Flowcharts

One of the tools that programmers use to develop an algorithm is a flowchart.

A flowchart is a drawing that shows the steps in an algorithm.
The order of the steps can be seen by following the arrows.

Programs can have branches and loops and the flowchart makes it easier to see
the sequence of the algorithm.

Different shapes are used to represent each type of action.

Terminal

The oval is used to indicate the beginning and end points of a flowchart.

Input and Output

The parallelogram is used to represent both input and output.

Assignment

A rectangle is used for assignment statements, or calculations.

Decision

The diamond is used for decisions. A Boolean condition (an
expression that will evaluate to either true or false) is shown
inside the diamond.
There will always be 2 lines out of the diamond:
    one marked T (true) and one marked F (false).
Evaluate the Boolean expression to determine which line to follow.
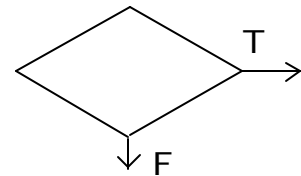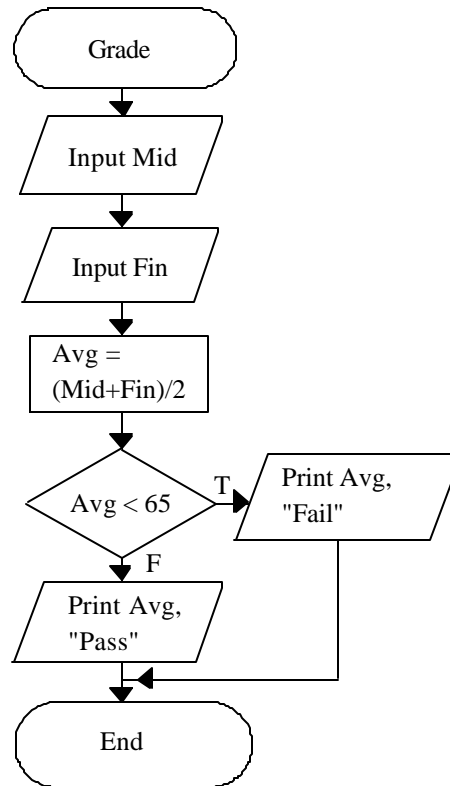
Procedures and Functions

A procedure is a group of statements that can be grouped together
logically to perform a task such as printing a heading, calculating a
bonus, or printing a check.
A procedure is represented by a rectangle with a bar on each side. Each procedure within
a program will have its own flowchart.

A Sample Flowchart

You can probably guess what the flowchart below does. Trace the arrows to see the sequence of events. Start with the oval labeled Grade and "walk" through the flowchart. Write down the values for each variable, making up input values and doing the calculations.

```
                    ⟮  Grade  ⟯
                        │
                        ▼
                 ╱ Input Mid ╱
                        │
                        ▼
                 ╱ Input Fin ╱
                        │
                        ▼
                ┌─────────────┐
                │ Avg =       │
                │ (Mid+Fin)/2 │
                └─────────────┘
                        │
                        ▼
                   ◇          T    ╱ Print Avg, ╱
                Avg < 65  ────────▶   "Fail"
                   ◇               
                        │ F
                        ▼
                ╱ Print Avg, ╱
                   "Pass"
                        │
                        ▼
                   ⟮  End  ⟯
```

Age Flowchart

Draw a flowchart to tell a person if they can retire or not.
Do this on paper before you continue!

Programming is not a spectator sport!
You only learn by doing.

Ok, yours is a little bit different than this one. Every programmer will use somewhat different variable names and approach the problem slightly differently.

Some programmers might have asked how old you are, but if the information is to be input from a file, it is more likely that the year born is in the file.
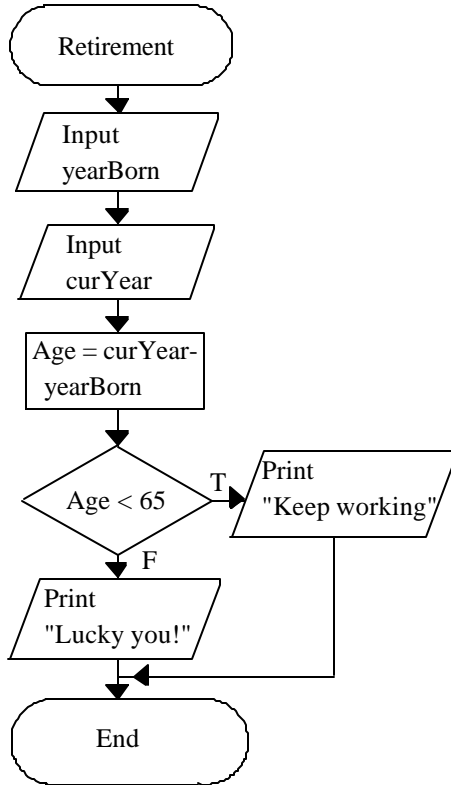
Notice that the variables **yearBorn** and **curYear** do not have a space but use a capital letter to break the two words.