Here are some programs for the HP-12C and/or the HP-12C Platinum. Some of them are quite good, the others are simply presented for fun (the ones with my name by them). The programs by Valentin Albillo and Katie Wasserman are VERY good and push the envelope of what is possible on a financial machine. Enjoy! – Gene Wright, September 5, 2006.

HP-12C Sum of the Digits Game

Gene Wright

Taken from the game on page 25 of the HP Digest, Volume 5, 1979. The HP-12C will generate a number between 0 and 99. It will display the sum of the tens place and the ones place. If the number generated were 25, the HP-12C would add the 2 and 5 together and display a 7. The user enters a number to be added to the generated secret number in hopes that when added to it, the new number will equal 99.

If it does, the game is won and the HP-12C displays "e", the number of guesses, and the original secret number. If the user entered number causes the new sum to go over 99, 99 is displayed in fix 9 format, and the previous sum is displayed again for the user to try another, lower guess. If the new number is less than 99, the two digits of the number are added together again and the new sum displayed. The user then enters another number to be added to the secret number.

Keystrokes	Display	Keystrokes	Display	Keystrokes	Display
f P/R		g INTG	20– 43 25	—	41– 30
f CLEAR PRGM	00–	x≷y	21– 34	g x=0	42– 43 35
CLx	01– 35	g FRAC	22– 43 24	g GTO 051	43-43,33,051
STO 0	02– 44 0	1	23– 1	9	44– 9
RCL i	03– 45 12	0	24– 0	9	45– 9
9	04– 9	X	25– 20	f 9	46– 42 9
9	05– 9	+	26– 40	g PSE	47– 43 31
7	06– 7	STO FV	27– 44 15	f 2	48– 42 2
X	07– 20	R/S	28– 31	RCL FV	49– 45 15
g FRAC	08– 43 24	1	29– 1	g GTO 028	50-43,33,028
STO i	09– 44 12	STO + 0	30- 44,40, 0	g e^x	51– 43 22
EEX	10– 26	R↓	31– 33	g e^x	52– 43 22
2	11– 2	RCL n	32– 45 11	f 9	53– 42 9
X	12– 20	+	33– 40	g PSE	54– 43 31
g INTG	13– 43 25	9	34– 9	f 2	55– 42 2
STO PMT	14– 44 14	9	35– 9	RCL 0	56– 45 0
STO n	15– 44 11	g x≤y	36– 43 34	g PSE	57– 43 31
1	16– 1	g GTO 040	37-43,33,040	RCL PMT	58– 45 14
0	17– 0	R↓	38– 33	g GTO 000	59-43,33,000
÷	18– 10	g GTO 015	39-43,33,015		
ENTER	19– 36	x≷y	40– 34		

Enter a decimal seed into $\boxed{i}$. Re-play does not require a re-seed. Does not require registers cleared beforehand. **Press** $\boxed{R/S}$ and see the sum of the secret two-digit number. **Repeat:** Enter a number to be added to the secret number and press $\boxed{R/S}$.

Example: 0.123456789 $\boxed{STO}\boxed{i}$ $\boxed{R/S}$. Display shows 8. Press 95 $\boxed{R/S}$. Display shows 99.00000000 then 8.00. Guess was too high. Press 12 $\boxed{R/S}$. Display shows 2. Sum of digits of new number is 2. Press 35 $\boxed{R/S}$. Display shows 10. Sum of digits of new number is 10. Press 44 $\boxed{R/S}$. Display shows 2.7182818 (a win!), then 4 (number of guesses) and finally 8 (original number).

