BRIDGE CHALLENGER

```
DEAL # 1           S 84
SET# 2             H AJ
BID=3N             D AQ6
YOU 9 THEY 4       C K86432


   S K93                     S 65
   H 10432                   H KQ97
   D K84                     D J109752
   C J109                    C 5

                    S AQJ1072
                    H 865
                    D 3
                    C AQ7

WANT TO REPLAY THIS HAND? _
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A Bridge Playing Program
For the APPLE II
16K RAM

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BRIDGE CHALLENGER is designed for all bridge players from novices to experts who would like to practice and improve their play. Since a standard game of contract bridge requires four players, it is difficult to study the game on your own time under realistic conditions. With BRIDGE CHALLENGER, you and the dummy play as the declaring team against the computer, which plays a skillful defense. The program will deal hands at random or according to your specifications for high card points. You can then rotate the hands to play North, South, East or West. At the end of the deal all four hands are displayed, and you can replay your hand now that the cards are known, shuffle only the defense-hands, or move on to another deal. The computer keeps track of all four hands and displays them in standard bridge form on the screen. You can stop and examine the previous trick at any point, or review all thirteen tricks at the end of a deal. You can save deals on cassette and reload them for later play. You don't even need a deck of cards to practice your game with BRIDGE CHALLENGER!

HOW IS BRIDGE PLAYED?

If you aren't familiar with the game of bridge, you can learn with the aid of BRIDGE CHALLENGER and any of the standard bridge textbooks. The basic rules are explained below for your convenience. Bridge is played with a standard deck of playing cards and four players. The deck is dealt evenly to all four players so that each player receives a hand of thirteen cards. Then each player sorts his hand according to suit, and from high card to low card in each suit (aces are high). The four players' hands are called North, South, East and West, and players usually sit around a table with the two teams, North-South and East-West, facing each other.

Bidding: Before the deal is actually played, each team member attempts to communicate the strength of his hand to his partner through a process calling bidding. Bidding is a complex process separate from the play itself, which results in a contract or agreement between the partners in one team (called the declaring team) as to how many tricks the team plans to take and which suit will be trumps in this deal (see below). The first six tricks taken by the declaring team is called a "book". The book must be taken before any tricks are counted towards the actual contract. For example, a contract of "3 Hearts" indicates that the declaring team plans to take six tricks for the book, plus an additional three tricks for a total of nine out of thirteen tricks. Hearts would be the trump suit for this contract.

Playing: Once a contract has been established, the player to the left of the declarer leads a card. At this time, the other member of the declaring team displays his hand on the table as the "dummy." The playing then continues in a clockwise direction. Each player contributes one card to the trick, and the highest card takes the trick. When all of the cards have been played, each team counts the number of tricks taken between them to determine whether or not the contract has been fulfilled by the declaring team. If the contract has not been fulfilled, the declarer is said to have "gone set." (In BRIDGE CHALLENGER, the dummy's hand is displayed opposite yours on the screen, and you select a contract. The computer plays the defense and keeps track of the number of tricks taken.)

Tricks: As mentioned above, the player to the left of the declarer leads the first card. Thereafter, the player who wins each trick leads the first card of the next trick, and play continues in a clockwise direction. Whenever possible, each player must follow suit (i.e. play a card of the same suit as the card led). However, if he has no cards left of that suit, he can play any other card in his hand, including a trump card (a card of the contract suit). If he plays a trump, he automatically wins the trick unless a trump of higher value is played by another player.

