Intro to Java Programming

Conditional Statements and Operations

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Outline

Topic

Conditional Statements and Operations

Conditional Statements

Code

```
1 System.out.println("Hello, world!");
2 if (true) {
3     System.out.println("This code is unavoidable!");
4 }
```

```
> Hello, world!
> This code is unavoidable!
```

Results

Code

```
1 int number = 11;
2 if (number > 10) {
3     System.out.println("The number was greater than 10");
4 }
```

```
> The number was greater than 10
```

Results

Conditional Statement (Cont'd)

Code

```
1 int number = 11;
2 boolean greaterThan10 = number > 10;
3 if (greaterThan10) {
4     System.out.println("Greater than 10!");
5 }
```

```
> Greater than 10!
```

Results

Programming Exercise - Speeding Ticket

Part01_23.SpeedingTicket

Write a program that asks the user for an integer and prints

the string "Speeding ticket!" if the input is greater than 120.

Code

```
1  import java.util.Scanner;
2
3  public class SpeedingTicket {
4
5      public static void main(String[] args) {
6          Scanner scanner = new Scanner(System.in);
7
8          // Write your program here.
9      }
10 }
```

Desired Output

```
> Give speed:
> 15
```

Results

```
> Give speed:
> 135
> Speeding ticket!
```

Results

Code Indentation and Block Statements

Code

```
1 public class ProgramName {
2     public static void main(String[] args) {
3         int number = 72;
4         if (number < 100){
5             System.out.println("Number less
  ↪  than 100");
6         }
7     }
8 }
```

```
> Number less than 100
```

Results

Code

```
1 public class ProgramName {
2 public static void main(String[] args) {
3 int number = 72;
4 if (number < 100){
5 System.out.println("Number less than 100");
6 }
7 }
8 }
```

```
> Number less than 100
```

Results

Comparison Operators

Common Comparators

Operator	Use
>	Greater Than
>=	Greater Than or Equal To
<	Less Than
<=	Less Than or Equal To
==	Equal To
!=	Not equal To

Programming Exercise - Ancient

Part01_26.Ancient

Write a program that prompts the user for a year. If the user inputs a number that is smaller than 2015, then the program prints the string "Ancient history!".

Code

```
1  import java.util.Scanner;
2
3  public class Ancient {
4
5      public static void main(String[] args) {
6          Scanner scan = new Scanner(System.in);
7
8          // Write your program here
9      }
10 }
```

Desired Output

```
> Give a year:
> 2017
```

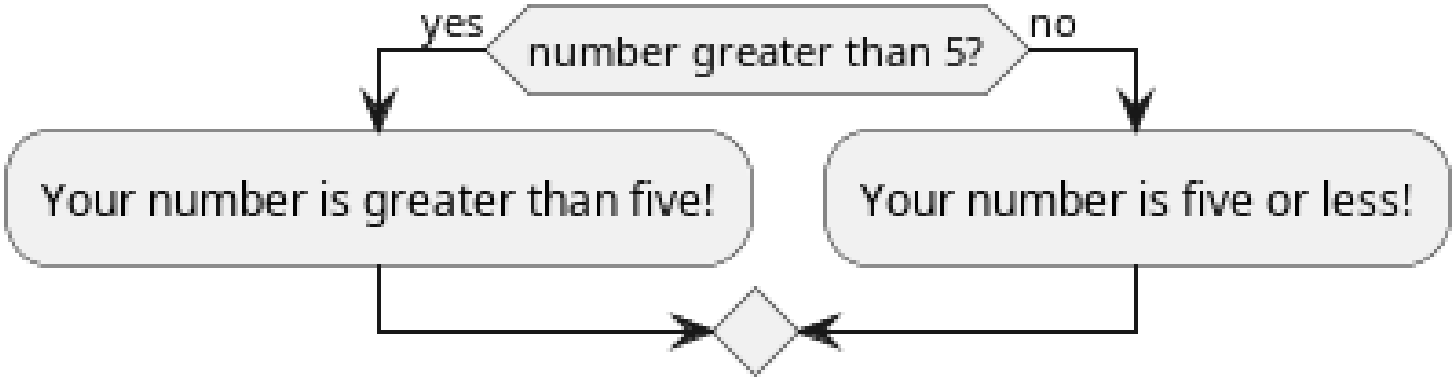
Results

```
> Give a year:
> 2013
> Ancient history!
```

Results

Else

Else statements



Code

```
1 int number = 4;
2
3 if (number > 5) {
4     System.out.println("Your number is greater than five!");
5 } else {
6     System.out.println("Your number is five or less!");
7 }
```

```
> Your number is five or less!
```

Results

Programming Exercise - Positivity

Part01_28.Positivity

Write a program that prompts the user for an integer and informs the user whether or not it is positive (greater than zero).

Code

```
1  import java.util.Scanner;
2
3  public class Positivity {
4
5      public static void main(String[] args) {
6          Scanner scan = new Scanner(System.in);
7
8          // Write your program here
9      }
10 }
```

Desired Output

```
> Give a number:
> 5
> The number is positive.
```

Results

```
> Give a number:
> -2
> The number is not positive
      .
```

Results

Programming Exercise - Adulthood

Part01_29.Adulthood

Write a program that prompts the user for their age and tells them whether or not they are an adult (18 years old or older).

