Informatik I
Übungssession 3

Herbst 2020

Homework

- Questions?

Introduction Activity

A boolean expression is a Java expression that returns a Boolean value i.e. it returns either a 'true' or 'false'.

```
int x = 10;
int y = -10;
boolean check = x > y; // This is a boolean expression.
System.out.println(check);
```

What does this code snippet print?

Introduction Activity

You want to hike on the warmest day.
You have the following variables:

```java
float saturdayTemperature;
float sundayTemperature;
```

Complete the following snippet:

```java
if(???) {
    System.out.println("Let's hike on Saturday!");
} else {
    System.out.println("Let's hike on Sunday!");
}
```

Introduction Activity

You want to hike on the warmest day that is not a rainy day. You have the following variables:

```
float saturdayTemperature;
float sundayTemperature;
boolean rainySaturday;
boolean rainySunday;
```

How would you solve this problem?

A (simplified) real world example.

The power of the future

The power of the future

Write a program that monitors a (fictional!) fusion power plant.

The power of the future

The plant has various sensors, measuring:

- The **temperature of the plasma** in kelvin (K), this is a floating-point number;
- the amount of **power produced** (kW), integer;
- the amount of **power required** by our customers (kW), integer.

The power of the future

- The program is run every second;
- it SHOULD read the sensor values from input;
- it SHOULD write whether to **increase** or **decrease** the magnetic field that directs the fuel.

The power of the future

- The containment material is only safe for temperatures lower then 28000 K;
- the state of plasma is only maintained for temperatures higher then 18000 K;
- the rate of increase / decrease in temperature is unpredictable, but it is at most 1000 K per second.

The power of the future

The plant SHOULD produce **as much power as needed** while **minimising fuel waste**. It MUST NOT cool off or blow up.

The power of the future

- To **increase** the field output `"UP"`;
- to **decrease** the field output `"DOWN"`.

The power of the future

Code Examples → The Power of the Future (Use Case)
`https://expert.ethz.ch/solve/4r6GTQCKmcuLSDp24`