

```

EEEEEEEEEEEEEE  ##  ##  AAAAAAAAAA  LL  GGGGGGGGGG
EEEEEEEEEEEEEE  ##  ##  AAAAAAAAAA  LL  GGGGGGGGGG
EE              #####  AA  AA  LL  GG  GGGGGGGG
EE              #####  AA  AA  LL  GG  GGGGGG
EE              ##  ##  AA  AA  LL  GG  GGGGG
EEEEEEEEEE      ##  ##  AAAAAAAAAA  LL  GG  GGGGG
EEEEEEEEEE      ##  ##  AAAAAAAAAA  LL  GG  GGGGG
EE              ##  ##  AA  AA  LL  GG  GGGGG
EE              #####  AA  AA  LL  GG  GGGGG
EE              #####  AA  AA  LL  GG  GGGGG
EEEEEEEEEEEEEE  ##  ##  AA  AA  LLLLLLLLLLLL  GGGGGGGGGG
EEEEEEEEEEEEEE  ##  ##  AA  AA  LLLLLLLLLLLL  GGGGGGGGGG

```

```

JJJJJJJJJJ      11      444      11      444      AAAAAAAAAA
JJJJJJJJJJ      111     4444     111     4444     AAAAAAAAAA
JJ              1111     44 44     1111     44 44     AA      AA
JJ              11      44 44     11      44 44     AA      AA
JJ              11      44 44     11      44 44     AA      AA
JJ              11      4444444444  11      4444444444  AAAAAAAAAA
JJ              11      4444444444  11      4444444444  AAAAAAAAAA
JJ              11      44      11      44      AA      AA
JJ JJ          11      44      11      44      AA      AA
JJ JJ          11      44      11      44      AA      AA
JJJJJJJJ      1111111111  44      1111111111  44      AA      AA
JJJJJJ      1111111111  44      1111111111  44      AA      AA

```

****A	START	JOB 1414	E#ALG	ROOM	6.55.48 PM 21 MAY 20	PRINTER1	SYS TK4-	JOB 1414	START	A****
****A	START	JOB 1414	E#ALG	ROOM	6.55.48 PM 21 MAY 20	PRINTER1	SYS TK4-	JOB 1414	START	A****
****A	START	JOB 1414	E#ALG	ROOM	6.55.48 PM 21 MAY 20	PRINTER1	SYS TK4-	JOB 1414	START	A****
****A	START	JOB 1414	E#ALG	ROOM	6.55.48 PM 21 MAY 20	PRINTER1	SYS TK4-	JOB 1414	START	A****

J E S 2   J O B   L O G

18.55.47 JOB 1414 \$HASP373 E#ALG     STARTED - INIT 1 - CLASS A - SYS TK4-  
18.55.47 JOB 1414 IEF403I E#ALG - STARTED - TIME=18.55.47  
18.55.47 JOB 1414 IEFACRT - STEPNAME PROCSTEP PROGRAM     RETCODE  
18.55.47 JOB 1414 E#ALG         ALGOL             ALGOL     RC= 0000  
18.55.48 JOB 1414 E#ALG         GO                LOADER    RC= 0000  
18.55.48 JOB 1414 IEF404I E#ALG - ENDED - TIME=18.55.48  
18.55.48 JOB 1414 \$HASP395 E#ALG     ENDED

