Topics: Program design, trace

Reading (ML): -

Programming Rules of Thumb

- *Learn program patterns* of general utility and *use relevant pattern* for the problem at hand.

- *Seek inspiration* by systematically working test data by hand. Be introspective; ask yourself: "what am I doing?"

- *Declare variables* for each piece of information you maintain when working problem by hand. *Write comments* that precisely describe the contents of each variable.

- *Decompose* problem into manageable tasks.

- *Remember* the problem's boundary conditions.

- *Validate* your program by tracing it on simple test data.

Program Trace

Trace the execution of the following program:

```
n=18;   x=3;   y=10;
while (n~=0)
     if (mod(n,2)==0)
         n = n/2;
     else
         n = n-1;
         x = 10*x+3;
         y = y*10;
     end
end
y = (y-1)/3;
```

n	18												
x		3											
y			10										

Time $\longrightarrow$

Example:

Write a program that reads an input value in the range of 1 to 12 (integer only) to represent the month of the year. The program should assign to a variable **days** the integer number of days in that month and print the number of days to the screen. Assume a non-leap year. You must use a conditional statement in your program.