Object Oriented Programming using Java

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Outline

1. Switch Statement
2. Break
3. Continue
4. Return
5. Some Examples

Switch Statement

- **Switch case statement** is a multi-way branch statement.
- Switch case statement is used, when we have number of options (or choices) and we need to perform a different task for each choice.
- The switch expression is evaluated once and it is based on the value of the expression.
- The value of the expression is compared with the values of each case.
- If there is a match, the associated block of code is executed.
- The **break** and **default** keywords are optional.

Switch Statement (Cont…)

- The **default** keyword specifies some code to run, if there is no case match.
- Syntax:

```
switch(expression)
{
   case x:
      Statement 1;        //Code block
      break;
   case y:
      Statement 2;        //Code block
      break;
   default:
       Statement 3;       //Code block
}
```

Switch Statement (Cont…)

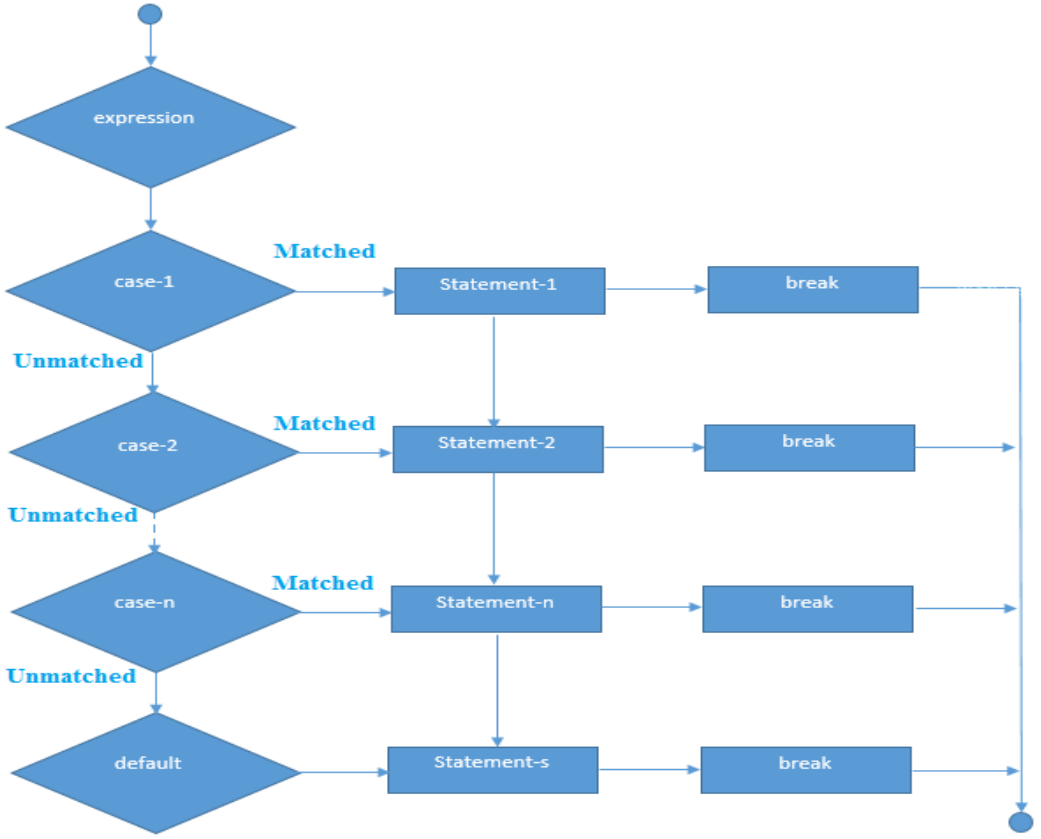

Fig. 1: Flowchart of switch statement

Switch Statement (Cont…)

- **Some important rule**
  - We can have any number of case statements within a switch.
  - Duplicate case values are not allowed.
  - The value of a case must be of the same data type as the variable in the switch.
  - The value for a case must be a constant or a literal. Variables are not allowed.
  - In Java, switch expression must be of byte, short, int, long (with its Wrapper type), enums and string.
  - The **break** statement is used inside the switch to terminate a statement sequence.
  - The **default** statement is optional and can appear anywhere inside the switch block.

