COP-2210
Computer Programming I

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Text: Big Java: Early Objects, Interactive Edition, 6th Edition

Decision Statements

17. SWITCH statement

The *switch* statement

```
switch ( <expression> )
{
        case < value 1 > :
                // list of statements
                break;
        case < value 2 > :
                // list of statements
                break;
                ⋮
        case < value n > :
                // list of statements
                break;
        default :
                // list of statements
}
```

The switch statement provides an alternate method for several condition checks.

***expression*: integer or char**

***break*: breaking out of the switch**

***values*: must be of the type of the expression**

Nested if: could produce obscure code

```
// The  purpose of this program fragment might  be clearer if a SWICTH is used

    if  ( number  ==  14 )
    {
            System.out.println ("14 is an even number");
    }
    else if  ( number  ==  15 )
    {
            System.out.println ("15 is an odd number");
    }
    else if  ( number  ==  16 )
    {
            System.out.println ("16 is a perfect square");
    }
    else if  ( number  ==  17 )
    {
            System.out.println ("17 is a prime number");
    }
    else
    {
            System.out.println ("Well, I don't  know ");
    }
```

switch: *Try it yourself*

```
//Program 17_01  example of SWITCH statement
public class Prog17_01 {
     //ask the user to enter a number

     switch (number)
     {
          case 14:  System.out.println ("14 is an even number");
                    break;

           case 15:  System.out.println ("15 is an odd number");
                    break;

          case 16:  System.out.println ("16 is a perfect square");
                    break;

          case 17:  System.out.println ("17 is a prime number");
                    break;
          default:  System.out.println ("Well, I don't  know");
     }
}
```

The *switch* statement

```
switch ( <expression> )
{
        case < value 1 > :
                // list of statements
                break;
        case < value 2 > :
                // list of statements

                ⋮

        case < value n > :
                // list of statements

        default :
                // list of statements
}
```

One or more “break” could be omitted

When* breaks *are omitted, the statements in the cases after the selected case will be executed (including the* default *statements) until a* break *is found or until the end of the* switch *is reached,

switch: *Try it yourself*

```
import java.util.Scanner;
public class Prog17_02
{
   public static void main(String[] args)
   {
      Scanner in = new Scanner(System.in);
      System.out.print("Do you want to continue <Y/N>? ");
      char answer = in.nextLine().charAt(0);

      switch(answer)
      {
         case 'n': case 'N':
            System.out.println("Halting ...");
            break;
         case 'y': case 'Y':
            System.out.println("Continuing ...");
            break;
          default: System.out.println("Please enter \"Y\" or \"N\"" );
      }
   }
}
```

switch: *Try it yourself*

```
import java.util.Scanner;
public class Prog17_03
{
   public static void main(String[] args)
   {
      Scanner in = new Scanner(System.in);
      System.out.print("Do you want to continue <Y/N>? ");
      String answer = in.nextLine();

      switch(answer)
      {
         case "no": case "No":
            System.out.println("Halting ...");
            break;
         case "yes": case "Yes":
            System.out.println("Continuing ...");
            break;
         default: System.out.println("Please enter \"Yes\" or \"No\"" );
      }
   }
}
```

Note 1: Alternative: use answer.toUpperCase()

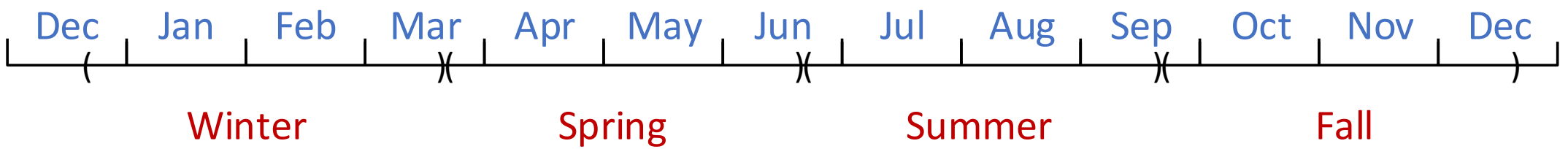
Note 2: if "IF" is used, answer.equals would be required

PRACTICE

Program 17_04:

Write a program that asks the user to enter a month and then prints the astronomical season(s) the month is in (Spring, Summer, Fall, Winter) for the Northern Hemisphere.

Note: March, June, September, and December are in two seasons.



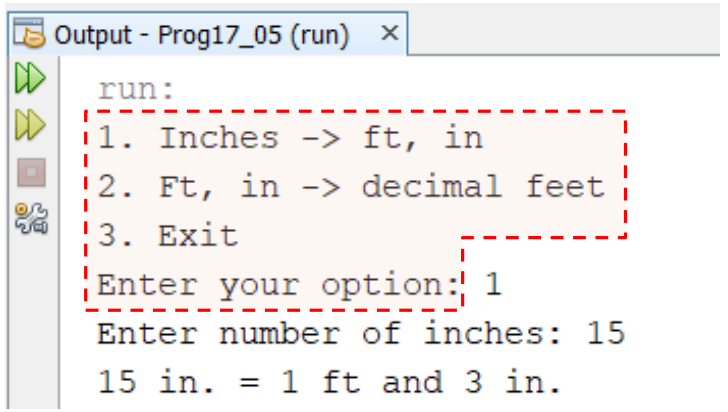
PRACTICE

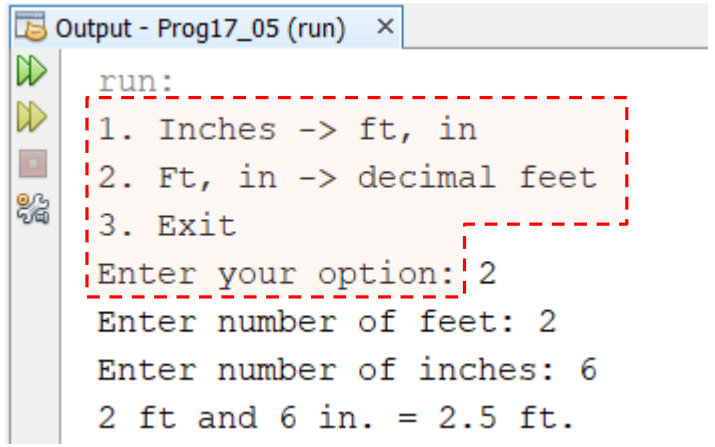
Program 17_05:

Write a program that converts distance values.
The program should give the user 3 options:

- convert inches to feet and inches
- convert feet and inches to decimal feet
- exit

Use a **switch** statement to implement the options.





Decision Statements

18. Conditional Operator

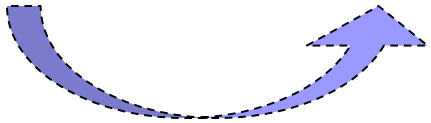
Conditional operator ?:

expression1 ? expression2 : expression3;

Ternary operator (three operands).

if (expression1 == true) then result = expression2
else result = expression3

```
if (a >= b) max = a;
else max = b;
```



max = (a >= b) ? a : b;

Conditional Operator: *Try it yourself*

```
import java.util.Scanner;

public class Prog18_01
{
   public static void main(String[] args)
   {
      Scanner in = new Scanner(System.in);
      System.out.print("Enter values for a and b: ");

      int a = in.nextInt();
      int b = in.nextInt();

      int max = (a>=b) ? a : b;

      System.out.println("Maximum = " + max);
   }
}
```