Problems Related to Card Games
for an Introductory Programming Course

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The following is a sequence of problems which were given as programming exercises in an introductory programming course. This sequence made up about two-thirds of the semester's assignments for the class, and were to be programmed in FORTRAN for the IBM 1130.

The following two subroutines were provided to aid the students in solving the problems:
SHUFL. This subroutine causes a shuffled deck of 52 cards to be prepared and stored in the computer. These cards may be drawn one at a time by means of the DRAW subroutine. This subroutine has no parameters.
DRAW. The statement CALL DRAW(I,J) generates an integer code for the suit and a code for the face value of the card that is drawn, and stores these codes in the first and second arguments of the subroutine, respectively. The codes for the suits are Heart = 1, Spade = 2, Club = 3, Diamond = 4. The codes for the values are Ace = 1, Jack = 11, Queen = 12, King = 13, all other cards = face value. The subroutine draws a card from the top of the deck without replacement. After 52 cards have been drawn from a shuffled deck, the subroutine indicates that no cards remain by returning zeros for the two arguments.

Assignment 1. Write a program which deals a bridge hand. Each of four players should be dealt thirteen cards. Print on the first line, codes for the suit and the face value of the first card dealt to each of the four players, on the second line, the same for the second card, etc. Continue until thirteen lines have been printed.

Assignment 2. Revise your program for assignment 1 so that a (computer) card is read which indicates the number of bridge hands to be generated and that number of bridge hands is then printed with each new hand beginning on a new page. Also, a card is to be read for each hand indicating the names of the four players, and these names are to be printed above the corresponding columns of playing card codes.

Assignment 3. Modify your program for assignment 2 in such a way that it decodes the suits and the face values of each card before it is printed. For example, instead of "1   5", the computer should print "FIVE OF HEARTS".

Assignment 4.   Rewrite your program for assignment 3 to add the ability to print the cards in each player's hand in the same order in which you would arrange them if you were holding them in your hand. That is, group all cards of the same suit together, and print them in the order of their face value within each suit.

Assignment 5. Write a function subprogram which accepts as parameters two integer subscripted variables. It is assumed that the first five elements of these parameters are the codes for the suits and face values, respectively, of five cards. The value returned by the function is determined by the hand of five cards so represented in the following manner:

If the hand is:	The function value is:
Royal Flush	9
Straight Flush	8
Four of a Kind	7
Full House	6
Flush	5
Straight	4
Three of a Kind	3
Two Pair	2
One Pair	1
None of the Above	0

If a hand falls into more than one of the above categories, the largest possible value is to be returned.

Write a program which uses the above function by shuffling a deck, dealing ten hands, five cards to a hand, from that deck, testing each hand by means of the function, and printing the number of the ten hands falling in each of the ten categories. You may wish to test more than ten hands by repeating the above process a number of times.

(Ed.:   Including this late contribution made my introductory comments in this section inaccurate. However, I'm always glad to get contributions and I try to work them in as soon as possible – even if it leads to a contradiction of one of my own statements!)

INFORMATION ON GRADUATE SCHOOLS IN COMPUTER SCIENCE

(Ed: I would like to thank Professor George Forsythe for sending me the following list of Computer Science Departments and Department Chairmen. In a cover letter Professor Forsythe mentioned that he used the list to help out in advising undergraudates about where they might go to graduate school. I thought other SIGCSE members might like to have access to this list for this and other purposes so I decided to reproduce it in this issue.)