


 BIRZEIT UNIVERSITY

Selections

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Comparison Operators

Java Operator	Mathematics Symbol	Name	Example (radius is 5)	Result
<	<	less than	<code>radius < 0</code>	<code>false</code>
<=	≤	less than or equal to	<code>radius <= 0</code>	<code>false</code>
>	>	greater than	<code>radius > 0</code>	<code>true</code>
>=	≥	greater than or equal to	<code>radius >= 0</code>	<code>true</code>
==	=	equal to	<code>radius == 0</code>	<code>false</code>
!=	≠	not equal to	<code>radius != 0</code>	<code>true</code>



if-else

```

if (radius >= 0) {
    area = radius * radius * 3.14159;
    System.out.println("The area for the " +
        "circle of radius " + radius + " is " + area);
}
else {
    System.out.println("Negative input");
}

```



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Common Errors

❖ Adding a **semicolon** at the end of an **if** clause is a common mistake.

```

if (radius >= 0) ; ← Wrong
{
    area = radius*radius*PI;
    System.out.println( "The area for the circle is " + area);
}

```

❖ This mistake is hard to find, because it is not a compilation error or a runtime error, it is a **logic** error.

❖ This error often occurs when you use the next-line block style.



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Logical Operators

<u>Operator</u>	<u>Name</u>
!	not
&&	and
	or
^	exclusive or



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switch Statements

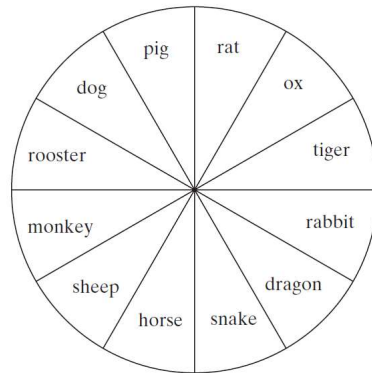
```
switch (status) {  
    case 0: compute taxes for single filers;  
            break;  
    case 1: compute taxes for married file jointly;  
            break;  
    case 2: compute taxes for married file separately;  
            break;  
    case 3: compute taxes for head of household;  
            break;  
    default: System.out.println("Errors: invalid status");  
            System.exit(1);  
}
```



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Problem: Chinese Zodiac

Write a program that prompts the user to enter a year and displays the animal for the year.



year % 12 = {

- 0: monkey
- 1: rooster
- 2: dog
- 3: pig
- 4: rat
- 5: ox
- 6: tiger
- 7: rabbit
- 8: dragon
- 9: snake
- 10: horse
- 11: sheep



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Conditional Operator

```
if (x > 0)
    y = 1;
else
    y = -1;
```

❖ is equivalent to:

```
y = (x > 0) ? 1 : -1;
```

```
(boolean-expression) ? expression1 : expression2
```



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Conditional Operator

```
if (num % 2 == 0)
    System.out.println(num + "is even");
else
    System.out.println(num + "is odd");
```



```
System.out.println( (num % 2 == 0) ?
    num + "is even" : num + "is odd" );
```



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Formatting Output

❖ Use the **printf** statement:

```
System.out.printf( format, items );
```

- Where format is a string that may consist of substrings and **format specifiers**.
- A format specifier specifies how an item should be displayed.
- An item may be a numeric value, character, boolean value, or a string.
- Each specifier begins with a **percent** sign.



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Frequently-Used Specifiers

<u>Specifier</u>	<u>Output</u>	<u>Example</u>
%b	a boolean value	true or false
%c	a character	'a'
%d	a decimal integer	200
%f	a floating-point number	45.460000
%e	a number in standard scientific notation	4.556000e+01
%s	a string	"Java is cool"

```
int count = 5;
double amount = 45.56;
System.out.printf("count is %d and amount is %f", count, amount);
```

display count is 5 and amount is 45.560000

items

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