HP-12C BlackJack

Gene Wright

Keystrokes	Display	Keystrokes	Display	Keystrokes	Display
f P/R		x≷y	23– 34	RCL 4	47– 45 4
f CLEAR PRGM	00–	RCL 0	24– 45 0	g GTO 000	48-43,33,000
f 0	01– 42 0	g x=0	25– 43 35	R↓	49– 33
STO 6	02– 44 6	g GTO 028	26-43,33,028	g PSE	50, 43 31
CLx	03– 35	g GTO 049	27-43,33,049	STO + 2	51 - 44 40 2
STO 0	04– 44 0	R↓	28– 33	RCL 1	52– 45 1
STO 1	05– 44 1	STO + 1	29 - 44 40 1	RCL 2	53– 45 2
STO 2	06– 44 2	R/S	30– 31	−	54– 30
RCL 5	07– 45 5	RCL 1	31– 45 1	g x=0	55– 43 35
9	08– 9	RCL 3	32– 45 3	g GTO 061	56-43,33,061
9	09– 9	−	33– 30	RCL 1	57– 45 1
7	10– 7	g x=0	34– 43 35	RCL 2	58– 45 2
X	11– 20	g GTO 044	35-43,33,044	g x≤y	59– 43 34
g FRAC	12– 43 24	RCL 1	36– 45 1	g GTO 007	60-43,33,007
STO 5	13– 44 05	RCL 3	37– 45 3	RCL 2	61– 45 2
1	14– 1	g x≤y	38– 43 34	RCL 3	62– 45 3
4	15– 4	g GTO 041	39-43,33,041	−	63– 30
X	16– 20	g GTO 007	40-43,33,007	g x=0	64– 43 35
g INTG	17– 43 25	RCL 6	41– 45 6	g GTO 041	65-43,33,041
g x=0	18– 43 35	CHS	42– 16	RCL 2	66– 45 2
g GTO 007	19-43,33,007	g GTO 045	43-43,33,045	RCL 3	67– 45 3
RCL 7	20– 45 7	RCL 6	44– 45 6	g x≤y	68– 43 34
g x≤y	21– 43 34	STO + 4	45– 44 40 4	g GTO 044	69-43,33,044
g GTO 024	22-43,33,024	g PSE	46– 43 31	g GTO 041	70-43,33,041

This is an HP-12C version of the slot machine game written by Mike Garland and appeared in the V5N4P23 issue of PPC Journal (May 1978). A listing of that game for the HP-25 and instructions on how to play it can be found here:

http://www.rskey.org/gene/calcmuseum/25blkjk.htm

Instructions:

1) Store the initial constants needed by the program: 10, STO 7, 21 STO 3.

2) Enter the initial random number seed (a decimal between 0 and 1) and press STO 5.

3) Enter your starting bankroll and press STO 4.

4) To play a game, press f PRGM, key in your bet and press R/S.

5) Your card will be displayed. Continue pressing R/S until you decide to stay or your total goes over 21.

6) If you bust, press R/S and your bet will be displayed as a negative number and then your balance will be displayed.

7) If you decide to stay, press STO 0, R/S and the machine's cards will be displayed successively. The machine will continue to take cards until it wins or busts.

8) If you win, your bet will be displayed as a positive number and then your balance will be displayed.

9) If you lose, your bet will be displayed as a negative number and then your balance will be displayed.

10) For a new game, go to step 4.

Notes: The machine wins all ties, unless you get a total of 21 on your turn. The machine takes all aces as 1's NOT 11's. You have the option of making your aces (displayed as 1's) into 11's by pressing X <> Y, STO+ 1, when your card is displayed. If you get 21, you win automatically, just press R/S.

Sample Game: Enter the following: 0.123456789 STO 5, 10 STO 7, 21 STO 3, 25 STO 4. Enter 5 for your bet and press f PRGM, then R/S.

A 1 is displayed (your first card). You decide to take this ace as an 11, so press X <> Y, then STO+ 1. Press R/S for the second card. A 2 is displayed (your second card for a total of 13). Press R/S for another card. A 10 is displayed. You busted! Press R/S. Display shows a -5 and a bank of 20 remaining.

