

Program Description I

Program Title Hunt the Wumpus

Contributor's Name Damon C. Temple
4009 Beechwood Rd.

Address _____
City Hyattsville State Md. Zip Code 20782

Program Description, Equations, Variables

Wumpus is based on the game by that name which appeared in Sept-Oct 1975 issue and the Jan-Feb 1976 issue of "Creative Computing."

The Wumpus is an imaginary cave dwelling creature, and your objective is to find and kill the creature with one of your five arrows. To do this, you must make your way through a series of caves that are connected by tunnels. Each cave has three tunnels leading from it. Some of these tunnels may be one-way, others may be two-way, and occasionally, a tunnel may loop back to the cave from which it started.

There are dangers in the caves: two caves contain bottomless pits. If you should wander into either of these caves, you fall into the pits and the game is over. Two more caves contain "superbats." When you enter a bat cave, these superbats carry you off and randomly drop you into another cave. If that cave contains the pits, the game is over. Still another danger is that you may wander into the cave containing the Wumpus itself (or maybe the bats will drop you there) at an inopportune time. Whenever you and the Wumpus are in the

Operating Limits and Warnings There must always be exactly 15 caves, and each cave must have three tunnels leaving it, one of which should exit to a different cave. Occassionally, access to the Wumpus may be completely blocked by bats and pits. You will have to find a way to force the Wumpus to move if this happens, else you will wander the caves forever.

This program has been verified only with respect to the numerical example given in *Program Description II*. User accepts and uses this program material AT HIS OWN RISK, in reliance solely upon his own inspection of the program material and without reliance upon any representation or description concerning the program material.

NEITHER HP NOR THE CONTRIBUTOR MAKES ANY EXPRESS OR IMPLIED WARRANTY OF ANY KIND WITH REGARD TO THIS PROGRAM MATERIAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. NEITHER HP NOR THE CONTRIBUTOR SHALL BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING OUT OF THE FURNISHING, USE OR PERFORMANCE OF THIS PROGRAM MATERIAL.

Program Description I

Program Title Hunt the Wumpus
 Contributor's Name Damon C. Temple
 Address 4009 Beechwood Rd.
 City Hyattsville State Md. Zip Code 20782

Program Description, Equations, Variables

same cave, one of three things will happen: 1) the Wumpus will be sleeping and so ignore you, 2) the Wumpus will be startled out of his slumber and run to another cave (randomly), or 3) the Wumpus will get mad, attack, and have you for dinner.

As you travel the tunnels from cave to cave, you are given hints as to what lies beyond the cave you are currently in. These hints are in the form of a three digit fraction. Possible outputs are:

I.000 - nothing in adjacent caves

I.001 - bats in at least one of the adjacent caves

I.010 - pits in at least one of the adjacent caves

I.011 - pits and bats in at least one adjacent cave

I.100 - wumpus is in one of the adjacent caves

I.101 - wumpus and bats in one or more adjacent caves

I.110 - wumpus and pits in one or more adjacent caves

I.111 - wumpus, pits, and bats in one or more adjacent caves

"I" is the number of arrows you have left (1 to 5). Following this warning code, your current cave number and the caves to which it

~~Operating Limits and Warnings~~ ~~XXXXXXXXXXXXX~~ connects are output. Example: 12.071114 would indicate that you are currently in cave number 12 and that tunnels lead from that cave to caves 7, 11, and 14.

This program has been verified only with respect to the numerical example given in *Program Description II*. User accepts and uses this program material AT HIS OWN RISK, in reliance solely upon his own inspection of the program material and without reliance upon any representation or description concerning the program material.

NEITHER HP NOR THE CONTRIBUTOR MAKES ANY EXPRESS OR IMPLIED WARRANTY OF ANY KIND WITH REGARD TO THIS PROGRAM MATERIAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. NEITHER HP NOR THE CONTRIBUTOR SHALL BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING OUT OF THE FURNISHING, USE OR PERFORMANCE OF THIS PROGRAM MATERIAL.