Code

```
1  import java.util.Scanner;
2
3  public class Adulthood {
4
5      public static void main(String[] args) {
6          Scanner scan = new Scanner(System.in);
7
8          // Write your program here
9      }
10 }
11
```

Desired Output

```
> How old are you?
> 12
> You are not an adult
```

Results

```
> How old are you?
> 32
> You are an adult
```

Results

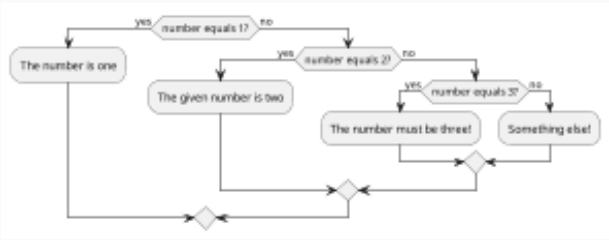
More conditionals

Code

```
1  int number = 3;
2
3  if (number == 1) {
4      System.out.println("The number is one");
5  } else if (number == 2) {
6      System.out.println("The given number is two");
7  } else if (number == 3) {
8      System.out.println("The number must be three!");
9  } else {
10     System.out.println("Something else!");
11 }
```

```
> The number must be three!
```

Results



Programming Exercise - Larger Than or Equal To

Part01_30.LargerThanOrEqualTo

Write a program that prompts the user for two integers and prints the larger of the two. If the numbers are the same, then the program informs us about this as well.

Code

```
1 import java.util.Scanner;
2
3 public class LargerThanOrEqualTo {
4
5     public static void main(String[] args) {
6         Scanner scan = new Scanner(System.in);
7
8     }
9 }
```

Desired Output

```
> Give the first number:
> 5
> Give the second number:
> 3
> Greater number is: 5
```

Results

```
> Give the first number:
> 5
> Give the second number:
> 8
> Greater number is: 8
```

Results

```
> Give the first number:
> 5
> Give the second number:
> 5
> The numbers are equal!
```

Results

Programming Exercise - Grades and Points

Part01_31.GradesAndPoints

The table below describes how the grade for a particular course is determined. Write a program that gives a course grade according to the provided table.

points	grade
< 0	impossible!
0-49	failed
50-59	1
60-69	2
70-79	3
80-89	4
90-100	5
> 100	incredible!

Desired Output

```
Give points [0-100]:
37
Grade: failed

Give points [0-100]:
76
Grade: 3

Give points [0-100]:
95
Grade: 5

Give points [0-100]:
-3
Grade: impossible!
```

Remainder Operations

The Modulo (%) Operator

Code

```
1 int remainder = 7 % 2;
2 System.out.println(remainder);
```

```
> 1
```

Results

Code

```
int number = 800;

if (number % 400 == 0) {
    System.out.println("The number " + number + " is divisible by four hundred.");
} else {
    System.out.println("The number " + number + " is not divisible by four hundred.");
}
```

```
> The number 800 is divisible by four hundred.
```

Results

Programming Exercise - Odd or Even

Part01_32.OddOrEven

Write a program that prompts the user for a number and

informs us whether it is even or odd.

Code

```
1 import java.util.Scanner;
2
3 public class OddOrEven {
4
5     public static void main(String[] args) {
6         Scanner scan = new Scanner(System.in);
7
8     }
9 }
```

Desired Output

```
> Give a number:
> 2
> Number 2 is even.
```

Results

```
> Give a number:
> 7
> Number 7 is odd.
```

Results

Comparing Strings

The .equals() method

Code

```
1 boolean compareInts = 10 == 10;              // evalutes to true
2 boolean compareDoubles = 42.42 == 42.42;     // evaluates to true
3 boolean compareStrings = "this" == "this"; //evaluates to false
```

Code

```
1 String sampleString = "this is my string";
2 boolean compareStrings = sampleString.equals("this is my string");      // evaluates to true
3 compareStrings = sampleString.equals("this is not my string");          // evaluates to false
```

Programming Exercise - Password

Part01_33.Password

Write a program that prompts the user for a password. If the password is "Caput Draconis" the program prints "Welcome!". Otherwise, the program prints "Off with you!"

Code

```
1  import java.util.Scanner;
2
3  public class Password {
4
5      public static void main(String[] args) {
6          Scanner scan = new Scanner(System.in);
7
8          // Write your program here
9      }
10 }
```

Desired Output

```
> Password?
> Wattlebird
> Off with you!
```

Results

```
> Password?
> Caput Draconis
> Welcome!
```

Results

Programming Exercise - Same

Part01_34.Same

Write a program that prompts the user for two strings. If the strings are the same, then the program prints "Same". Otherwise, it prints "Different". prints "Off with you!"

Code

```
1  import java.util.Scanner;
2
3  public class Same {
4
5      public static void main(String[] args) {
6          Scanner scan = new Scanner(System.in);
7
8          // Write your program here.
9      }
10 }
```

Desired Output

```
> Enter the first string:
> hello
> Enter the second string:
> hello
> Same
```

Results

```
> Enter the first string:
> hello
> Enter the second string:
> world
> Different
```

Results

Logical Operators

Code

```
System.out.println(true && true);
```

```
> true
```

Results

Code

```
System.out.println(true && false);
```

```
> false
```

Results

Code

```
System.out.println(false || true);
```

```
> true
```

Results

Code

```
System.out.println(true || false);
```

```
> true
```

Results

Code

```
System.out.println(false || false);
```

```
> false
```

Logic	Symbol
and	&&
or	||
not	!