----- JES2 JOB STATISTICS -----

21 MAY 20 JOB EXECUTION DATE

6 CARDS READ

207 SYSOUT PRINT RECORDS

0 SYSOUT PUNCH RECORDS

0.01 MINUTES EXECUTION TIME

1	//E#ALG JOB CLASS=A,MSGCLASS=A,MSGLEVEL=(1,1),	JOB 1414
	// NOTIFY=HERC01,	IKJEFF10
	// USER=HERC01,PASSWORD=	
	GENERATED BY IKJEFF10	
2	// EXEC ALGOF CG,PARM.ALGOL=LONG,PARM.GO=MAP	
	***	00001001
	*****	00002001
	***	00003001
	*** IBM ALGOL F LEVEL 2.1	00004001
	***	00005001
	*** 360S-AL-531 ALGOL F COMPILER	00006001
	*** AND	00007001
	*** 360S-LM-532 ALGOL F LIBRARY	00008001
	***	00009001
	*** COMPILE AND EXECUTE A PROGRAM	00010001
	***	00011001
	*****	00012001
	***	00013001
3	XXALGOL EXEC PGM=ALGOL,REGION=1024K	00014001
4	XXSYSPRINT DD SYSOUT=*	00015001
5	XXSYSPUNCH DD DUMMY	00016001
6	XXSYSLIN DD DSN= &&OBJECT,UNIT=VIO,SPACE=(3200,(20,10)),	00017001
	XX DISP=(,PASS)	00018001
7	XXSYSUT1 DD UNIT=VIO,SPACE=(2048,(50,10))	00019001
8	XXSYSUT2 DD UNIT=VIO,SPACE=(2048,(50,10))	00020001
9	XXSYSUT3 DD UNIT=VIO,SPACE=(2048,(40,10))	00021001
10	//SYSIN DD DSN=E.TEST.SOURCE(E#ALG),DISP=SHR	
11	XXGO EXEC PGM=LOADER,PARM='MAP,LET,PRINT',COND=(5,LT,ALGOL)	00022001
12	XXSYSLIN DD DSN= &&OBJECT,DISP=(OLD,DELETE)	00023001
13	XXSYSLIB DD DSN=SYS1.ALGLIB,DISP=SHR	00024001
14	XXSYSLOUT DD SYSOUT=*	00025001
15	XXSYSPRINT DD SYSOUT=*	00026001
16	XXALGLDD01 DD SYSOUT=*	00027001
17	XXSYSUT1 DD UNIT=VIO,SPACE=(1024,(20,10))	00028001
18	//GO.SYSIN DD DSN=E.TEST.DATA(E),DISP=SHR	

```

IEF236I ALLOC. FOR E#ALG ALGOL
IEF237I JES2 ALLOCATED TO SYSPRINT
IEF237I DMY ALLOCATED TO SYSPUNCH
IEF237I VIO ALLOCATED TO SYSLIN
IEF237I VIO ALLOCATED TO SYSUT1
IEF237I VIO ALLOCATED TO SYSUT2
IEF237I VIO ALLOCATED TO SYSUT3
IEF237I 242 ALLOCATED TO SYSIN
IEF142I E#ALG ALGOL - STEP WAS EXECUTED - COND CODE 0000
IEF285I JES2.JOB01414.S00101 SYSOUT
IEF285I SYS20142.T185547.RA000.E#ALG.OBJECT PASSED *-----2
IEF285I SYS20142.T185547.RA000.E#ALG.R0000001 DELETED *-----0
IEF285I SYS20142.T185547.RA000.E#ALG.R0000002 DELETED *-----0
IEF285I SYS20142.T185547.RA000.E#ALG.R0000003 DELETED *-----25
IEF285I E.TEST.SOURCE KEPT *-----2
IEF285I VOL SER NOS= MV0001.
IEF373I STEP /ALGOL / START 20142.1855
IEF374I STEP /ALGOL / STOP 20142.1855 CPU OMIN 00.05SEC SRB OMIN 00.00SEC VIRT 192K SYS 288K
*****
* 1. JOBSTEP OF JOB: E#ALG STEPNAME: ALGOL PROGRAM NAME: ALGOL EXECUTED ON 21.05.20 FROM 18.55.47 TO 18.55.47 *
* ELAPSED TIME 00:00:00,12 CPU-IDENTIFIER: TK4- PAGE-IN: 0 *
* CPU TIME 00:00:00,05 VIRTUAL STORAGE USED: 192K PAGE-OUT: 0 *
* I/O OPERATION *
* NUMBER OF RECORDS READ VIA DD * OR DD DATA: 0 *
* DMY.....0 DMY.....0 FFF.....2 FFF.....0 FFF.....0 FFF.....25 242.....2 *
* *
* CHARGE FOR STEP (W/O SYSOUT): 0,08 *
*****
IEF236I ALLOC. FOR E#ALG GO
