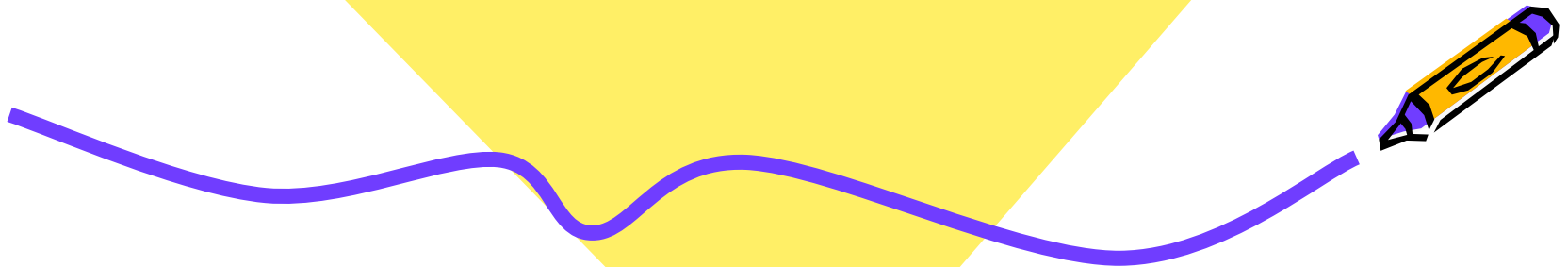# Chapter 14 Loops and Arrays

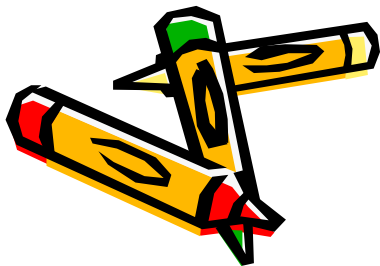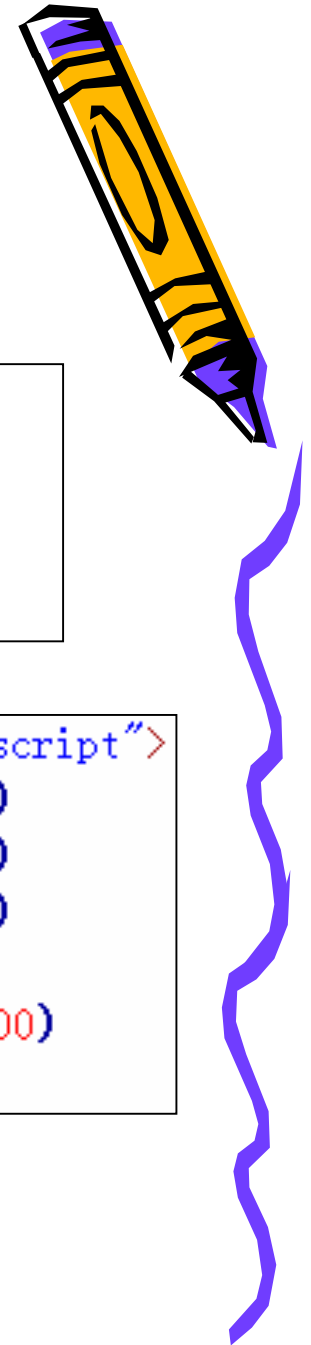Xin Miao

Programming Loops
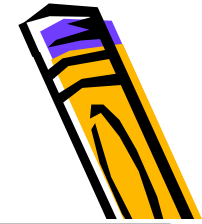
n Why and when to use a programming loop?

