Set 9: The *switch* Statement

Skill 9.1: Apply *switch* statements with integers to evaluate different conditions
Skill 9.2: Apply switch statements with Strings to evaluate different conditions
Skill 9.3: Interpret the usage of the *break* statement

Skill 9.1: Apply switch statements with integers to evaluate different conditions

Skill 9.1 Concepts

The *if* statement is the most powerful and often used decision-type command. The *switch* is another decision-type command. The switch statement allows a single variable to be tested for equality against a list of values. Each value is called a case, and the variable being switched on is checked for each case.

The syntax for the *switch* statement is illustrated below,

```
switch(variable to be tested) {

     case value :
          // Statements
          break; // optional

     case value :
          // Statements
          break; // optional

     // You can have any number of case statements.
     default : // Optional
          // Statements
}
```

The example below illustrates how to apply a switch statement to evaluate a variable of type *int,*

```
System.out.println("Make your arithmetic selection from the choices below:\n");
System.out.println(" 1. Addition ");
System.out.println(" 2. Substraction ");
System.out.println(" 3. Multiplication ");
System.out.println(" 4. Division ");
System.out.println(" Your choice? ");

Scanner kbReader = new Scanner(System.in);
int choice = kbReader.nextInt();
System.out.println("\nEnter first operand");
double op1 = kbReader.nextDouble();
System.out.println("\nEnter second operand");
double op2 = kbReader.nextDouble();
System.out.println("");

switch(choice) {
     case 1:
          System.out.println(op1 + " plus " + op2 + "=" + (op1+op2));
          break;
     case 2:
          System.out.println(op1 + " minus " + op2 + "=" + (op1-op2));
          break;
     case 3:
          System.out.println(op1 + " times " + op2 + "=" + (op1*op2));
          break;
     case 4:
          System.out.println(op1 + " divided by " + op2 + "=" + (op1/op2));
          break;
     default:
          System.out.println("Hey dummy, enter only 1, 2, 3, or 4!");
}
```

In the above example, the *default* option is not required. The *default* option should be used if there is a possibility that the selected value is not one of the choices.

Skill 9.1 Exercise 1

Skill 9.2: Apply switch statements with Strings to evaluate different conditions

Skill 9.2 Concepts

It is also possible to compare Strings when using *switch* statements. This is demonstrated below,

```
System.out.println("Make your arithmetic selection from the choices below:\n");
System.out.println(" A. Addition ");
System.out.println(" S. Substraction ");
System.out.println(" M. Multiplication ");
System.out.println(" D. Division ");
System.out.println(" Your choice? ");

Scanner kbReader = new Scanner(System.in);
String choice = kbReader.nextLine();
System.out.println("\nEnter first operand");
double op1 = kbReader.nextDouble();
System.out.println("\nEnter second operand");
double op2 = kbReader.nextDouble();
System.out.println("");

switch(choice) {
     case "A":
          System.out.println(op1 + " plus " + op2 + "=" + (op1+op2));
          break;
     case "S":
          System.out.println(op1 + " minus " + op2 + "=" + (op1-op2));
          break;
     case "M":
          System.out.println(op1 + " times " + op2 + "=" + (op1*op2));
          break;
     case "D":
          System.out.println(op1 + " divided by " + op2 + "=" + (op1/op2));
          break;
     default:
          System.out.println("Hey dummy, enter only A, S, M, or D!");
}
```

Skill 9.2 Exercise 1

Skill 9.3: Interpret the usage of the *break* statement

Skill 9.3 Concepts

The *break* command is used to jump out of the *switch* statement if a condition is not met. If the *break* command is omitted, each statement will continue to be evaluated as long as the first one is true. In the following example, if *j* is equal to 1, 2, or 3, *message* will be assigned to "low". If *j* is equal to 4, 5, or 6, *message* will be assigned to "high". If *j* is equal to 7, *message* will be assigned to "lucky".

Code	Output

`String message = "";`
`int j = 2;`
 	
`switch (j) {`
 	
`  case 1:`
`  case 2:`
`  case 3:`
`  message = "low";`
`  break;`
`  case 4:`
`  case 5:`
`  case 6:`
`  message = "high";`
`  break;`
`  case 7:`
`  message = "lucky";`
`}`
 	
`System.out.println(message);`
	low

Skill 9.3 Exercises 1 thru 3