

Exercises

COMP SCI / SFWR ENG 2S03

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if-then Statement

If-Then

- execute statements if the condition is true

```
if ( condition ) {  
    statement(s)  
}
```

Example

```
if (a==b){  
    System.out.println("a==b");  
}
```

if-then-else Statement

If-Then-Else

- can have multiple else-if statements
- "else" covers all the other cases not previously defined
- only one case will be executed

```
if (condition){  
    statement(s)  
} else if (condition){  
    statement(s)  
} else if (condition){  
    statement(s)  
}  
...  
else {  
    statement(s)  
}
```

Example

```
if (a < b) {  
    System.out.println("a < b");  
} else if (a == b) {  
    System.out.println("a == b");  
} else {  
    System.out.println("a > b");  
}
```

while loop

While Loop

- Evaluates condition before entering the loop
- Statement(s) may or may not execute depending on the condition

```
while (condition){  
    statement(s)  
}
```

Example

```
a=5;  
while (a>=0){  
    System.out.println(a);  
    a-=1;  
}
```

```
5  
4  
3  
2  
1  
0
```

Exercise # 1

- Write a program that asks the user for their name and age. Output their name and whether or not they can legally buy and consume alcohol.

Exercise # 2

- The following program is incorrect in 3 separate instances. Locate the errors and correct the program

```
/**
 * _____
 * Project: CS2S03 Tutorial #4
 * Date: September 24, 2012
 * Author(s): Julian Glenesk
 * File: ProfitOrLossBad.java
 * _____
 * This program has 3 errors either syntactically, logically, or both.
 * It should determine whether the user has made a profit, a loss, or
 * has broken even based on the user-inputted net income.
 * _____
 */

import java.util.*;

public class ProfitOrLossBad {

    public static void main(String args[]) {

        double netIncome;
        Scanner input = new Scanner(System.in);

        System.out.println("Enter_your_Net_Income");

        if (netIncome >= 0)
            System.out.println("Congratulations_you_have_made_a_profit");
        else if (netIncome < 0)
            System.out.println("I'm_sorry,_you_have_incurred_a_loss");

        input.close();
    }
}
```

Exercise # 3

- Using a while loop, calculate the factorial of an integer.

Exercise # 4

- The following program is incorrect in 2 separate instances. Locate the errors and correct the program

```
/**
 * -----
 * Project: CS2S03 Tutorial #4
 * Date: September 24, 2012
 * Author(s): Julian Glenesk
 * File: RocketLaunchBad.java
 * -----
 * This program has 2 logical errors. It should simulate a
 * rocket launch counting down from 10 before "blasting off".
 * -----
 */

public class RocketLaunchBad {

    public static void main(String args[]) {

        int countdown = 10;

        while (countdown > 1) {

            System.out.println(countdown);
        }

        System.out.println("Blast_Off!");
    }
}
```

Exercise # 5

- Write a JUnit test case for question #3 and use multiple assertEquals statement to test the correctness of your program.