Enter 10 for your bet and press R/S. A 3 is displayed. Press R/S. A 10 is displayed for a 2 card total of 13. You decide to stand. Press STO 0 then R/S. Display shows HP's first card is an 8, then HP's second card is a 10, so HP wins! Display shows your -10 bet and then 10 remaining in the bank. Perhaps you can do better? To play again, just press R/S and continue as above.

HP-12C Slot Machine

Gene Wright

This is an HP-12C version of the slot machine game written by Craig Pearce for the HP-25 as found in the February 1976 issue of the PPC Journal. A listing of that game for the HP-25 and instructions on how to play it can be found here: http://www.rskey.org/gene/calcmuseum/25slot.htm

Enter starting bank amount STO 1. Enter a decimal seed and STO 0. Each "spin" costs $0.10. Payoff is $1 for any 0.aaa or 0.aa0 number returned, where "a" is any non-zero digit. A result of 0.000 is worth $10.

Keystrokes	Display	Keystrokes	Display	Keystrokes	Display
f P/R		X	19– 20	g x=0	39– 43 35
f CLEAR PRGM	00–	g INTG	20– 43 25	g GTO 042	40-43,33,042
f 3	01– 42 3	STO 3	21– 44 3	g GTO 051	41-43,33,051
RCL 0	02– 45 0	g LSTx	22– 44 11	RCL 2	42– 45 2
9	03– 9	g FRAC	23– 43 24	g x=0	43– 43 35
9	04– 9	1	24– 26	g GTO 047	44-43,33,047
7	05– 7	0	25– 2	0	45– 0
X	06– 20	X	26– 20	g GTO 048	46-43,33,048
g FRAC	07– 43 24	g INTG	27– 43 25	9	47– 9
g PSE	08– 43 31	STO 4	28– 44 4	STO + 1	48 - 44 40 1
STO 0	09– 44 0	R↓	29– 33	1	49– 1
1	10– 1	—	30– 30	STO + 1	50 - 44 40 1
0	11– 0	g x=0	31– 43 35	•	51– 22
X	12– 20	g GTO 034	32-43,33,034	1	52– 1
g INTG	13– 43 25	g GTO 051	33-43,33,051	STO — 1	53 - 44 30 1
STO 2	14– 44 14	RCL 4	34– 45 4	RCL 1	54– 45 1
g LSTx	15– 43 40	g x=0	35– 43 35	f 2	55– 42 2
g FRAC	16– 43 24	g GTO 042	36-43,33,042	g GTO 000	56-43,33,000
1	17– 1	RCL 2	37– 45 2		
0	18– 0	—	38– 30		

Example: 0.777888999 STO 0, 100 STO 1, R/S. Display shows 0.555 while pausing, then displays 100.90, a winner of $1, less the cost of $0.10 to play. Press R/S. Display shows 0.666 while pausing, then displays 101.80, a winner of $1, less the $0.10 to play. Press R/S. Display shows 0.009 while pausing, then displays 101.70, a winner of $1. Press R/S. Display shows 0.943 while pausing, then displays 101.60, a winner of $1. Play as long as you like!

HP-12C Eleven-Thirty Game

Gene Wright

This is an HP-12C version of the game of Eleven-Thirty on the HP-65. It was written by John Rausch and appeared in the V2N3P28 issue of PPC Journal (March 1975). A listing of that game for the HP-65 and instructions on how to play it can be found here: http://www.rskey.org/gene/calcmuseum/651130.htm

Enter a decimal seed and press STO 4. Store an initial "Pot" by entering the amount and pressing STO 0. Deal the first two numbers by pressing GTO 000 and R/S. The HP-12c will show two numbers between

11 and 30. The numbers will be in the form of XX.YY. Bet any amount you wish that the next number will be between the first two numbers (ties do not count). Enter bet (if you do not wish to bet, enter 0), and press R/S. Display will show the next number with a pause and then your new "Pot" either increased or decreased.

