	5	DM	5	~(A&B) ≈ (~Av~B)	5	CP	5	(A > B) ≈ (~A v B)	5	CP	5	(A > ~B) ≈ (~B > ~A)	5	CP	5	(A > ~B) ≈ (~B > ~A)	5	CP	5	(A > ~B) ≈ (~B > ~A)	5	CP	5	(A > ~B) ≈ (~B > ~A)	5	CP	5	(A > ~B) ≈ (~B > ~A)		
5	W	5	B	/	A	>	B	5	C	5	(A > B) ≈ (~A v B)	5	CP	5	(A > B) ≈ (~A v B)	5	CP	5	(A > ~B) ≈ (~B > ~A)	5	CP	5	(A > ~B) ≈ (~B > ~A)	5	CP	5	(A > ~B) ≈ (~B > ~A)	5	CP	5	(A > ~B) ≈ (~B > ~A)	5	CP	5	(A > ~B) ≈ (~B > ~A)
5	=E	5	A	=	B,	A	/	B	5	=E	5	A	=	B,	B	/	A	5	=E	5	A=B,	A=B	/	A	>	B	5	=E	5	A=B,	A=B	/	A	>	B
5	=E	5	A	=	B,	A	=	B	/	B	>	A	5	=I	5	A	>	B,	B	>	A	/	A	=	B	5	A	5	Any Assumption	5	A	5	Any Assumption		
5	=E	5	A	=	B,	A	=	B	/	B	>	A	5	=I	5	A	>	B,	B	>	A	/	A	=	B	5	A	5	Any Assumption	5	A	5	Any Assumption		
5	=E	5	A	=	B,	A	=	B	/	B	>	A	5	=I	5	A	>	B,	B	>	A	/	A	=	B	5	A	5	Any Assumption	5	A	5	Any Assumption		
5	=E	5	A	=	B,	A	=	B	/	B	>	A	5	=I	5	A	>	B,	B	>	A	/	A	=	B	5	A	5	Any Assumption	5	A	5	Any Assumption		
5	=E	5	A	=	B,	A	=	B	/	B	>	A	5	=I	5	A	>	B,	B	>	A	/	A	=	B	5	A	5	Any Assumption	5	A	5	Any Assumption		
5	=E	5	A	=	B,	A	=	B	/	B	>	A	5	=I	5	A	>	B,	B	>	A	/	A	=	B	5	A	5	Any Assumption	5	A	5	Any Assumption		
5	=E	5	A	=	B,	A	=	B	/	B	>	A	5	=I	5	A	>	B,	B	>	A	/	A	=	B	5	A	5	Any Assumption	5	A	5	Any Assumption		
5	=E	5	A	=	B,	A	=	B	/	B	>	A	5	=I																					

This screen may be viewed while using Proof Tutor by typing * and pressing return.