Break

- When there is a **break** keyword in the **switch cases**, it breaks out of the switch block.
- When a match is found in switch cases, the break keyword would be executed.
- Break keyword in Java also terminates the **loop** immediately, and the control of the program moves to the next statement following the loop.
- It is also used to break (a form of Goto) a **label**.
- It stops the execution of more code and case testing inside the block.

Continue

- **Continue** statement is used to skip the current iteration of a loop and jump to the next iteration of the **loop** immediately.
- We can use continue statement inside any types of loops, such as for, while and do-while loop.
- It is used in a situation, when we want to continue the loop, but do not want the remaining statement after the continue statement.
- We can use a labelled continue statement to continue the outermost loop.

Return

- **return** keyword is used to exit from a method with or without a value.
- The value passed with return keyword must match with return type of the method.
- Return can be used with methods in two ways:
  - **Methods returning a value:** For methods that define a return type, return statement must be immediately followed by return value.
  - **Methods not returning a value:** Any method declared void doesn't return a value. It does not need to contain a return statement, but it may do so. In such a case, a return statement can be used to branch out of a control flow block and exit the method.

Some Examples

```
public class Switch1
{
   public static void main(String args[])
   {
      int i = 3;
      switch(i)
      {
         case 1:
           System.out.println("Print Case1");
         case 2:
           System.out.println("Print Case2");
         case 3:
           System.out.println("Print Case3");
         case 4:
           System.out.println("Print Case4");
      }
   }
}
```

Some Examples (Cont…)

- Output

  Print Case3

  Print Case4

Some Examples (Cont…)

```
public class Switch2
{
   public static void main(String args[])
   {
      int i = 1;
      switch(i+2)
      {
         case 1:
           System.out.println("Print Case1");
         case 2:
           System.out.println("Print Case2");
         case 3:
           System.out.println("Print Case3");
         case -3:
           System.out.println("Print Case -3");
         default:
           System.out.println("Print Default too");
      }
   }
}
```

Some Examples (Cont…)

- Output

  Print Case3

  Print Case -3

  Print Default too

Some Examples (Cont…)

```
public class Switch3
{
   public static void main(String args[])
   {
      int i = 1;
      switch(i+2)
      {
         case 2:
           System.out.println("Print Case1");
         case 1:
           System.out.println("Print Case2");
         default:
           System.out.println("Print Default");
         case 3:
           System.out.println("Print Case3");
         case 100:
           System.out.println("Print Case 100 too");

      }
   }
}
```

Some Examples (Cont…)

- Output

  Print Case3

  Print Case 100 too

Some Examples (Cont…)

```
public class Switch4
{
   public static void main(String args[])
   {
      char day = 'c';
      switch (day)
      {
         case 'a':
            System.out.println("Monday");
            break;
         case 'b':
            System.out.println("Tuesday");
            break;
         case 'c':
            System.out.println("Wednesday");
            break;
         case 'd':
            System.out.println("Thursday");
            break;
         case 'e':
            System.out.println("Friday");
            break;
      }
   }
}
```

Some Examples (Cont…)

- Output

  Wednesday

Some Examples (Cont…)

```
public class Switch5
{
   public static void main(String args[])
   {
      int day = 1;
      switch (day+2+3)
      {
         case 1:
            System.out.println("Monday");
            break;
         case 2:
            System.out.println("Tuesday");
            break;
         case 3:
            System.out.println("Wednesday");
            break;
         case 4:
            System.out.println("Thursday");
            break;
         case 5:
            System.out.println("Friday");
            break;
         default:
            System.out.println("Sunday");
            break;
      }
   }
}
```

Some Examples (Cont…)

- Output

  Sunday

Some Examples (Cont…)

```
public class Switch6
{
   public static void main(String args[])
   {
      int day = 1;
      switch (6)
      {
         case 1:
            System.out.println("Monday");
            break;
         case 2:
            System.out.println("Tuesday");
            break;
         case 3:
            System.out.println("Wednesday");
            break;
         default:
            System.out.println("Sunday");
         case 4:
            System.out.println("Thursday");
            break;
         case 5:
            System.out.println("Friday");
            break;
      }
   }
}
```