By remembering which cards were played by each player as the deal progresses, you can determine with increasing certainty the cards still held by your opponents. Of course, your opponents will at the same time try to determine which cards are still in your hand. Sophisticated players may deliberately play an unexpected card in order to mislead you as to which cards are still in their hands. BRIDGE CHALLENGER includes a number of algorithms to determine which card is the best to play based on the probable contents of your and its partner's hands, making it an excellent opponent for you!

LOADING BRIDGE CHALLENGER

Your first step in using BRIDGE CHALLENGER is to load the program from the supplied cassette. To do this, read and follow carefully the instructions below.

1. Press RESET. You should hear a beep and see the asterisk prompt of the Apple Monitor.
2. Place the BRIDGE CHALLENGER cassette in your cassette player with the Apple's plug removed from the EAR jack, and press PLAY. Adjust the volume control until the sound you hear is about the same volume as that of other cassettes which you have loaded before.
3. Rewind and stop the cassette player, and re-insert the Apple's plug into the EAR jack. Type:

<p align="center">30.3FFFR</p>

Do not press RETURN yet.
4. Press PLAY on your cassette recorder, and now press RETURN. After about ten seconds, the screen will be erased. *Let your cassette player continue to run.* In about two minutes, the program will begin execution with the options display described below.

BRIDGE CHALLENGER is written partly in Apple Integer Basic and partly in machine language. Because of the way it uses memory, if you press RESET or CONTROL-C while playing bridge you will partially destroy the program in memory. But once BRIDGE CHALLENGER is loaded, you can play any number of hands, save deals on cassette and reload deals from previous sessions, or use any other of the program's options.

On some cassette players, you will get an ERR message (cassette load error) unless you advance the tape to the point where the initial steady tone can be heard before pressing PLAY and RETURN.

If your cassette does not load properly on the first try, adjust the volume and tone controls on your cassette player and try again. (You may wish to follow the procedure outlined in the Apple Integer BASIC manual for finding the right volume setting.) You will usually find a setting at which the cassette will load properly. Write this setting on the cassette for future reference.

HOW TO USE BRIDGE CHALLENGER

When you are typing a response from the keyboard, you need only type enough characters to unambiguously indicate your choice from among the available alternatives. For example, to answer **YES** or **NO**, just type **Y** or **N** and the program will display the rest of the word. If you type **S** in response to WHAT CONTRACT? the program will display **SKIP**, and so on. If you make a mistake, you can use the left arrow key to delete characters, and then retype the correct response.

The program begins with the following display.

YOU HAVE SEVERAL OPTIONS:
1. PLAY A COMPUTER DEALT HAND
2. SET UP YOUR OWN DEAL
3. LOAD AND PLAY A DEAL FROM TAPE
4. DEAL AND PLAY SPECIAL DEALS

WHICH OPTION WOULD YOU LIKE? 1
WHAT SET OF HANDS? 3
(Screen erases.)
PLEASE WAIT WHILE I DEAL.

Here we will play a computer dealt hand. The computer uses its random number generator to construct a long sequence of randomly selected cards, from which it assembles and deals a deck of cards. The number you enter in response to WHAT SET OF HANDS? is a "seed" for the random number generator: a different seed number will result in a different sequence of randomly selected cards. Thus, you can generate a deal of particular interest on another run of the program by entering the same number as before for WHAT SET OF HANDS?. If you had played through a whole series of deals on your previous run of the program, you can skip down to the particular deal of interest using the SKIP option described below.