IEF237I VIO ALLOCATED TO SYSLIN
IEF237I 148 ALLOCATED TO SYSLIB
IEF237I JES2 ALLOCATED TO SYSLOUT
IEF237I JES2 ALLOCATED TO SYSPRINT
IEF237I JES2 ALLOCATED TO ALGLDD01
IEF237I VIO ALLOCATED TO SYSUT1
IEF237I 242 ALLOCATED TO SYSIN
IEF142I E#ALG GO - STEP WAS EXECUTED - COND CODE 0000
IEF285I SYS20142.T185547.RA000.E#ALG.OBJECT DELETED *-----3
IEF285I SYS1.ALGLIB KEPT *-----81
IEF285I VOL SER NOS= MVSRES.
IEF285I JES2.JOB01414.S00102 SYSOUT
IEF285I JES2.JOB01414.S00103 SYSOUT
IEF285I JES2.JOB01414.S00104 SYSOUT
IEF285I SYS20142.T185547.RA000.E#ALG.R0000004 DELETED *-----0
IEF285I E.TEST.DATA KEPT *-----2
IEF285I VOL SER NOS= MV0001.
IEF373I STEP /GO / START 20142.1855
IEF374I STEP /GO / STOP 20142.1855 CPU OMIN 00.71SEC SRB OMIN 00.01SEC VIRT 332K SYS 240K
*****
* 2. JOBSTEP OF JOB: E#ALG STEPNAME: GO PROGRAM NAME: LOADER EXECUTED ON 21.05.20 FROM 18.55.47 TO 18.55.48 *
* ELAPSED TIME 00:00:00,79 CPU-IDENTIFIER: TK4- PAGE-IN: 0 *
* CPU TIME 00:00:00,72 VIRTUAL STORAGE USED: 332K PAGE-OUT: 0 *
* I/O OPERATION *
* NUMBER OF RECORDS READ VIA DD * OR DD DATA: 0 *
* FFF.....3 148.....81 DMY.....0 DMY.....0 DMY.....0 FFF.....0 242.....2 *
* *
* CHARGE FOR STEP (W/O SYSOUT): 1,20 *
*****
IEF375I JOB /E#ALG / START 20142.1855
IEF376I JOB /E#ALG / STOP 20142.1855 CPU OMIN 00.76SEC SRB OMIN 00.01SEC

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```
'BEGIN'
  'COMMENT'
    SALE, A.H.J. (1968). THE CALCULATION OF E TO MANY SIGNIFICANT DIGITS
    THE COMPUTER JOURNAL. 11 (2): 229-230 - MODIFICATO!;

  'PROCEDURE' ECALCULATION(N);
1  'VALUE' N;
2  'INTEGER' N;
3  'BEGIN'
3    'INTEGER' M;
4    'REAL' TEST;
5    M:=4;
6    TEST:=(N+1)*2.30258509;
7  LOOP: M:=M+1;
8    'IF' M*(LN(M)-1.0)+0.5*LN(6.2831852*M)<=TEST
8    'THEN' 'GOTO' LOOP;
9    'BEGIN'
9      'INTEGER' I, J, CARRY, TEMP;
10     'INTEGER' 'ARRAY' COEF[2:M];
11     'FOR' J:=2 'STEP' 1 'UNTIL' M
11     'DO' COEF[J]:=1;
12     SYSACT(1,6,100);
13     SYSACT(1,12,1);
14     SYSACT(1,2,47);
15     OUTSTRING(1,('E = 2. '));
16     SYSACT(1,14,1);
17     'FOR' I:=1 'STEP' 1 'UNTIL' N
17     'DO' 'BEGIN'
17       CARRY:=0;
18       'FOR' J:=M 'STEP' -1 'UNTIL' 2
18       'DO' 'BEGIN'
18         TEMP:=COEF[J]*10+CARRY;
19         CARRY:=TEMP/'J';
20         COEF[J]:=TEMP-CARRY*J
20       'END' OF DIGIT GENERATION;
21       OUTDIGIT(1,CARRY);
22     'END' HAVING CALCULATE N DIGITS
22     'END' DELETING DECLARATIONS
22   'END' OF ECALCULATION;
23
23   'PROCEDURE' OUTDIGIT(DS,D);
24   'VALUE' DS,D;
25   'INTEGER' DS,D;
26   'BEGIN'
26     OUTSYMBOL(DS,('0123456789'),' ',D+1)
26   'END' OF OUTDIGIT;
27
27   'COMMENT' BEGIN MAIN;
27   'INTEGER' NC;
28   ININTEGER(0,NC);
29   ECALCULATION(NC)
29 'END' OF MAIN
```