Some Examples (Cont…)

- Output

  Sunday

  Thursday

Some Examples (Cont…)

```
class Switch7
{
   public static void main(String args[])
   {
      int month = 2;
      char day = 'c';
      switch (month)
      {
        case 1:
           System.out.println("Print Case 1 of Month, i.e. January");
           break;
        case 2:
           System.out.println("Print Case 2 of Month, i.e. February");
           switch ('c')                    //Nested Switch
           {
              case 'a':
              case 'b':
                 System.out.println("Print Case b of day, i.e. Tuesday");
                 break;
              case 'c':
                 System.out.println("Print Case c of day, i.e. Wednesday");
                 break;
              default:
                 System.out.println("Elective courses : Optimization");
           }
        case 3:
           System.out.println("Print Case 3 of Month, i.e. March");
           break;
      }
   }
}
```

Some Examples (Cont…)

- Output

```
Print Case 2 of Month, i.e. February
Print Case c of day, i.e. Wednesday
Print Case 3 of Month, i.e. March
```

Some Examples (Cont…)

```
class Switch8
{
   public static void main(String args[])
   {
      for (int i = 0; i < 5; i++)
      {
         if (i == 2)
         {
            break;
         }
         System.out.println(i);
      }
   }
}
```

Some Examples (Cont…)

- Output

  0

  1

Some Examples (Cont…)

```
import java.util.Scanner;
class Switch12
{
   public static void main(String args[])
   {
      Double num, sum = 0.0;
      Scanner input = new Scanner(System.in);
      while (true)
      {
         System.out.print("Enter a number: ");
         num = input.nextDouble();
         if (num < 0)
         {
            break;
         }
         sum = sum + num;
      }
      System.out.println("Sum: " + sum);
   }
}
```

Some Examples (Cont…)

- Output

```
Enter a number: 5
Enter a number: 7.7
Enter a number: 3.1
Enter a number: -9
Sum: 15.799999999999999
```

Some Examples (Cont…)

```
class Switch9
{
   public static void main(String args[])
   {
      int i = 0;
      while (i < 5)
      {
         if (i == 3)
         {
            i++;
            continue;
         }
         System.out.println(i);
         i++;
      }
   }
}
```

Some Examples (Cont…)

- Output

  0

  1

  2

  4

Some Examples (Cont…)

```
class Switch10
{
   public static void main(String args[])
   {
      aa:
         for(int i = 1; i <= 3; i++)
         {
            bb:
               for(int j = 1; j <= 3; j++)
               {
                  if(i==2 && j==2)
                  {
                     break aa;
                  }
                  System.out.println(i+" "+j);
               }
         }
   }
}
```

Some Examples (Cont…)

- Output

  1 1

  1 2

  1 3

  2 1

Some Examples (Cont…)

```
class Switch11
{
   public static void main(String args[])
   {
   aa:
      for (int i = 0; i < 5; i++)
      {
      bb:
         for (int j = 0; j < 5; j++)
         {
            if (i == 2 && j == 2)
               continue bb;
            System.out.println("i: "+i+" "+"j: "+j);
         }
      }
   }
}
```

Some Examples (Cont…)

- Output

```
i:  0  j:  0
i:  0  j:  1
i:  0  j:  2
i:  0  j:  3
i:  0  j:  4
i:  1  j:  0
i:  1  j:  1
i:  1  j:  2
i:  1  j:  3
i:  1  j:  4
i:  2  j:  0
i:  2  j:  1
i:  2  j:  3
i:  2  j:  4
i:  3  j:  0
i:  3  j:  1
i:  3  j:  2
i:  3  j:  3
i:  3  j:  4
i:  4  j:  0
i:  4  j:  1
i:  4  j:  2
i:  4  j:  3
i:  4  j:  4
```

thank you . . .

Slides are prepared from various sources, such as Book, Internet Links and many more.