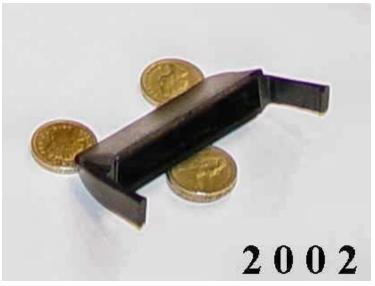# HHC Contests - 2000 to 2002

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Two of the HHC activities are contests. Participation is optional - if it appeals to you. We will add a third and very different contest this year. Some very nice prizes have been awarded for these contests.

The ***What is This?***, or ***Guess This***, contest presents an accessory related to HP Calculators. The item is available for inspection (usually during registration and breaks) and the participant writes down as much information as he or she can. Such facts as the manufacturer, model, use, related machine(s), where made, cost, etc. are submitted to the judges who grade each entry for the greatest number of correct facts. Sometimes a form is used, other times it is free form. Here are photographs of the "Guess This" contest accessory for the last three HHC's. How many do you recognize? None of these are "modern" items, they are from the heyday of calculators. You may read the conference reports for each conference for additional details or you may email me for details if you are curious. All three are interesting choices.

The second contest is a programming contest. Usually the most recent (HP48 & HP49) machines are used. A problem statement is given and the program that meets the requirements is declared the winner. Sometimes it is the fastest program or the shortest program. Most recently it is a combination of both wherein the lowest value of the bytes multiplied by the run time is the winner. The problem statement and rules are usually provided during registration and the submission and judging is done on Sunday afternoon. The problem for HHC 2001 was not given out during the conference and the contest was held

by the Internet shortly after wards for those who "registered" at the Conference. One other time the contest done on the Internet - years ago. This contest was held before the Conference with the winner announced at the Conference. That contest was sponsored by EduCALC and conducted wirelessly as a test of the early wireless networks available for the HP200LX. The contest usually has three winners, 1st, 2nd, and 3rd, but not always. That year all three winners resided outside the United States. It was a tough one to manage because the prizes were expensive, very nice, and five times many people participated.

The HHC programming contests constitute the most successful programming contests conducted for any calculator. Many organizations, Internet groups, etc. have attempted such contests, but I am not aware of any that have been very successful. I am not sure why. They are announced, and then they die. One reason, I believe, is that they are too elaborate and too complicated. We work on basic, simple, and fundamental problems, and we advance the programming art with each contest. The problems for the last three Programming Contests are listed. Again, if you are curious, I can email you the details.

HHC 2000 Programming Contest.

Problem Statement: Input: **A list** of ASCII numbers, 0 through 255. Output: **A list** of two strings. The first string is the contents of the input list with the ASCII numbers delimited by a space. The second string is the ASCII characters delimited by a space. There shall be no extra leading or trailing spaces in either string. See example below:

Input: { 65 66 67 68 69 70 }
Output: { "65 66 67 68 69 70" "A B C D E F" }

The winning program will be based on the product of the execution time in seconds and the byte count. HP 49 execution times should be made in approximate mode. Alternate list inputs of variable length using random ASCII character numbers (applied to all entries, averaged) may be used if the winner is not obvious from the example input. Either HP48 or HP49 programs accepted. One requirement is quite important. You are to solve the problem and write the program yourself. You are not to use the Internet.

HHC 2001 Programming Contest.

Problem: Summing Integers.

Given two positive integers: **m**, **n** where **m** < **n.**
Calculate A using the following:

$$A \; = \; \frac{\Sigma E}{\Sigma O}$$

Where: A is the ratio of the Even integer sum and the Odd integer sum,
        E is the sum of all even integers from **m** to **n** inclusive,
        O is the sum of all odd integers from **m** to **n** inclusive.

The "best" program wins the prize and will be judged using the four sets of inputs listed in Table 1. For each input, the execution time will be measured and multiplied by the number of bytes of the submitted program. This "BT" value will be averaged for the final "BT" value for the program.

Alternate BT: Alternately, the run times for each set of the four inputs may be summed and the sum multiplied by the program byte count to determine the winner. This process will be performed by a program to automate the determination of each entry's BT value.

All programs will be judged in the same way. In the event of a tie, an alternate set of inputs will be used to break the tie.