Three Types of Loops:
n for,
n while
n do-while

```
<script type="text/javascript">
alert("Printing... "+ 1)
alert("Printing... "+ 2)
alert("Printing... "+ 3)
    ... ...
alert("Printing... "+ 100)
</script>
```
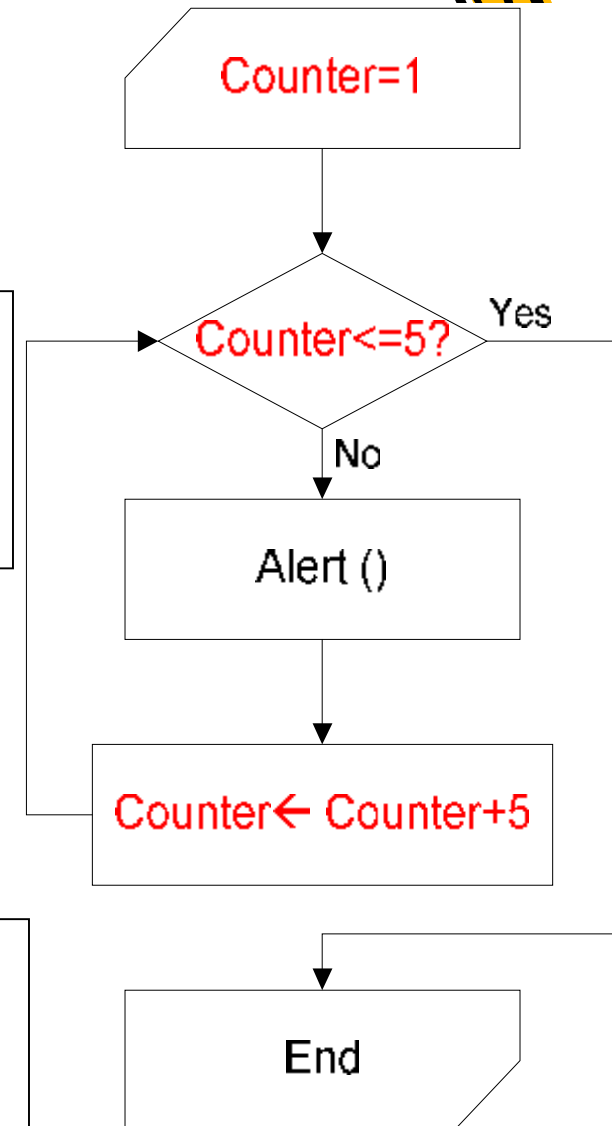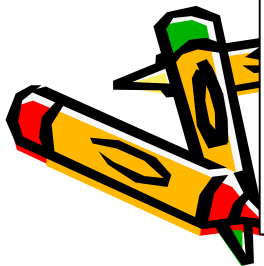
Three Types of Loops (1)

```
for (some number of times)

   { Execute a sequence of instructions}
```
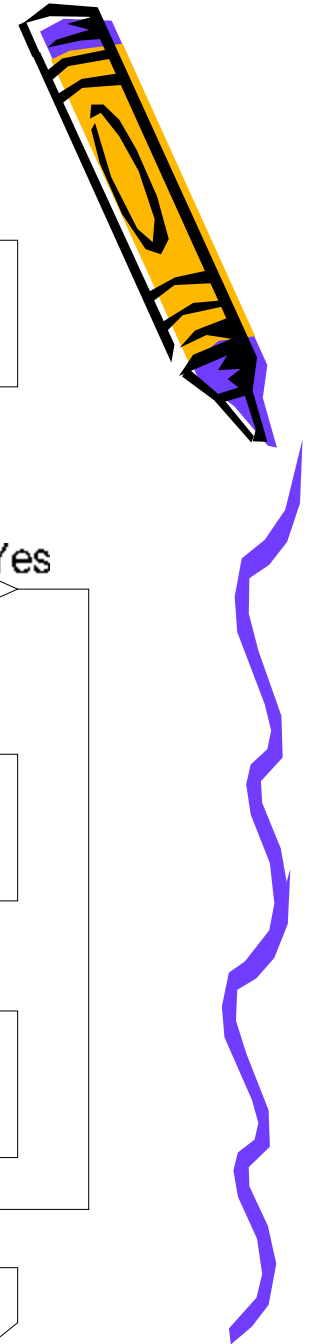
```
var counter

for (counter=1; counter<=5; counter=counter+1)

   { alert ("I deserve an A+! ") }
```

3 Elements: Starting number; ending number; increment

```
var counter

for (counter=1; counter<=5; counter++)

   { alert ("I deserve an A+! ") }
```