Program Description I

Program Title Hunt the Wumpus
 Contributor's Name Damon C. Temple
 Address 4009 Beechwood Rd.
 City Hyattsville State Md. Zip Code 20782

Program Description, Equations, Variables When you think you have found the Wumpus, you shoot an arrow into his cave. You can only shoot into an adjacent cave; an attempt to shoot into a non-adjacent cave will cost you one arrow as a penalty and an "error" will be displayed. If you shoot into the correct cave, the Wumpus is destroyed (indicated by flashing the tunnel number repeatedly). If you shoot into the wrong cave, the Wumpus will randomly relocate to another cave and you will have to start your search all over again. When all your arrows are gone (indicated by a flashing "99"), you loose.

Initialization of this program: There are two ways to initialize this game. Both start by inputting a random seed between 0 and 1. Then a selection of initialization type is made. Pressing "B" will cause the program to randomize the cave and tunnels. Editing is done to ensure that each cave has three tunnels, that each has at least on entry point, and that each cave has at least one exit point. This randomization takes about 2½ minutes.

Pressing "C" will tell the program that you want to define your own cave structure. You will be prompted for the tunnel connections for each cave, beginning with cave number one and continuing thru cave 15. For each cave, enter either the cave number followed by the tunnels in fractional form (ie when prompted with a 1 enter 1.010712 to indicate that tunnels run to caves 1, 7, and 12) or just the fractional portion (.010712). After the 15th cave is defined, the program will randomly distribute the

This program has been verified only with respect to the numerical example given in *Program Description II*. User accepts and uses this program material AT HIS OWN RISK, in reliance solely upon his own inspection of the program material and without reliance upon any representation or description concerning the program material.

NEITHER HP NOR THE CONTRIBUTOR MAKES ANY EXPRESS OR IMPLIED WARRANTY OF ANY KIND WITH REGARD TO THIS PROGRAM MATERIAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. NEITHER HP NOR THE CONTRIBUTOR SHALL BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING OUT OF THE FURNISHING, USE OR PERFORMANCE OF THIS PROGRAM MATERIAL.

Program Description I

Program Title	Hunt the Wumpus		
Contributor's Name	Damon C. Temple		
Address	4009 Beechwood Rd.		
City	Hyattsville	State	Md. Zip Code 20782

Program Description, Equations, Variables

bats, pits, wumpus, and your current position within the structure you have defined. The player will always be in a "safe" cave at the beginning of the game, but will not be given hints about the status of the adjacent caves (1st move, you're on your own). The Wumpus, bats and pits can all co-exist together--bats because they hang from the ceiling, and the wumpus because he has sucker feet that prevent his falling into the pits.

Note: for fast game start-up, record a set of caves on a card for ready use. Then after loading the card, press "E" to place the hazards.

During the course of play, one of the following codes/be flashed:

- 0. - you fell into a bottomless pit
- 3. - bats got you/you are relocated at random
- 88. - wumpus got you and "ate" you for dinner
- 99. - no more arrows left
- n. - where "n" is a cave number you just shot an arrow into,

```

XXXXXXXXXXXXXXXXXXXXX Wumpus is killed
Operating Limits and Warnings

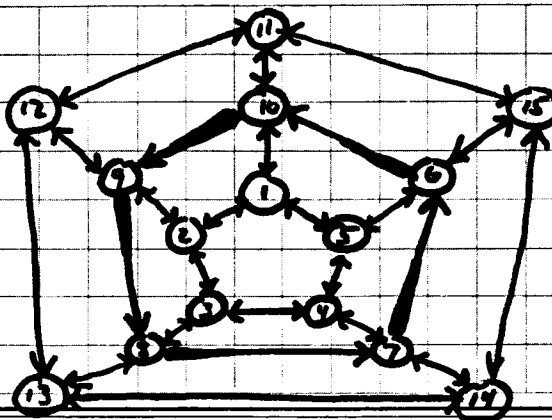
```

This program has been verified only with respect to the numerical example given in *Program Description II*. User accepts and uses this program material AT HIS OWN RISK, in reliance solely upon his own inspection of the program material and without reliance upon any representation or description concerning the program material.

NEITHER HP NOR THE CONTRIBUTOR MAKES ANY EXPRESS OR IMPLIED WARRANTY OF ANY KIND WITH REGARD TO THIS PROGRAM MATERIAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. NEITHER HP NOR THE CONTRIBUTOR SHALL BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING OUT OF THE FURNISHING, USE OR PERFORMANCE OF THIS PROGRAM MATERIAL.