Keystrokes	Display	Keystrokes	Display	Keystrokes	Display
f P/R		0	25– 0	g FRAC	51– 43 24
f CLEAR PRGM	00–	X	26– 20	STO 4	52– 44 04
f 2	01– 42 2	1	27– 1	2	53– 2
RCL 4	02– 45 4	1	28– 1	0	54– 0
9	03– 9	+	29– 40	X	55– 20
9	04– 9	g INTG	30– 43 25	1	56– 1
7	05– 7	RCL 1	31– 45 1	1	57– 1
X	06– 20	x≥y	32– 34	+	58– 40
g FRAC	07– 43 24	g x≤y	33– 43 34	g INTG	59– 43 25
STO 4	08– 44 04	x≥y	34– 34	g PSE	60– 43 31
2	09– 2	STO 2	35– 44 02	RCL 2	61– 45 2
0	10– 0	x≥y	36– 34	g x≤y	62– 43 34
X	11– 20	STO 1	37– 44 01	g GTO 073	63-43,33,073
1	12– 1	RCL 2	38– 45 2	R↓	64– 43 35
1	13– 1	EEX	39– 26	RCL 1	65– 45 1
+	14– 40	2	40– 2	x≥y	66– 34
g INTG	15– 43 25	÷	41– 10	g x≤y	67– 43 34
STO 1	16– 44 01	+	42– 40	g GTO 073	68-43,33,073
RCL 4	17– 45 4	R/S	43– 31	RCL 3	69– 45 03
9	18– 9	f 0	44– 42 0	STO + 0	70- 44,40, 0
9	19– 9	STO 3	45– 44 03	RCL 0	71– 45 0
7	20– 7	RCL 4	46– 45 4	g GTO 000	72-43,33,000
X	21– 20	9	47– 9	RCL 3	73– 45 03
g FRAC	22– 43 24	9	48– 9	CHS	74– 16
STO 4	23– 44 04	7	49– 7	g GTO 070	75-43,33,070
2	24– 2	X	50– 20		

Example: 0.123456789 STO 4, 500 STO 0, g GTO 000 R/S. Display shows 12.14. I don't think the odds are good that the next number will be 13, so enter 0 R/S. Display pauses showing 28 (made a good bet) and then shows the pot of 500. Press R/S. Display shows 16.30. I like these odds for bet the whole pot, 500 R/S. Display pauses showing 23 (I'm rich!) and then shows the pot of 1000. Press R/S. Display shows 12.25. Hmm, bet 200 R/S. Display pauses showing 18 (made a good bet) and then shows the pot of 1200. Press R/S. Display shows 20.21. Hmm, bet 5 R/S. Display pauses showing 11 (oops! wasn't paying attention) and then shows the pot of 1195. Play as long as you like!

HP-12C Platinum Sorting Routine

Katie Wasserman

Now that the new HP-12C Platinum has 81 cash flow registers with accompanying Nj's (that can have values from 0 to 99) I thought that I find some non-obvious use for them. So, I came up with a little linked list insertion sort program.

This program treats the CFj/Nj registers as a linked list and does an incremental insertion sort into it. It works on the original HP 12C and the later model HP 12C Platinum (and related editions), but will not work as-is on the early model Platinum due the limitation on N(0). (Note from Gene: This program will work on HP-12c Platinums that have parentheses, but not on early ones without them).

To use the program:
(1) Set n<--0, N(0)<--0 (0, STO n, Nj)
(2) Enter each number to sort and press R/S.