Counter=1
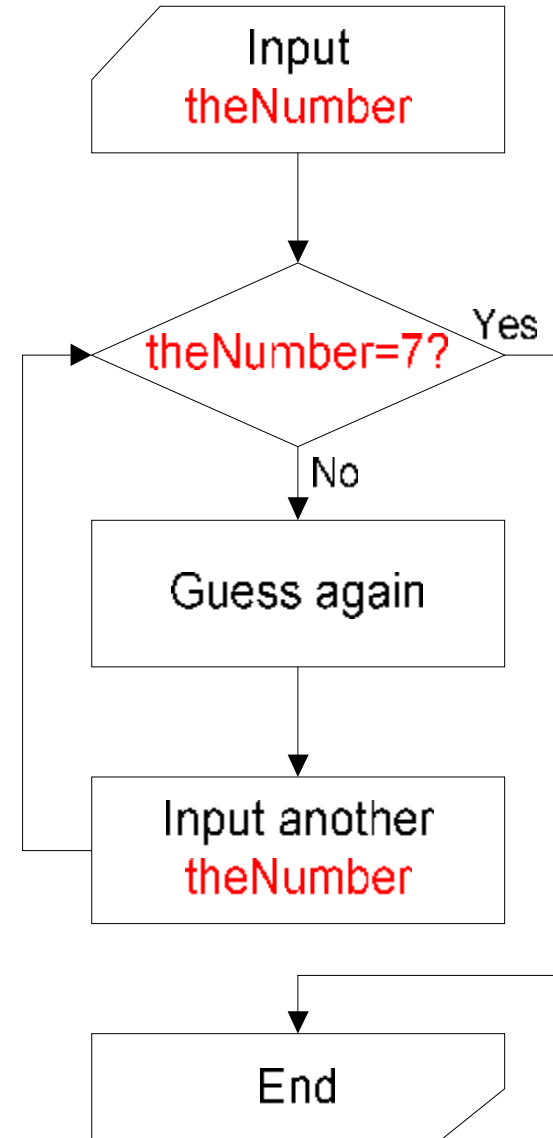
Counter<=5? Yes

No

Alert ()

Counter ← Counter+5

End
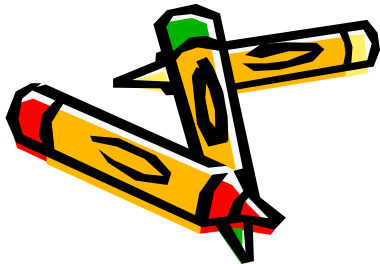
Three Types of Loops (2)

while (some condition is true)

   { Execute a sequence of instructions}

// input a number from 1 to 10

while (theNumber !=7)

   { alert (" Enter a number! ") …}

alert ("You guessed it! It was 7.")

No Starting condition or incrementing instruction.