```
DEAL NO. 1              NORTH
SET #3                  S   QJ875
                        H   KT96
                        D   J2
                        C   73

                        SOUTH
                        S   632
                        H   Q4
                        D   A8
                        C   QJ9854
```

The top hand is the dummy's, and the bottom one is your hand. Your opponents' hands (East-West) are of course hidden from view. Here S stands for Spades, H for Hearts, D for Diamonds, C for Clubs, A for Ace, K for King and so on. (T stands for Ten.) Both hands are already sorted.

WHAT CONTRACT? **SKIP**
SKIP TO WHAT DEAL? 5

If the first deal is not interesting, or if you wish to reach a particular deal of interest from a previous run, you can ask the computer to continue dealing. The program will run through its sequence of randomly selected cards until it reaches the 5th complete deck, and then deal out the cards again.

```
DEAL NO. 5            NORTH
SET #3                S   AT976
                      H   KQJT3
                      D   KQ2
                      C

                      SOUTH
                      S   43
                      H   9
                      D   A954
                      C   976543
```

WHAT CONTRACT? 1H

Here you have indicated that your team will attempt to take six tricks
for the book plus one additional trick. Hearts will be the trump suit.
(Enter the level of the bid first, then the suit; enter N for the suit to bid
no trump.) Now the play begins with a card led by your left hand
opponent.

WEST PLAYS C8
WHAT PLAY FROM NORTH (DUMMY)? H3
EAST PLAYS C2
WHAT PLAY FROM SOUTH (YOURS)? C3

(To indicate which card you wish to play, enter the suit first, then the
card rank.) If your hand contains only a singleton of the suit to be
played, the computer will automatically play this card for you. In this
case, you (as NORTH) won the trick. The screen now erases, and the
computer calculates which cards remain in each hand and displays
your and the dummy's hands.

```
DEAL NO. 5            NORTH
SET #3                S   AT976
BID 1H                H   KQJT
YOU 1                 D   KQ2
THEY 0                C

                      SOUTH
                      S   43
                      H   9
                      D   A954
                      C   97654
```

WHAT PLAY FROM NORTH (DUMMY)? **LAST**
H3 C2 C3 *C8
WHAT PLAY FROM NORTH (DUMMY)? **SA**
EAST PLAYS S8
WHAT PLAY FROM SOUTH (YOURS)? **S3**
WEST PLAYS S2

LAST indicates that you would like to see the cards that were played
on the previous trick. The first card shown (H3) is the dummy's; the
remaining cards are displayed clockwise from the hands. An asterisk
indicates the card that was led on the trick.

At some point you may determine from the cards previously played
that you and the dummy hold cards sufficient to win all the remaining
tricks. You indicate this to the computer by entering **CLAIM** instead of
a card to be played. The program will play all four hands out for the

remaining tricks to check your claim. In the above example if you now type CLAIM in response to WHAT PLAY FROM NORTH (DUMMY)?, you will see:

NORTH PLAYS ST
EAST PLAYS H4
SOUTH PLAYS S4
WEST PLAYS S5

(And so on for ten more tricks.) When the hand is over the computer will display the original hands again, but this time it will show all four hands instead of just yours and the dummy's.

```
                         NORTH
DEAL NO. 5               S   AT976
SET #3                   H   KQJT3
YOU 7                    D   KQ2
THEY 6                   C

WEST                                         EAST
S   KQJ52                                     S   8
H   862                                       H   A754
D   T8                                        D   J763
C   KJ8                                       C  .AQT2

