

- Previous Lecture:
 - Parts of a Java program
 - Java types, arithmetic operations
 - Variable, declaration and assignment
- Today's Lecture:
 - Conditional statement
 - boolean expressions
- Assigned reading:
 - T Sec 2.3.3
 - PL Lesson page 1-4

Example 1

Given temperature `t` in Fahrenheit, write a program fragment that prints "cold" if the temperature is below 32 F.

```
// print message if it is cold
```

Example 2

Given temperature `t` in Fahrenheit, write a program fragment that prints "comfy" if the temperature is between 50 and 70F.

```
// print message if it is "comfy"
```

Example 3

Given temperature `t` in Fahrenheit, write a program fragment that prints "cold" if the temperature is below 32 F. Otherwise, print "not cold."

```
// print message indicating
// whether it is cold
if ( t < 32 ) {
    System.out.println("cold");
} else {
    System.out.println("not cold");
}
```

Conditional Statement

```
if ( condition1 )
    statement1;
else
    statement2;
```

- At most one statement is executed
- At most one else clause

Conditional Statement

```
if ( condition1 ) {
    statement1;
    statement2;
}
else {
    statement3;
    statement4;
}
```

Boolean

- Represent conditions or states *true* or *false*
- Only two valid values for boolean type: true, false

```
boolean done = false;
```

Boolean Expressions

- A condition often uses *relational operators*, which return **boolean** results:

==	equal to
!=	not equal to
<	less than
>	greater than
<=	less than or equal to
>=	greater than or equal to

Boolean Expressions

- A condition often uses *logical operators*, which return **boolean** results:

&&	and
	or
!	not

Example 4

Variable *m* stores an integer value in the range (1..12). Write a program fragment to print the number of days in month *m*. Assume a non-leap year.

```
int days;  //# of days in month m
```

```
System.out.println("Month " + m +  
    " has " + days + " days.");
```

```
int days;  //# of days in month m
```

```
System.out.println("Month " + m +  
    " has " + days + " days.");
```

Good programming style

Indent substructure:

```
if ( x ==y) {  
    //do something  
    //...  
}
```

Good programming technique

- Develop an algorithm!
- Decompose the problem
- Refine the algorithm iteratively

Conditional Statement

```
if ( condition1 )  
    statement1;  
else  
    if ( condition2 )  
        statement2;  
    else  
        statement3;
```

Conditional Statement

```
if ( condition1 )
    statement1;
else if ( condition2 )
    statement2;
else
    statement3;
```

```
int days;  // # of days in month m
if (m==2)
    days= 28;
else if ( m%2==1 && m<=7 ||
          m%2==0 && m>=8 )
    days= 31;
else
    days= 30;
}
System.out.println("Month " + m +
    " has " + days + " days.");
```