Eg 3.1

1. Stage I

Clearly define the problem:

Given integer # of minutes (MINS),
find integer # of hours (HOURS)

= integer # of part of \( \frac{MINS}{60} \)
using integer arithmetic.

Formula is \[ \text{HOURS} = \frac{MINS}{60} \] in integer arithmetic

Also find remaining # of minutes (RMINS)

\[ \text{RMINS} = \text{MINS} \mod 60 \]

("question says not to use MOD")

\[ \text{RMINS} = \text{MINS} - 60 \times \text{HOURS} \]
Stage II

layout a coarse logical structure

\{ 
\begin{align*}
\text{Read} & \quad \text{WINS} \\
\text{Calculate} & \quad \text{HOURS, RWINS} \\
\text{Print results} & 
\end{align*}
\}
Stage III

Refine the structure - add more detail.

"underscore"

PROGRAM Mrs_Mins

Aim/Description

Declare variables

< Prompt for input

head MINS

HOURS = MINS / 60

RMIN = MINS - 60 + HOURS

Print HOURS, RMIN

End of program
PROGRAM Hrs_Mins
!
! Aim: To calculate the # of hours in MINS minutes and the remaining # of minutes RMINS.
! Declare variables:

INTEGER :: MINS, HOURS, RMINS
OPEN(1, FILE='hrs_mins.dat') ! (iii)
!
! Prompt for MINS:

! WRITE(*,*) 'Enter # of minutes: '
! PRINT*, 'Enter # of minutes: '

READ(*,*) MINS ! (i), (ii)
READ(1,*) MINS ! (iii)
HOURS = MINS / 60 ! 60. is stored differently
RMINS = MINS - 60*HOURS! from 60
!

! Output results

WRITE(*,*) 'HOURS=b', HOURS, 'RMINS=b', RMINS
CLOSE(1) ! (iii) not necessary.
STOP

END PROGRAM Hrs_Mins