                         SOUTH
                         S   43
                         H   9
                         D   A954
                         C   976543
```

WANT A RECAP OF THIS DEAL? YES

	N	E	S	W
TRICK NO. 1	H3	C2	C3	'C8
TRICK NO. 2	'SA	S8	S3	S2

WANT TO REPLAY THIS HAND?

After looking at all four hands, you can request a recap of the deal which will show which cards were played on all thirteen tricks. (The asterisk indicates which card was led on each trick.) Finally, in response to WANT TO REPLAY THIS HAND?, you can enter YES, NO, or SAVE to save the deal on cassette (see HOW TO SAVE A DEAL ON TAPE).

HOW TO SET UP YOUR OWN DEAL

With Option 2, SET UP YOUR OWN DEAL, you can specify exactly which cards will be in all four hands. You can use this option, for instance, to play out the deals listed in many newspaper columns on bridge (and it's much easier than trying to sort out the cards in a standard deck!). Once the deal is set up, you can save the hands on cassette and/or play out your hand immediately.

WHICH OPTION WOULD YOU LIKE? 2
WHAT DEAL NO.? 1

NORTH HAND S? 6
NORTH HAND H? A10543
NORTH HAND D? QJ752
NORTH HAND C? A7

EAST HAND H? 96
EAST HAND D? 10
EAST HAND C? KJ64

(And so forth; once you have entered the North, East and South hands, the computer will automatically fill in the West hand.) Enter T for a Ten. To enter a void suit (i.e. no cards of that suit), just press RETURN. The DEAL NO. is simply a reference number for future use if you save the deal on cassette. The screen will now erase and the hands will be displayed just as you entered them. Then the computer will display the North and South (the dummy's and your) hands and ask:

WHAT CONTRACT?

From here, the procedure is the same as that outlined above for Option 1. If you don't want to play the hands immediately but wish to save the deal on cassette, enter **PASS** in response to WHAT CONTRACT? and then **SAVE** in response to WANT TO REPLAY THIS HAND?.

HOW TO LOAD AND PLAY A DEAL FROM TAPE

If you have previously saved a deal on cassette tape as described earlier, you can reload it with Option 3:

WHICH OPTION WOULD YOU LIKE? 3

Place the cassette tape in your cassette player. You can find the location on the tape of the deal you want to load by listening for the leader tone. If you have saved multiple deals on the same tape, you must either have noted the appropriate index counter settings on your cassette player, or you must search for the deal by skipping past the right number of leader tones. Re-insert the Apple's plug into the cassette player's EAR jack, and then press a key to start loading. When the computer says FINISHED READING, you may shut off the cassette player.

HOW TO SAVE A DEAL ON TAPE

To save a deal on cassette tape, you answer **SAVE** in response to WANT TO REPLAY THIS HAND?, as noted earlier. *Make sure that the tape is positioned beyond the leader material* at the beginning of the cassette (nothing can be recorded on the nonmagnetic leader material.) The program will display:

PLACE DEAL TAPE IN THE RECORDER
HIT ANY KEY TO CONTINUE

Put your cassette player in RECORD mode, and then press a key to save the deal.

HOW TO DEAL SPECIAL DEALS

With Option 4, you can generate and play (or save on cassette) special deals which meet your specifications for high card points. You simply indicate the maximum and minimum number of high card points which you would like to share with your partner. The computer will then commence dealing, until it finds a deal that falls within the specified parameters. For example:

WHICH OPTION WOULD YOU LIKE? 4
WHAT SET OF HANDS? 1
WANT TO SKIP TO A DEAL HIGHER THAN NO. 1? YES
SKIP TO WHAT DEAL? 3
WHAT IS THE MINIMUM NUMBER OF HCP? 20
WHAT IS THE MAXIMUM NUMBER OF HCP? 35
DO YOU WANT THE HANDS THAT ARE SKIPPED COUNTED? YES
PLEASE WAIT WHILE I DEAL.

In this example, the number that you enter in response to WHAT SET OF HANDS is a "seed" for the random number generator, just as it was for Option 1. Again you can skip to a deal which occurs later in the random sequence, in this case Deal No. 3. Now the computer will begin dealing hands, displaying them on the screen as it does so. When a hand is dealt which falls within your specified range of high card points, you will be able to play out and/or save the deal on cassette, as in Option 2. If you answer YES to the question DO YOU WANT THE HANDS THAT ARE SKIPPED COUNTED, the program will number every deal, including those that do not fall within your specified range of high card points. Thus, the deal numbers will be the same as those generated as the program deals in Option 1 (for the same "seed" number or set of hands). If you answer NO to this question, only the deals that are actually saved will be numbered 1, 2, 3, etc.

SUMMARY OF COMMANDS

In response to WHAT CONTRACT? you can enter:

A. NORTH	— Hands will be rotated so that
B. EAST	the specified hand will fall into
C. WEST	your position and become yours.
D. SKIP	— Skip to another deal in the set.
E. PASS	— Skip to next deal in the same set.
F. Contract	— (E.g. 4H) Declare the specified contract and commence play.

In response to WHAT PLAY FROM DUMMY? or WHAT PLAY FROM YOUR HAND? you can enter:

A. LAST	— Look at cards from last trick.
B. STOP	— Discontinue playing this hand.
C. CLAIM	— Claim remaining tricks. Computer finishes playing out the hand.
D. Card	— (E.g. C7) Play the specified card.

In response to WANT TO PLAY THIS HAND AGAIN? you can enter:

A. YES	— Play this hand again.
B. NO	— Don't play hand again, move to next deal.
C. SAVE	— Save this deal on cassette tape.

If you answer YES to WANT TO PLAY THIS HAND AGAIN?, you will then be asked: WANT DEFENSE HANDS SHUFFLED? Enter:

A. YES	— Will play the hand again after shuffling the East and West hands.
B. NO	— Will play the hand again with no alterations.