Program Description II

Sketch(es)



Sample Problem(s) Randomize the cave structure:

- 1) load both sides of card one and enter a random seed - .314159265 and press "A"
- 2) press "B" - the pgm will take 2½ minutes to randomize
- 3) output after initialization is 13.050614 indicating that the player is located in cave number 13 and that tunnels lead to caves 5, 6, and 14.

Define your own caves:

- 1) enter a seed - .2718349 followed by "A"
- 2) press "C" - when prompted, key the following

	output	input	output	input	output	input
	1	.020510	6	.051015	11	.101215
	2	.010309	7	.040614	12	.091113
Solution(s)	3	.020408	8	.030713	13	.081214
	4	.030507	9	.020812	14	.071315
	5	.010406	10	.010911	15	.061114

Each of the above inputs is followed by R/S to enter the data. Final output of user defined structure is 5.010406 indicating that player is in cave 5 and tunnels lead to caves 1, 4, and 6. The above input produces a cave structure as shown above. If you now record the data registers, this structure can be loaded and played at any time by pressing "E" to relocate the hazards.

Reference(s)

Program Description II

Sketch(es)

Sample Problem(s) To play the user-defined structure above:

input

output

	5.010406	current position
1 "E"	88	flashing/wumpus ate you

to see other possible moves store 5 in RA then

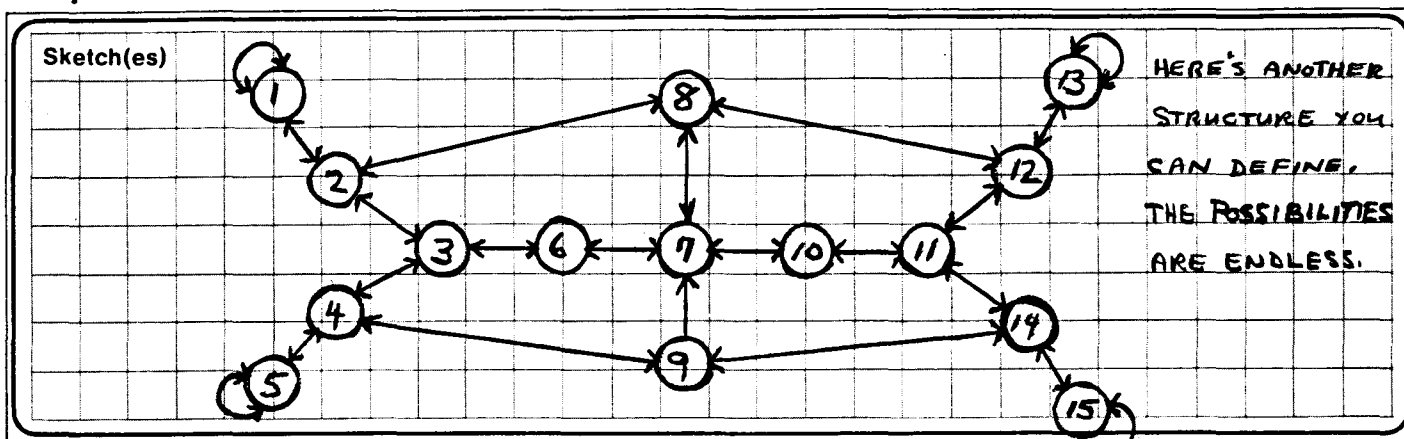
4 "E"	5.010	5 arrows left/pits nearby
	4.030507	tunnels from cave 4 to caves 3,5,7
3 "E"	5.011	pits and bats nearby
	3.020408	
2 "E"	0.	fell into the pits/game over

to see other possible moves, store 3 in RA and continue:

8 "E"	5.010	15 "E"	5.001
	8.030713		15.061114
13 "E"	5.000	6 "E"	3. bats got you/you
	13.081214		are relocated
12 "E"	5.000		5.000
	12.091113		11.101215
11 "E"	5.000	10 "E"	5.100 wumpus nearby
	11.101215		10.010911
		1 "A"	1. flashing/wumpus
			killed

Reference(s)

Program Description II



Sample Problem(s)

If at any time you attempt to move or shoot into a cave not adjacent to the one you are in, an "error" is displayed. You can press "C" twice to recover from the error and display your current flags and position. Should you fall into a pit on the first move, this key can be used to recover from that situation as well. However, your flags will be meaningless and your position is the pit cave.

