\*----------------------------------------------------------------------

\* Programmer: Quang Trinh

\* Class Account: cssc0855

\* Assignment or Title: Program #2

\* Filename: prog2.s

\* Date completed: 03.14.18

\*----------------------------------------------------------------------

\* Problem statement: Create a loan payment calculator program.

\* Input: Principle, interest rate APR, months

\* Output: Monthly payment

\* Error conditions tested: N/A

\* Included files: prog2.s

\* Method and/or pseudocode: Floating-point number

\* References: N/A

\*----------------------------------------------------------------------

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ORG $0

DC.L $3000 \* Stack pointer value after a reset

DC.L start \* Program counter value after a reset

ORG $3000 \* Start at location 3000 Hex

\*

\*----------------------------------------------------------------------

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#minclude /home/cs/faculty/riggins/bsvc/macros/iomacs.s

#minclude /home/cs/faculty/riggins/bsvc/macros/evtmacs.s

\*

\*----------------------------------------------------------------------

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\* Register use

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\*----------------------------------------------------------------------

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start:initIO \* Initialize (required for I/O)

setEVT \* Error handling routines

initF \* For floating point macros only

lineout title \* Assignment information

lineout prompt1

floatin buffer

cvtaf buffer,D1 \* Principle(P)

lineout prompt2

floatin buffer

cvtaf buffer,D2 \* Annual Interest rate

fdiv #$44960000,D2 \* Monthly Interest rate(r)

lineout prompt3

floatin buffer

cvtaf buffer,D3 \* Number of months(n)

move.l D2,D4 \* Copy of interest rate(r)

fadd.l #$3f800000,D2 \* (r+1)->D2

fpow.l D2,D3 \* (r+1)^n->D0

move.l D0,D3 \* Copy of (r+1)^n into D3

fmul.l D0,D4 \* r(r+1)^n->D4

fmul.l D4,D1 \* Pr(r+1)^n->D1

fsub.l #$3f800000,D3 \* (r+1)^n-1->D3

fdiv.l D3,D1 \* payment->D1

cvtfa payment,#2

lineout answer

break \* Terminate execution

\*

\*----------------------------------------------------------------------

\* Storage declarations

title: dc.b 'Program #2, cssc0855, Quang Trinh',0

prompt1: dc.b 'Enter the amount of the loan:',0

prompt2: dc.b 'Enter the annual percentage rate:',0

prompt3: dc.b 'Enter the length of the loan in months:',0

buffer: ds.b 80

answer: dc.b 'Your monthly payment will be $'

payment: ds.b 20

end