

Switch (Case) Structure

a. English

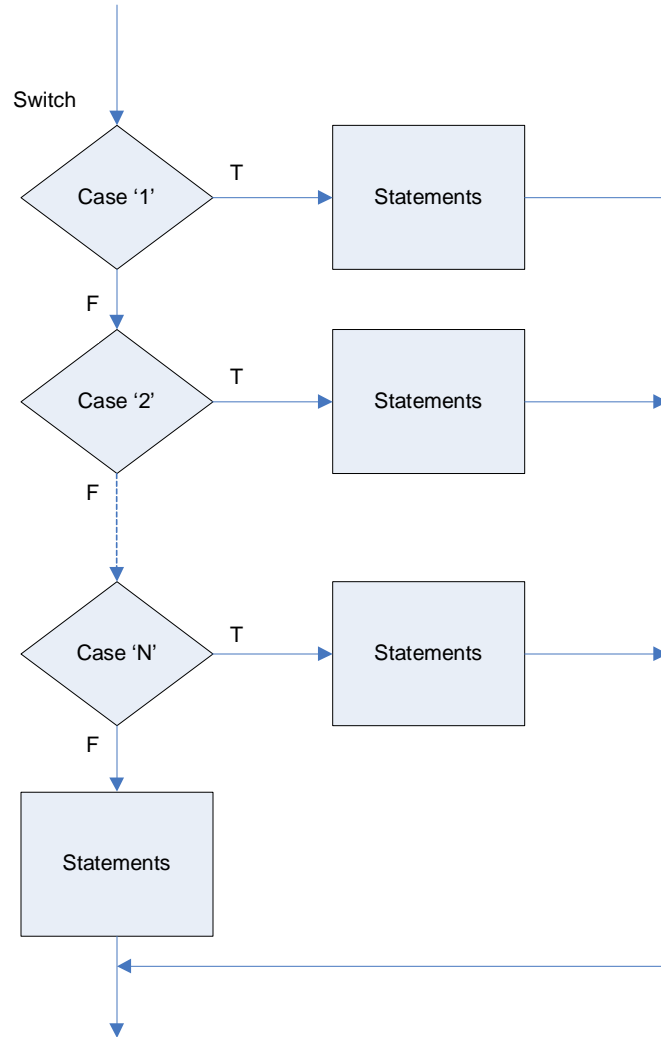
switch what you do based on the value of *x*
 for the **case** where *x* equals _____ do ...
 for the **case** where *x* equals _____ do ...

b. MATLAB syntax

```

switch variable or expression
    case value
        statements
    case value
        statements
    case value
        statements
    ...
    otherwise
        statements
end
    
```

c. Flow Chart



d, Example: Converting compass points to degrees:

```
function angle = compass(direct)
% function angle = compass(direct)
% S. Scott Moor      November 2005
% This function will return the angle given one of
% four major compass points (N, W, S, E)
% Input: direct = the compass direction ('N','W','S',or'E')
% Output: angle = the standard direction angle (degrees)
%
switch direct
case 'N'
    angle = 0;
case 'E'
    angle=90;
case 'S'
    angle = 180;
case 'W'
    angle = 270;
otherwise
    disp('Error')
    angle =NaN
end
```

Cell Arrays

1. How are cell arrays created?
 - i. enclose set of cells in curly braces {cases}
cases are delimited by commas
>> y = {3, 5, 5}
 - ii. use **num2cell()** to convert *number array* to *cell array*
>> x = [3 4 6]
>> y = num2cell(x)
2. What are cell arrays? An array of arrays
e.g. [1,2,3] with [1,2] with 'text'
>> y = {[1,2,3], [1,2], 'text'}
3. Why are cell arrays needed?
 - i. Associate related values of different data types.
e.g., a vector of column headers and the associated columns of data
>> y = {'Height', [8.3, 10.2, 12.3, 15.3, 16.8, 18.0]}
 - ii. Store text strings of different length.
e.g. 'green' 'red' 'blue'
>> y = {'green','red','blue'}
 - iii. Used in a case statement to distinguish between:
 - i. every element in vector must be matched → use a standard array
 - ii. any element in the vector can be matches → use a cell array