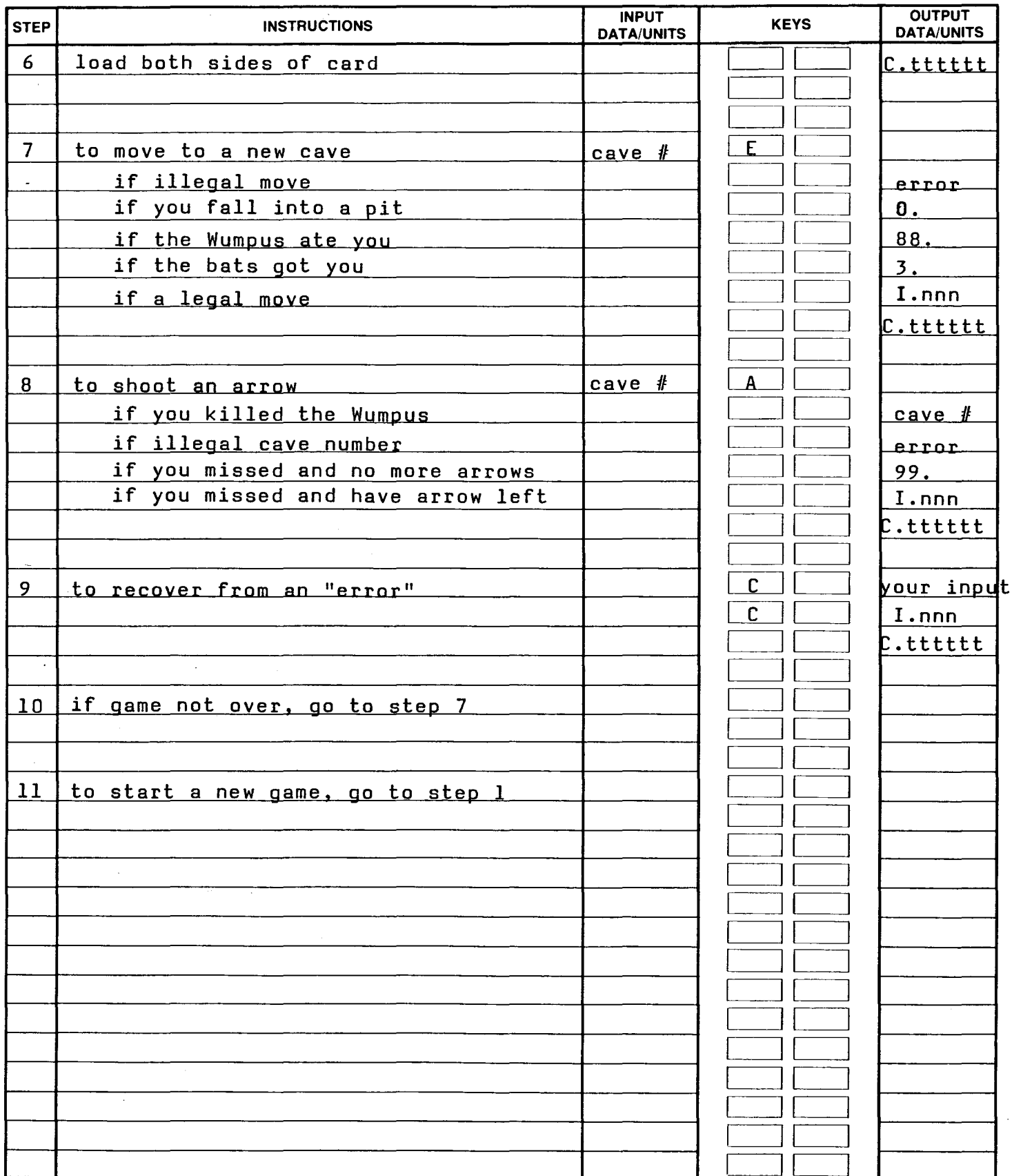
To start a new game, reload the initialization card and press "E" to place the hazards in the existing structure. Then reload the game card.