Input
theNumber

theNumber=7?   Yes

No

Guess again

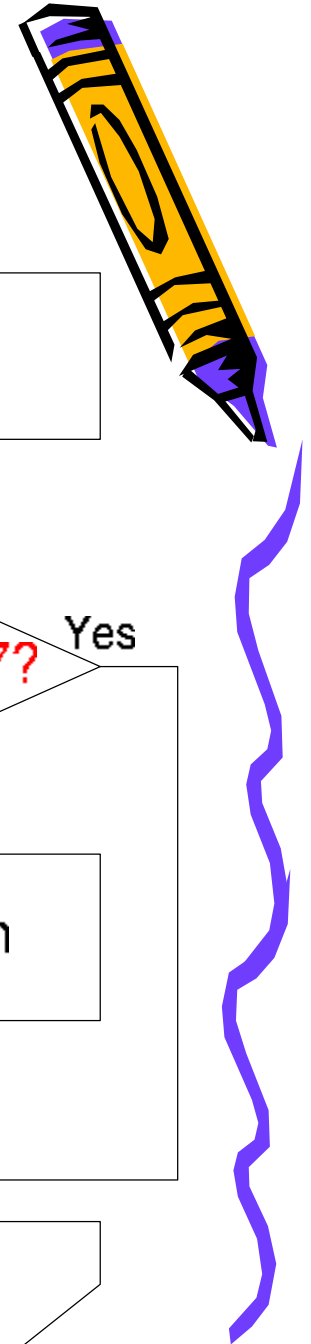Input another
theNumber

End

"for" loops vs. "while" loops

```
var counter

for (counter=1; counter<=5;
counter=counter+1)

    { alert ("I deserve an A+! ") }
```

```
var counter =0
while (counter <=5)

    { alert ("I deserve an A+! ")

        counter=counter+1

    }
```
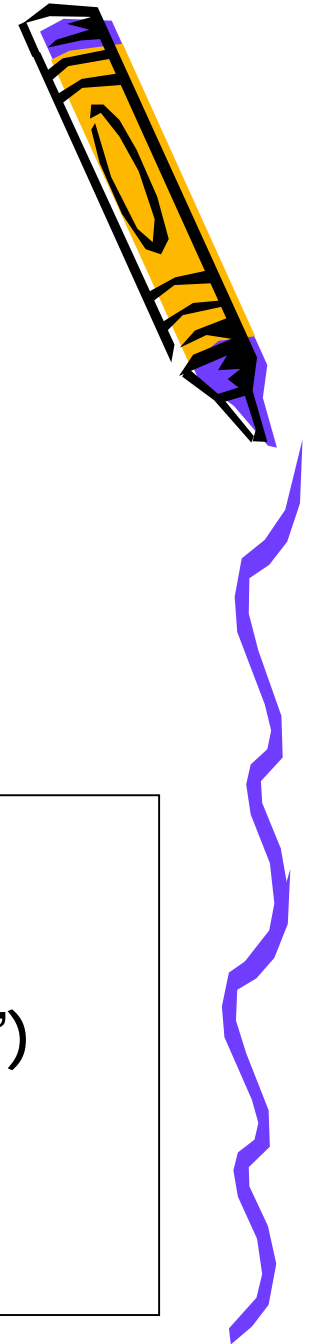
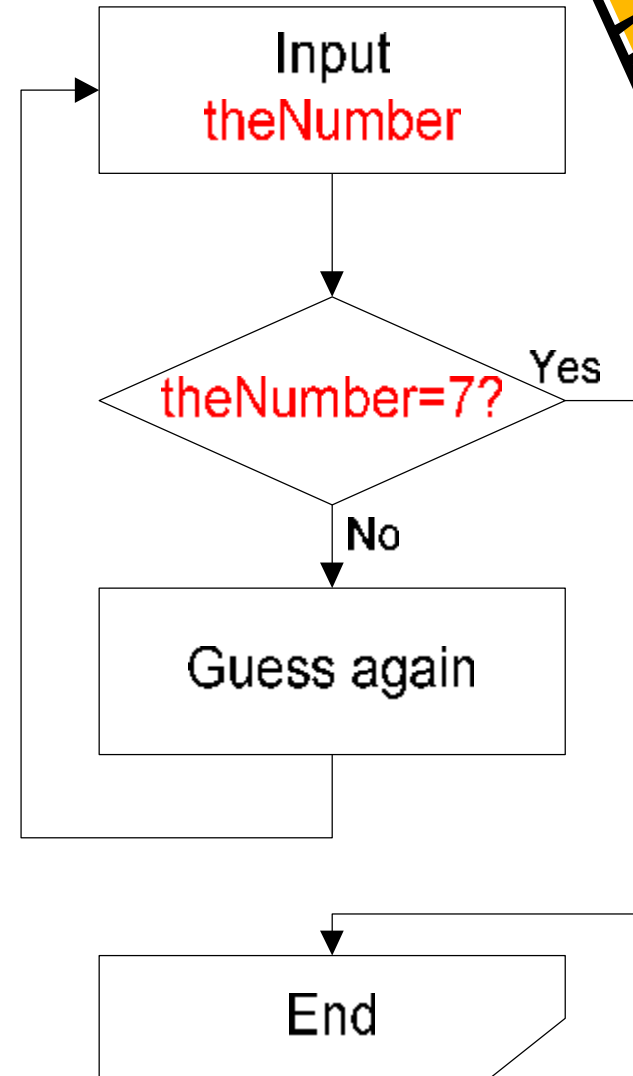# Three Types of Loops (3)

do

{ Execute a sequence of instructions}

while (some condition is true)

---

do

    { alert (" Enter a number! ") …}

while (theNumber !=7)

