

```

ST14_3: PROCEDURE OPTIONS (MAIN);
  ON ENDFILE (SYSIN) GO TO OD_EV;
  DCL X(100) FIXED (3) INITIAL ((100)0);
  DCL HALF FIXED (4,2) INITIAL (0);
  I = 1;
INLOOP: GET LIST (X(I));
  I = I + 1;
  GO TO INLOOP;
OD_EV: HALF = (I - 1) / 2;
  IF HALF = TRUNC(HALF) THEN DO;
    A = X(HALF);
    B = X(HALF + 1);
    CALL EV_ARY (A,B);
  END;
  ELSE DO;
    A = X(TRUNC(HALF) + 1);
    CALL OD_ARY (A);
  END;
END;

EV_ARY: PROCEDURE (R,S);
  DCL MEDIAN FIXED (5, 2) INITIAL (0);
  MEDIAN = (R + S) / 2;
  PUT SKIP LIST ('ARRAY HAS EVEN NUMBER OF ENTRIES');
  PUT SKIP DATA (MEDIAN);
END EV_ARY;

OD_ARY: PROCEDURE (R);
  DCL MEDIAN FIXED (5, 2) INITIAL (0);
  MEDIAN = R;
  PUT SKIP LIST ('ARRAY HAS ODD NUMBER OF ENTRIES');
  PUT SKIP DATA (MEDIAN);
END OD_ARY;

```

If you find the code a bit hard to understand, it's probably because it's hard to figure out what `HALF` does. `HALF` has an inappropriate data type — although it's actually an integer because it represents an array index, it's typed `FIXED DECIMAL` with two decimal places. The built-in function `TRUNC` is used to truncate any fractional part, in a strange test for divisibility.

But the biggest problem lies in the choice of modules used to express the solution. `EV_ARY` is called when there are an even number of `X`'s, so two adjacent elements are needed to compute the median, which is then printed. `OD_ARY` is similar, but different — only one element is needed to determine the median, so only that one is passed as an argument.

Two such similar functions ought surely be combined into one more generally useful routine. It seems silly to have a function that can compute the median only of arrays with an even number of elements; it is even sillier to require the calling routine to perform half the calculation (determining which elements are needed to compute the median), then decide which of two specialized functions should finish the job. A true `MEDIAN` function, on the other hand, is likely to be usable in a number of contexts. It is also much easier to describe what it does.

But it is not enough just to combine the two functions `OD_ARY` and `EV_ARY`, because in addition to not doing enough, each also does *too much*. Why print the result from inside the routine that computes the median? The print operation has