IDENTIFIER TABLE																PAGE 2	
PBN	SC	PBN	NAME	TYPE	DM	DSP	NAME	TYPE	DM	DSP	NAME	TYPE	DM	DSP			
		SURR			PR	LN			PR	LN			PR	LN			
001	00000	000	ECALCU	P	01	070	NC	I		018	OUTDIG	P	02	078			
002	00000	001	LOOP TEST	L R		074 028	M	I		020	N	I V		018			
003	00009	002	CARRY J	I I		020 01C	COEF TEMP	I A I	01	028 024	I	I		018			
004	00023	001	D	I V		020	DS	I V		018							

OBJECT MODULE SIZE 2460 BYTES									
DATA STORAGE AREA SIZES									
PBN	BYTES	PBN	BYTES	PBN	BYTES	PBN	BYTES	PBN	BYTES
001	48	002	80	003	136	004	64		

## VS LOADER

OPTIONS USED - PRINT,MAP,NOLET,CALL,RES,NOTERM,SIZE=307200,NAME=\*\*GO

NAME	TYPE	ADDR	NAME	TYPE	ADDR	NAME	TYPE	ADDR	NAME	TYPE	ADDR	NAME	TYPE	ADDR
PROGRAM	SD	AC010	IHIENTIF	LR	AC9A0	IHIDSTAB	LR	AC75C	IHISYSCT*	SD	AC9B0	IHILLOGM*	SD	AD138
IHILLO *	LR	AD138	IHIIDECM*	SD	AD290	IHIIDEAI*	LR	AD290	IHIIDEII*	LR	AD2D4	IHIIDEIR*	LR	AD318
IHIOSYMB*	SD	AD960	IHIIOSTRG*	SD	ADA98	IHIFSARA*	SD	ADBE0	IHIFSAIN*	LR	AE9D4	IHIFSARB*	SD	AEA48
IHIPTTAB*	SD	AF0B8	IHIIORTN*	SD	AF1C0	IHIIOROQ*	LR	AF1C0	IHIIOROP*	LR	AF28C	IHIIORNX*	LR	AF63C
IHIIORCL*	LR	AF8A0	IHIIORCP*	LR	AFA56	IHIIORGP*	LR	AFB44	IHIIORCN*	LR	AFB48	IHIIOREN*	LR	AFBAC
IHIIOREV*	LR	AFC28	IHIIORED*	LR	AFCBC	IHIIORCI*	LR	AFD68	IHIIORER*	LR	AFDEC	IHIERROR*	SD	AFED8
IHIERMSG*	SD	B05C0	IHIERM01*	LR	B0670									

TOTAL LENGTH	4F68
ENTRY ADDRESS	AE9D4



END OF ALGOL PROGRAM EXECUTION

$$E = 2.$$

7182818284590452353602874713526624977572470936999595749669676277240766303535475945713821785251664274  
2746639193200305992181741359662904357290033429526059563073813232862794349076323382988075319525101901  
1573834187930702154089149934884167509244761460668082264800168477411853742345442437107539077744992069  
5517027618386062613313845830007520449338265602976067371132007093287091274437470472306969772093101416  
9283681902551510865746377211125238978442505695369677078544996996794686445490598793163688923009879312  
7736178215424999229576351482208269895193668033182528869398496465105820939239829488793320362509443117  
3012381970684161403970198376793206832823764648042953118023287825098194558153017567173613320698112509  
9618188159304169035159888851934580727386673858942287922849989208680582574927961048419844436346324496  
8487560233624827041978623209002160990235304369941849146314093431738143640546253152096183690888707016  
7683964243781405927145635490613031072085103837505101157477041718986106873969655212671546889570350354

```

EEEEEEEEEEEEEE  ##  ##  AAAAAAAAAA  LL  GGGGGGGGGG
EEEEEEEEEEEEEE  ##  ##  AAAAAAAAAA  LL  GGGGGGGGGG
EE              #####  AA  AA  LL  GG  GGGGGGGGGG
EE              #####  AA  AA  LL  GG  GGGGGGGGGG
EE              ##  ##  AA  AA  LL  GG  GGGGGGGGGG
EEEEEEEEEE      ##  ##  AAAAAAAAAA  LL  GG  GGGGGGGGGG
EEEEEEEEEE      ##  ##  AAAAAAAAAA  LL  GG  GGGGGGGGGG
EE              ##  ##  AA  AA  LL  GG  GGGGGGGGGG
EE              #####  AA  AA  LL  GG  GGGGGGGGGG
EE              #####  AA  AA  LL  GG  GGGGGGGGGG
EEEEEEEEEEEEEE  ##  ##  AA  AA  LLLLLLLLLLLL  GGGGGGGGGGGG
EEEEEEEEEEEEEE  ##  ##  AA  AA  LLLLLLLLLLLL  GGGGGGGGGGGG

```

```

JJJJJJJJJJ      11      444      11      444      AAAAAAAAAA
JJJJJJJJJJ      111     4444     111     4444     AAAAAAAAAA
JJ              1111     44 44     1111     44 44     AA      AA
JJ              11      44 44     11      44 44     AA      AA
JJ              11      44 44     11      44 44     AA      AA
JJ              11      4444444444  11      4444444444  AAAAAAAAAA
JJ              11      44444444444  11      44444444444  AAAAAAAAAA
JJ              11      44      11      44      AA      AA
JJ JJ          11      44      11      44      AA      AA
JJ JJ          11      44      11      44      AA      AA
JJJJJJJJ      1111111111  44      1111111111  44      AA      AA
JJJJJJ      1111111111  44      1111111111  44      AA      AA

```

****A	END	JOB 1414	E#ALG	ROOM	6.55.48 PM 21 MAY 20	PRINTER1	SYS TK4-	JOB 1414	END	A****
****A	END	JOB 1414	E#ALG	ROOM	6.55.48 PM 21 MAY 20	PRINTER1	SYS TK4-	JOB 1414	END	A****
****A	END	JOB 1414	E#ALG	ROOM	6.55.48 PM 21 MAY 20	PRINTER1	SYS TK4-	JOB 1414	END	A****
****A	END	JOB 1414	E#ALG	ROOM	6.55.48 PM 21 MAY 20	PRINTER1	SYS TK4-	JOB 1414	END	A****