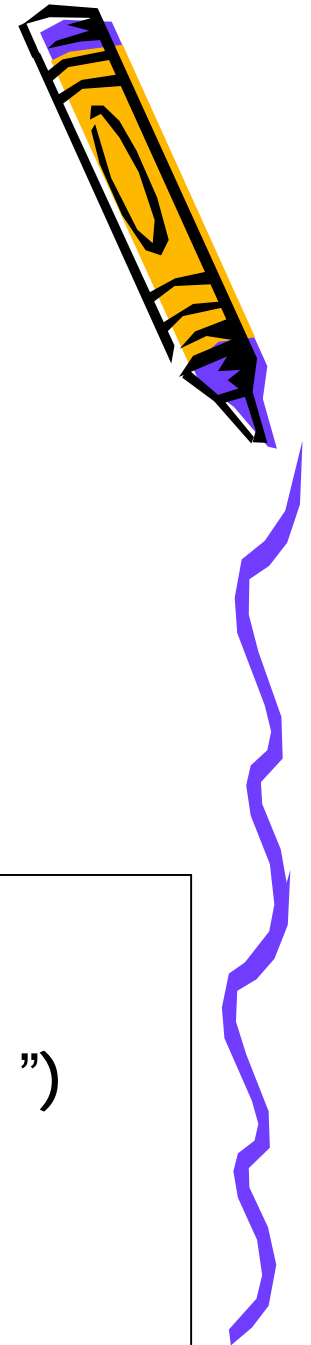alert ("You guessed it! It was 7.")

```
Input
theNumber
        |
        v
   theNumber=7?  --Yes-->
        |
        No
        |
        v
   Guess again
        |
        v
      End
```

"while" loops vs. "do-while" loops

```
var counter =0
while (counter <=5)

    { alert ("I deserve an A+! ")

     counter=counter+1

    }
```

```
var counter =0
do
    { alert ("I deserve an A+! ")

     counter=counter+1

    } while (counter <=5)
```
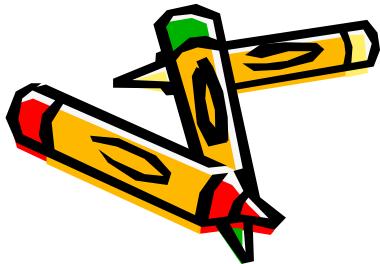
Creating Arrays

- Var sampleArray= new Array(6)
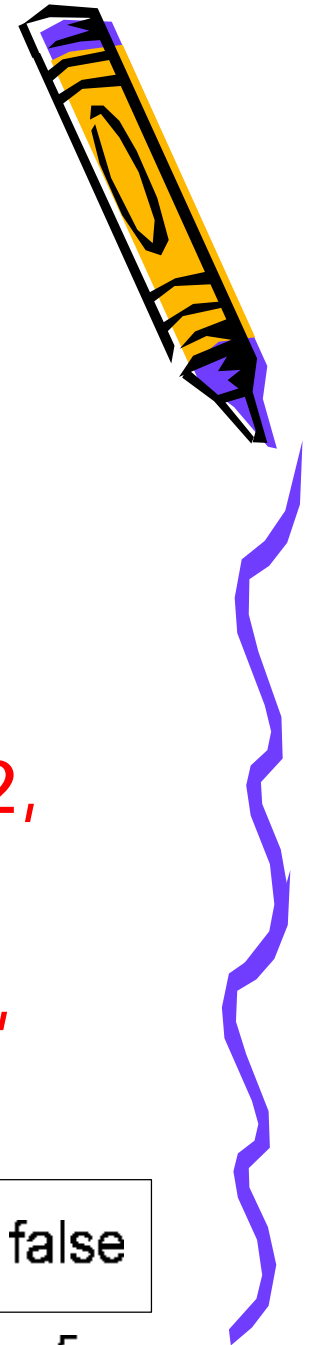
  sampleArray[1]= "Hi"
  sampleArray[0]= 39.72
  sampleArray[2]= 25
  sampleArray[3]= true
  sampleArray[4]= "Bye"
  sampleArray[5]= false

- Var sampleArray= new Array("Hi", 39.72, 25, true, "Bye", false)
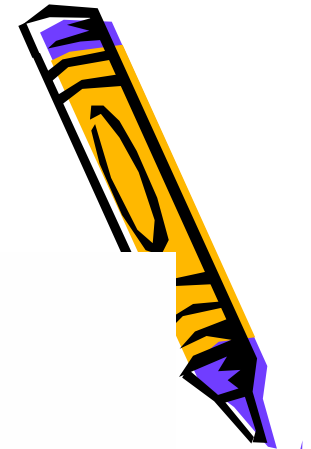
- Var sampleArray= ["Hi", 39.72, 25, true, "Bye", false]

