ALGORITHM 99
EVALUATION OF JACOBI SYMBOL
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procedure Jacobi (n,m,r); value n,m;
integer n, m, r;
comment Jacobi computes the value of the Jacobi symbol (n/m),
where m is odd, by the law of quadratic reciprocity. The parameter r is assigned one of the values −1, 0, or 1 if m is odd. If m is even, the symbol is undefined and r is assigned the value 2.
For odd m the routine provides a test of whether m and n are relatively prime. The value of r is 0 if and only if m and n have a nontrivial common factor. In the special case where m is prime,
r = −1 if and only if n is a quadratic nonresidue of m;
begin
integer s;
Boolean p, q;
Boolean procedure parity (x); value x; integer x;
comment The value of the function parity is true if x is odd, false if x is even;
begin
parity := x ÷ 2 × 2 ≠ x
end parity;
if ¬ parity (m) then begin r := 2; go to exit end;
p := true;
loop: n := n − n ÷ m × m;
q := false;
if n ≤ 1 then go to done;
even: if ¬ parity (n) then
begin
q := ¬ q;
n := n ÷ 2;
go to even
end n now odd;
if q then if parity ((m)2 − 1) ÷ 8 then p := ¬ p;
if n = 1 then go to done;
if parity ((m−1) × (n−1) ÷ 4) then p := ¬ p;
s := m; m := n; n := s; go to loop;
done: r := ¬ 1 if n = 0 then 0 else if p then 1 else −1;
exit: end Jacobi

REMARK ON ALGORITHM 99
EVALUATION OF JACOBI SYMBOL [S. J. Garland and A. W. Knapp, Comm. ACM 6, June 1962]
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One syntactical error was found in this procedure. It occurs in the second if statement following the label even. The statement

if q then if parity ((m)2 − 1) ÷ 8 then
p := ¬ p;

might be changed as follows.
if q then go to CHECK;
next 1: if n = 1 then go to done;
CHECK: if parity ((m + 2 − 1) ÷ 8) then
p := ¬ p;
go to next 1;