At the end of each session, re-record the standard caves to capture the changing random number seed for use next time.

Solution(s)

HAPPY HUNTING!

Reference(s)



STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
001	*lbl A	31 25 11	Edit and save the random seed	057	GSB 0	31 22 00	get bat cave 1
002	ABS	35 64		058	STO C	33 13	
003	frac	32 83		059	GSB 0	31 22 00	get bat cave 2
004	X = 0	31 51		060	STO D	33 14	
005	Pi	35 73		061	GSB 0	31 22 00	get pit 1
006	STO 0	33 00	randomize cave structure	062	STO E	33 15	
007	RIN	35 22		063	GSB 0	31 22 00	get pit 2
008	*lbl B	31 25 12		064	EEX	43	and append to
009	rcl 0	34 00		065	2	02	pit 1
010	clreg	31 43		066	+	81	
011	P↔S	31 42	set loop cntrl	067	RCL E	34 15	
012	clreg	31 43		068	+	61	
013	sto 0	33 00		069	STO E	33 15	
014	1	01		070	*lbl d	32 25 14	get pLayer Loc.
015	5	05		071	GSB 0	31 22 00	and make it safe
016	ST I	35 33	gen cave connect. get tunnel	072	STO A	33 11	
017	sto E	33 15		073	RCL B	34 12	
018	*lbl a	32 25 11		074	X=Y	32 51	if = wumpus loc
019	GSB 0	31 22 00		075	GTO d	22 31 14	try again
020	GSB 9	31 22 09		076	RCL A	34 11	
021	EFX	43	verify entry cnt	077	RCL C	34 13	
022	2	02		078	X=Y	32 51	if = bat1 loc
023	+	81		079	GTO d	22 31 14	try again
024	STO+(i)	33 61 24		080	RCL D	34 14	
025	GSB 0	31 22 00		081	RCL A	34 11	
026	GSB 9	31 22 09	get 2nd tunnel	082	X=Y	32 51	if = bat2 loc
027	EEX	43		083	GTO d	22 31 14	try again
028	4	04		084	RCL E	34 15	
029	+	81		085	int	31 83	
030	STO+(i)	33 61 24		086	X=Y	32 51	if = pit1
031	GSB 0	31 22 00	get 3rd tunnel	087	GTO d	22 31 14	try again
032	GSB 9	31 22 09		088	RCL E	34 15	
033	EFX	43		089	frac	32 83	
034	6	06		090	EEX	43	
035	+	81		091	2	02	
036	STO+(i)	33 61 24	repeat til caves are all done	092	X	71	
037	DSZ	31 33		093	RCL A	34 11	
038	GTO a	22 31 11		094	X=Y	32 51	if = pit2
039	1	01		095	GTO d	22 31 14	try again
040	5	05		096	ST I	35 33	
041	ST I	35 33	drop entry cnt from tunnels and substitute cave number in its place	097	RCL(i)	34 24	display player location
042	*lbl b	32 25 12		098	DSP 6	23 06	
043	RCL(i)	34 24		099	P↔S	31 42	
044	frac	32 83		100	RIN	35 22	stop initial.
045	RC I	35 34		101	*lbl 9	31 25 09	
046	+	61	verify cave has no more than 3 entry caves	102	STO C	33 13	
047	STO(i)	33 24		103	X↔I	35 24	
048	DSZ	31 33		104	STO D	33 14	
049	GTO b	22 31 12		105	RC I	35 34	
050	P↔S	31 42		106	2	02	
051	*lbl E	31 25 15	get arrow cnt and locate hazards	107	.	83	
052	5	05		108	9	09	
053	STO 8	33 08		109	RCL(i)	34 24	if fewer that 3
054	P↔S	31 42		110	X ≤ Y	32 71	entry tunnels
055	GSB 0	31 22 00		111	GTO 1	22 01	use the tunnel
056	STO 8	33 12	get wumpus	112	*lbl e	32 25 15	else get last