The program will execute CFj adding the data to the cash flow registers and then "link" this number into the sorted data structure. Data will remain in the order that you enter them, only the Nj's are modified. (Entry will take a varying amount of time based on how many numbers have been previously entered and where the current number is in sorted order.) N(0) contains the number of the CF register with the lowest data value. The N(x) register contains the number of the CF register with the next lowest value, etc.. The CF register with the highest data value will have a value of zero in N(x) indicating the end of the list. Note that CF(0) does not contain a data element.

```
Keystrokes        |Display         | Comments
[f][P/R]          |                |
[f]CLEAR[PRGM]    |00-             |
[g][CFj]          |01-     43  14 | increment n and add to CF register
[STO]0            |02-     44   0 | save the data being added for easy access
[RCL][n]          |03-     45  11 |
[STO][i]          |04-     44  12 | save n
0                 |05-          0 |
[STO][PV]         |06-     44  13 | PV is the current value of the link
[STO][n]          |07-     44  11 | use it to point to the next CF register
[RCL][g][Nj]      |08- 45,43  15 |
[STO][FV]         |09-     44  15 | save the next value of the link
[STO][n]          |10-     44  11 |
[RCL][g][CFj]     |11- 45,43  14 |
[RCL]0            |12-     45   0 |
[g][x<=y]         |13-     43  34 | compare CFj with the new entry
[g][GTO]17        |14- 43,33  17 | same or smaller value so insert it into the
                  |               |    linked-list here
[RCL][FV]         |15-     45  15 |
[g][GTO]06        |16- 43,33  06 | follow the link if the new entry is larger
[RCL][PV]         |17-     45  13 |
[STO][n]          |18-     44  11 |
[RCL][i]          |19-     45  12 |
[g][Nj]           |20-     43  15 | current link now points to latest data entry
[STO][n]          |21-     44  11 | restore n
[RCL][FV]         |22-     45  15 |
[g][Nj]           |23-     43  15 | link of last data entry now points to
[g][GTO]00        |24- 43,33  00 | where previous link pointed
[f][P/R]          |                |
```

The following program can be used to traverse the linked list displaying the data in sorted order:

```
Keystrokes      |Display          | Comments
[f][P/R]        |                 |
[f]CLEAR[PRGM]  |00-              |
0               |01-           0  |
[STO][n]        |02-     44   11  |
[RCL][g][Nj]    |03- 45,43   15   |
[STO][PV]       |04-     44   13  |
[STO][n]        |05-     44   11  |
[RCL][g][CFj]   |06- 45,43   14   |
[g][PSE]        |07-     43   31  |
[RCL][PV]       |08-     45   13  |
[g][x=0]        |09-     43   35  |
[g][GTO]00      |10- 43,33   00   |
[g][GTO]02      |11- 43,33   02   |
[f][P/R]        |                 |
```

This next program will find the N'th largest data element in the sorted list; call with N in the X register:

```
Keystrokes      |Display          | Comments
[f][P/R]        |                 |
[f]CLEAR[PRGM]  |00-              |
[STO]0          |01-     44    0  |
0               |02-           0  |
[STO][n]        |03-     44   11  |
[RCL]0          |04-     45    0  |
[g][x=0]        |05-     43   35  |
[g][GTO]11      |06- 43,33   11   |
1               |07-           1  |
[STO][-]0       |08- 44 30     0  |
[RCL][g][Nj]    |09- 45,43   15   |
[g][GTO]03      |10- 43,33   03   |
[RCL][g][CFj]   |11- 45,43   14   |
[g][GTO]00      |12- 43,33   00   |
[f][P/R]        |                 |
```

Valentin Albillo's HP-12C Masterpieces

Valentin Albillo is, quite frankly, the best programmer I have ever run across. Old PPC members might remember him from the development days of the PPC ROM. Valentin had numerous inputs and suggestions for routines that were quite ingenious. You might also remember him from his very amazing games, such as Othello, Reversi and Micro-Chess for the HP-41C and Chess on an HP-67 as well!

More recently, you might have run across his numerous "mini-challenges" on the HP Museum's forum. These are usually interesting, didactic problems that often have seemingly obvious but inefficient ways of answering them. Valentin always has an amazing, short approach that usually causes the reader to say "Wow! Why didn't I think of that?"

When I wanted to present the best HP-12C programs I could find, I immediately thought of Valentin and the programs that follow.

Compared to him, in my opinion, we are all amateurs. Gene Wright