"Hi"	39.72	25	true	"Bye"	false
0	1	2	3	4	5

Using Arrays with Loops

```html
1  <html>
2  <head>
3      <title>Array and Loop Demo</title>
4  </head>
5  <body>
6      <script type="text/javascript">
7      var sampleArray= new Array("Hi", 39.72, 25, true, "Bye", false)
8      alert("the element 0 is: "+sampleArray[0])
9      alert("the element 1 is: "+sampleArray[1])
10     alert("the element 2 is: "+sampleArray[2])
11     alert("the element 3 is: "+sampleArray[3])
12     alert("the element 4 is: "+sampleArray[4])
13     alert("the element 5 is: "+sampleArray[5])
14     //using arrays with loops
15     for (counter=0; counter<=5; counter++) {
16         alert ("the element "+counter+ " is: " +sampleArray[counter])
17     }
18     </script>
19 </body>
20 </html>
```
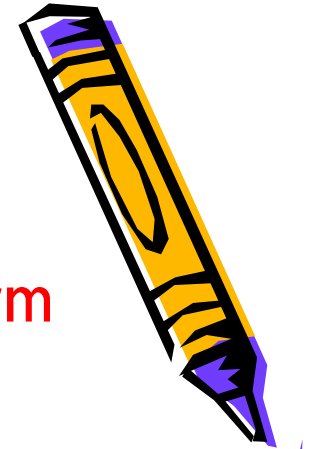
Using elements Array

Please enter four names in the boxes below:

Ryan	Larry
Linnea	Lori

Please enter four short greetings below:

Hi	How are you
Hello	Good to see you

Display!

Form ID: namesForm

   n1Box   n2Box

   n3Box   n4Box

Form ID: greetingsForm
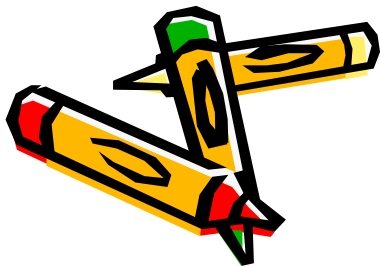
   g1Box   g2Box

   g3Box   g4Box

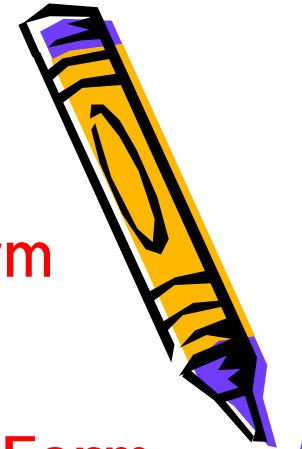Form ID: outputForm

   o1Box   o2Box

   o3Box   o4Box

n document.ourputForm.o1Box.value

n document.ourputForm.elements[0].value

Using Forms Array

Please enter four names in the boxes below:

| Ryan | Larry |
| Linnea | Lori |

Please enter four short greetings below:

| Hi | How are you |
| Hello | Good to see you |

Display!

[0] Form ID: namesForm

    n1Box   n2Box
    n3Box   n4Box

[1] Form ID: greetingsForm

    g1Box   g2Box
    g3Box   g4Box

[3] Form ID: outputForm
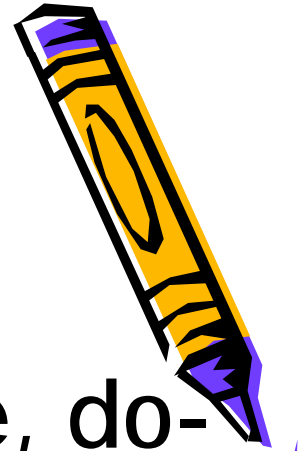
    o1Box   o2Box
    o3Box   o4Box

n document.ourputForm.o1Box.value

n document.ourputForm.elements[0].value

n document.forms[2]. o1Box.value

n document.forms[2].elements[0].value

Summary

- Three types of loops: for, while, do-while;

- Create and use "arrays";

- Refer to form elements by number instead of by name (element arrays)

Lab Exercises for Ch14

- Lab Ex. 14.1, 14.2, 14.3 & 14.4 (P.422-423)

- 14.1-part4 & 14.3-part3 are optional.