REGISTERS

0	cavel0	1	cave 11	2	cave 12	3	cave 13	4	cave 14	5	cave15	6		7		8	arrows	9	
S0	seed	S1	cave 1	S2	cave 2	S3	cave 3	S4	cave 4	S5	cave 5	S6	cave 6	S7	cave 7	S8	cave 8	S9	cave 9
A	player loc		B	wumpus loc		C	bats 1		D	bats 2		E	pits1/2		I	used			

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
113	RCL E	34 15	cave checked for	169	STO(i)	33 24	set cave up
114	ST I	35 33	max entries. If	170	GTO c	22 31 13	go get next cave
115	2	02	it has fewer than	171	*1b1 1	31 25 01	- - - - -
116	.	83	3 entries, use it	172	P \Rightarrow S	31 42	Go
117	9	09	as the reqd	173	GTO E	22 15	get hazards
118	RCL(i)	34 24	tunnel	174	*1b1 D	31 25 14	- - - - -
119	X \leq Y	32 71		175	0	00	display caves
120	GTO 2	22 02		176	ST I	35 33	
121	RCL E	34 15	else subt 1 from	177	P \Rightarrow S	31 42	
122	1	01	it and try that	178	*1b1 4	31 25 04	
123	-	51	tunnel	179	ISZ	31 34	
124	STO E	33 15		180	1	01	
125	GTO e	22 31 15		181	6	06	
126	*1b1 2	31 25 02	get default cave	182	RC I	35 34	
127	RC I	35 34	and save it as	183	X=Y	32 51	
128	STO C	33 13	entry cave #	184	GTO 5	22 05	
129	*1b1 1	31 25 01		185	RCL(i)	34 24	
130	1	01	add 1 to number	186	-X-	31 84	
131	STO+(i)	33 61 24	of cave entries	187	GTO 4	22 04	- - - - -
132	RCL D	34 14		188	*1b1 5	31 25 05	
133	ST I	35 33	restore curr	189	RCL A	34 11	display player
134	RCL C	34 13	index to cave #	190	ST I	35 33	location
135	RTN	35 22	and return	191	RCL(i)	34 24	
136	*1b1 0	31 25 00	- - - - -	192	P \Rightarrow S	31 42	
137	RCL 0	34 00	rnd number gen	193	RTN	35 22	stop
138	9	09	gets numbers	194	R/S		
139	9	09	between 1 and 15				
140	7	07					
141	X	71					
142	frac	32 83					
143	STO 0	33 00					
144	1	01		200			
145	5	05					
146	X	71					
147	1	01					
148	+	61					
149	int	31 83					
150	RTN	35 22	- - - - -				
151	*1b1 C	31 25 13	user defining				
152	DSP 0	23 00	his own caves				
153	RCL 0	34 00					
154	clreg	31 43		210			
155	P \Rightarrow S	31 42					
156	clreg	31 43					
157	STO 0	33 00					
158	*1b1 c	32 25 13					
159	1	01					
160	5	05					
161	ISZ	31 34	add 1 to tunnel				
162	RC I	35 34	count				
163	X $>$ Y	32 81	if done				
164	GTO 1	22 01	jump else hold	220			
165	R/S	84	for input				
166	frac	32 83	take only tunnel				
167	RC I	35 34	part and add				
168	+	61	cave number				

LABELS					FLAGS	SET STATUS		
seed	^B rndize	^C u-define	^D display	^E hazards	0	FLAGS	TRIG	DISP
^a used	^b used	^c used	^d used	^e used	1	ON OFF		
⁰ rnd #	¹ used	² used	³	⁴ used	2	0 <input type="checkbox"/> <input type="checkbox"/>	DEG <input type="checkbox"/>	FIX <input checked="" type="checkbox"/>
⁵ used	⁶	⁷	⁸	⁹ verify	3	1 <input type="checkbox"/> <input type="checkbox"/>	GRAD <input type="checkbox"/>	SCI <input type="checkbox"/>
						2 <input type="checkbox"/> <input type="checkbox"/>	RAD <input type="checkbox"/>	ENG <input type="checkbox"/>
						3 <input type="checkbox"/> <input type="checkbox"/>		n_6

