CN208
Introductory Computer Programming

Week 6:- Execution Control (If, Switch)
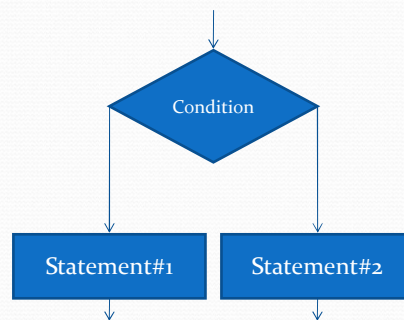
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Execution Control (If, Switch)

- **Overview of Execution Control and Flowchart**
- If statements
- Switch Statements

Overview of Execution Control and Flowchart

- Flowchart requires control
- Decision making:- yes, no, again, skip
- Programming style = execution control

Execution Control (If, Switch)

- Overview of Execution Control and Flowchart
- **If statements**
- Switch Statements

If statements

```
if <logical expression 1>
        <code block 1>
elseif <logical expression 2>
        <code block 2>
        .
        .
        .
elseif <logical expression n>
        <code block n>
else
        <default code block>
end
```

If statements

```
if  day ==7                    % Saturday
    state = 'weekend'
  elseif day == 1              % Sunday
    state = 'weekend'
  else
    state= 'weekday'
end
```

Execution Control (If, Switch)

- Overview of Execution Control and Flowchart
- If statements
- **Switch Statements**

Switch Statements

```
switch <parameter>
    case  <logical expression 1>
            <code block 1>
    case  <logical expression 2>
            <code block 2>
        .
        .
        .
    case <logical expression n>
            <code block n>
    otherwise
        <default code block>
end
```

Switch Statements

```
switch month
    case {9, 4, 6, 11}          % Sept, Apr, June, Nov
          days = 30;
    case  2                     % Feb
        if  leapYear
                days =29;
        else
                days = 28;
        end
    case { 1, 3, 5, 7, 8, 10, 12} % the rest
          days =31;
    otherwise
          error('bad months index')
end
```

Sample Code

```
A = A/h^2;

A(1,1) = 1;
A(N,N) = 1;

b = sin(x);
b(1) = lefty;
b(N) = righty;

if(decision<3)

    % Find and plot the eigen values
    [e,v] = eig(A);
    e = diag(e);
    plot(real(e),imag(e),'rx');
    title('Eigen Values of the matrix');

elseif(decision>3)

    % Find and plot the eigen values of inv(A)
    [e,v] = eig(inv(A));
    e = diag(e);
    plot(real(e),imag(e),'rx');
    title('Eigen Values of the inverse of the matrix');
```
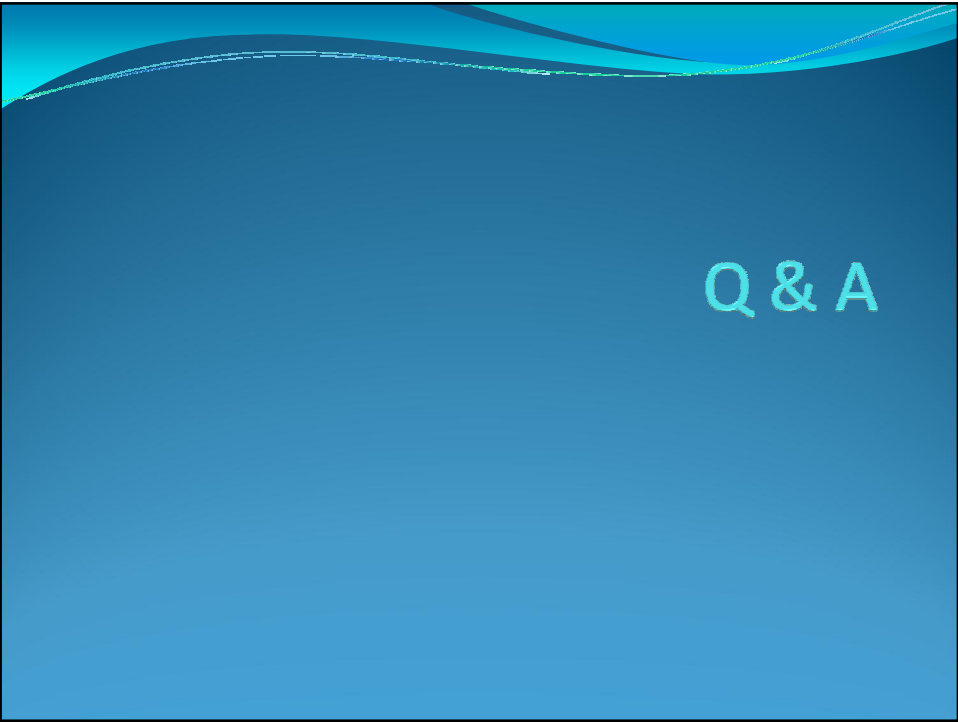
Sample Code

```
else

    % Solve the system
    y = A\b;
    linear = (lefty-righty+sin(leftx)-sin(rightx))/(leftx-rightx);
    constant = lefty + sin(leftx) - linear*leftx;
    true = -sin(x) + linear*x + constant;

    subplot(1,2,1);
    plot(x,y,'go',x,true,'y');
    title('True Solution and Approximation');
    xlabel('x');
    ylabel('y');
    subplot(1,2,2);
    plot(x,abs(y-true),'cx');
    title('Error');
    xlabel('x');
    ylabel('|Error|');


end
```

Reference

- http://www.cyclismo.org/tutorial/matlab/if.html @ 31 OCT 2008