HHC 2002 Programming Contest. A little more information is provided with this description.

Making The Best Cut. You need to cut business cards, which are 3.5" long by 2" wide from a sheet of paper stock 11" long by 8.5" wide. Using consistent units, and the convention for the paper stock dimensions as L x W, and the desired cut size as a x b, write a program that has inputs and outputs as follows.

Input		Output	
4: W	*Note: W & L may be in any order.*		
3: L		3: % Loss: nn.n	*Note: A tagged real.*
2: a	*Note: a & b may be in any order.*	2: L: a or b	*Note: A tagged real.*
1: b		1: N (No. of pieces)	*Note: A real.*

The inputs of the paper stock size are made first in any order, i.e. W - L or L - W. The desired cut size dimensions are entered next, also in any order, i.e. a - b or b - a. After the four reals are entered, the program is run and three output values are calculated.

The first program output is the percentage of scrap, or loss, of the paper stock material. This value is displayed on level three with the tag "% Loss" **to one (rounded) decimal place**. Note space between % and "L".

The second program output value tells you how to cut the paper stock by dividing the paper stock length, L, by the cut dimension a or b. The paper stock dimension L is the longest dimension.

The third program output is the maximum number of pieces that may be cut from the paper stock. Figure 1 shows an example, Ex., 1 of table 1 of the best cut.

Obviously there are two possibilities of cutting the paper stock. L is cut by "a" length or L is cut by "b" length. The case where the paper stock is square is undefined. The output values for example 1 of table 1 are:

> 3: % Loss: 10.2
> 2: L: 3.5
> 1: 12

Table 1 has data for several problems. The winning program will have the fewest bytes and run in the shortest time as determined by the product of the bytes and the seconds. See the rules below.

Table 1 — Typical Problem Data

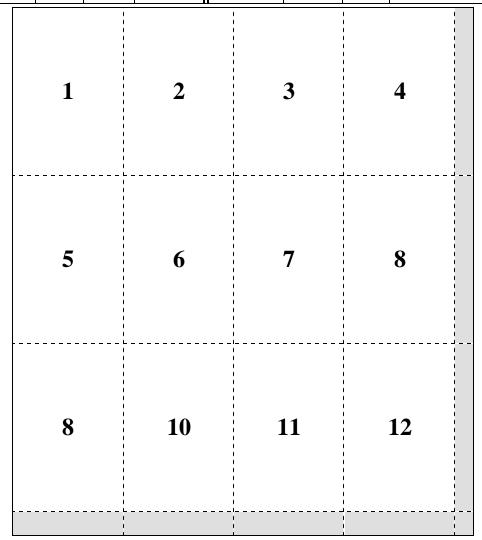|	Inputs				Outputs			
Ex.	L	W	a	b	% Loss:	L:	Pieces	Comments
1.	11	8.5	3.5	2	10.2	3.5	12	U.S. Business Card
2.	11.69	8.27	3.375	2.125	25.8	2.125	10	UK Business Card
3.	14	8.5	3.25	1.25	16.8	3.25	24	Labels

Figure 1 — Example 1. Typical US business cards cut from standard US Paper. Shaded area represents the scrap. Zero loss is assumed for the cuts.

Program Submittal

Complete the program submittal form or use a piece of paper, which contains the following information.

1. Your Name
2. Three letter (your initials) program name.
3. Your program (HP48) byte count. If you use an HP49 get this value when you transfer your program.
4. Your program (HP48) check sum in Hex.
5. Your email or street address.

Transfer your program to the machine used for the judging. This will be an HP48GX. HP49 programmers will have to accept the HP48 version of their HP49 entry. Some HP49 commands place the machine in Exact mode which could be a disadvantage. Certain stack commands not available on the HP48 could provide an advantage to HP49 programs. Ask an HP48 user if in doubt. HP49 stack commands UNROT, UNPICK, PICK3, DUPDUP, NIP, and NDUPN are not usable HP48 commands for purposes of this contest. See rule #14 which defines the winning criteria.

I hope this provides enough information to give you a good idea of what the contests are like. The new contest this year will be quite different and appeal to a different mindset. Still, it will involve calculators so be sure to bring yours.

$X <> Y$,

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