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
001	*1b1 E	31 25 15	move to new cave	057	STO A	33 11	for player
002	GSB 5	31 22 05	verify legal mov	058	GTO 4	22 04	- - - - -
003	STO A	33 11		059	*1b1 b	32 25 12	wumpus nearby?
004	0	00	initialize	060	0	00	
005	STO 9	33 09	result code	061	GSB 7	31 22 07	get 1st tunnel
006	*1b1 4	31 25 04	did player go	062	GSB 3	31 22 03	set code if eq
007	RCL A	34 11	into wumpus cave	063	1	01	to wumpus cave
008	RCL B	34 12		064	GSB 7	31 22 07	
009	X ≠ Y	32 61		065	GSB 3	31 22 03	
010	GTO 2	22 02	no	066	2	02	
011	SF 2	35 51 02		067	GSB 7	31 22 07	
012	GSB 8	31 22 08		068	GSB 3	31 22 03	
013	.	83	did wumpus eat	069	GTO c	22 31 13	- - - - -
014	8	08	him	070	*1b1 3	31 25 03	compare tunnels
015	X > Y	32 81		071	RCL B	34 12	to wumpus cave
016	GTO 1	22 01	no	072	X ≠ Y	32 61	
017	8	08		073	RIN	35 22	
018	8	08		074	.	83	set code when eq
019	GTO 9	22 09		075	1	01	
020	*1b1 1	31 25 01		076	STO+9	33 61 09	- - - - -
021	X ≥ Y	35 52		077	*1b1 c	32 25 13	pits nearby?
022	.	83	move wumpus?	078	0	00	
023	2	02		079	GSB 7	31 22 07	
024	X ≤ Y	32 71		080	GSB 3	31 22 03	
025	GTO 2	22 02	no	081	1	01	
026	GSB 8	31 22 08	get new cave	082	GSB 7	31 22 07	
027	STO B	33 12		083	GSB 3	31 22 03	
028	GTO 4	22 04	- - - - -	084	2	02	
029	*1b1 2	31 25 02	fall into pit?	085	GSB 7	31 22 07	
030	RCL E	34 15		086	GSB 3	31 22 03	
031	int	31 83		087	GTO d	22 31 14	- - - - -
032	RCL A	34 11		088	*1b1 3	31 25 03	compare tunnels
033	X = Y	32 51		089	RCL E	34 15	to pit caves
034	GTO 0	22 00	yes - pit 1	090	int	31 83	
035	RCL E	34 15		091	X = Y	32 51	
036	frac	32 83		092	GTO 0	22 00	
037	EEX	43		093	X ≥ Y	35 52	
038	2	02		094	RCL E	34 15	
039	X	71		095	frac	32 83	
040	X ≠ Y	32 61	PIT 2?	096	FFX	43	
041	GTO a	22 31 11	no	097	2	02	
042	*1b1 0	31 25 00		098	X	71	
043	0	00		099	X ≠ Y	32 61	
044	GTO 9	22 09	- - - - -	100	RIN	35 22	
045	*1b1 a	32 25 11	bats get him?	101	*1b1 0	31 25 00	set code
046	RCL C	34 13		102	.	83	
047	RCL A	34 11		103	0	00	
048	X = Y	32 51		104	1	01	
049	GTO 0	22 00		105	STO+9	33 61 09	- - - - -
050	RCL D	34 14		106	*1b1 d	32 25 14	bats nearby?
051	X ≠ Y	32 61		107	0	00	
052	GTO b	22 31 12		108	GSB 7	31 22 07	
053	*1b1 0	31 25 00	yes	109	GSB 3	31 22 03	
054	3	03		110	1	01	
055	-X-	31 84		111	GSB 7	31 22 07	
056	GSB 8	31 22 08	get rnd cave	112	GSB 3	31 22 03	

REGISTERS

0	1	2	3	4	5	6	7	8	9
cave 10	cave 11	cave 12	cave 13	cave 14	cave 15			arrows	hints
S0	S1	S2	S3	S4	S5	S6	S7	S8	S9
seed	cave 1	cave 2	cave 3	cave 4	cave 5	cave 6	cave 7	cave 8	cave 9
A	B	C	D	E	I				
player move	wumpus loc	bat1 loc	bat2 loc	pits 1/2	used				

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
113	2	02		169	y ^x	35 63	
114	GSB 7	31 22 07		170	RCL (i)	34 24	
115	GSB 3	31 22 03		171	X	71	
116	GTO C	22 13		172	frac	32 83	
117	*1b1 3	31 25 03	compare tunnels	173	EEX	43	
118	RCL C	34 13	to bat caves	174	2	02	
119	X=Y	32 51		175	X	71	
120	GTO 0	22 00		176	int	31 83	
121	X ^z Y	35 52		177	P ^z S	31 42	
122	RCL D	34 14		178	RTN	35 22	
123	X ^z Y	32 61		179	*1b1 8	31 25 08	random number
124	RTN	35 22		180	P ^z S	31 42	generator
125	*1b1 0	31 25 00		181	RCL 0	34 00	
126	3	03	set code if eq	182	9	09	
127	CHS	42		183	9	09	
128	10 ^x	32 53		184	7	07	
129	STO+9	33 61 09		185	X	71	
130	GTO C	22 13		186	frac	32 83	
131	*1b1 5	31 25 05	is move or shot	187	STO 0	33 00	
132	0	00	legal?	188	P ^z S	31 42	
133	GSB 7	31 22 07		189	F? 2	35 71 02	
134	X ^z Y	35 52		190	RTN	35 22	
135	X=Y	32 51		191	1	01	
136	RTN	35 22		192	5	05	
137	1	01		193	X	71	
138	GSB 7	31 22 07		194	1	01	
139	X ^z Y	35 52		195	+	61	
140	X=Y	32 51		196	int	31 83	
141	RTN	35 22		197	RTN	35 22	
142	2	02		198	*1b1 9	31 25 09	dsply termination
143	GSB 7	31 22 07		199	1	01	
144	X ^z Y	35 52		200	CHS	42	
145	X=Y	32 51		201	ST I	35 33	
146	RTN	35 22		202	X ^z Y	35 52	
147	GTO e	22 31 15	-error...	203	DSP 0	23 00	
148	*1b1 C	31 25 13		204	PSE	35 72	
149	RCL A	34 11	recover from	205	GTO (i)	22 24	
150	ST I	35 33	error condition	206	*1b1 A	31 25 11	shoot arrow
151	DSP 3	23 03	and dsply hints	207	1	01	
152	RCL 9	34 09	and position	208	STO-8	33 51 08	
153	RCL 8	34 08		209	X ^z Y	35 52	
154	+	61		210	GSB 5	31 22 05	legal shot?
155	-X-	31 84	dsply hints	211	RCL B	34 12	
156	P ^z S	31 42		212	X=Y	32 51	
157	DSP 6	23 06		213	GTO 9	22 09	wumpus killed
158	RCL (i)	34 24		214	GSB 8	31 22 08	reloc wumpus
159	P ^z S	31 42		215	STO B	33 12	
160	R/S	84	dsply position	216	RCL 8	34 08	
161	*1b1 7	31 25 07		217	X ^z 0	31 61	arrows left?
162	P ^z S	31 42	extract tunnels	218	GTO 4	22 04	yes
163	RCL A	34 11	from player cave	219	9	09	
164	ST I	35 33		220	9	09	
165	R ↓	35 53		221	GTO 9	22 09	
166	EEX	43		222	R/S		
167	2	02					
168	X ^z Y	35 52					

LABELS					FLAGS	SET STATUS			
A	B	C	D	E		FLAGS		TRIG	DISP
Shoot		Recover		Move	0				
^a batsnatch	^b wum near	^c pit near	^d bat near	^e error	1	ON OFF		DEG <input type="checkbox"/>	FIX <input checked="" type="checkbox"/>
⁰ used	¹ used	² used	³ used	⁴ ate	2	0 <input type="checkbox"/> <input checked="" type="checkbox"/>		GRAD <input type="checkbox"/>	SCI <input type="checkbox"/>
						1 <input type="checkbox"/> <input checked="" type="checkbox"/>		RAD <input type="checkbox"/>	ENG <input type="checkbox"/>
⁵ legal	⁶	⁷ ext tun	⁸ rnd num	⁹ endgame	3	2 <input type="checkbox"/> <input checked="" type="checkbox"/>			n <u>6</u>
						3 <input type="checkbox"/> <input checked="" type="checkbox"/>			