

# CD/CN4001: Topic 7 Lab

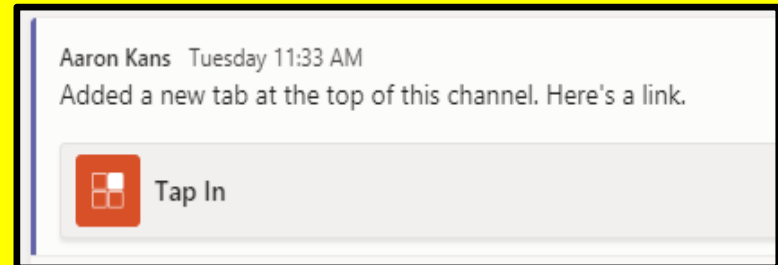
## ON CAMPUS

***Tap in*** with your ID card in a **UEL lab**



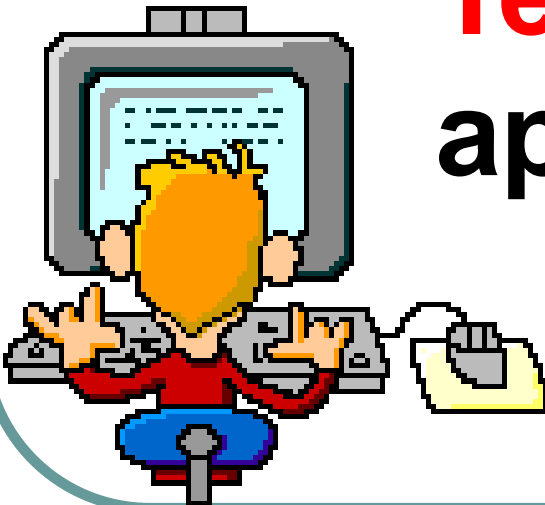
## REMOTE

***Click on the Tap in tab*** in the **General** channel of the Teams site



# CD/CN4001: Topic 7 Lab

This week we will look  
at the  
**TemperatureReadings**  
app from the lecture.



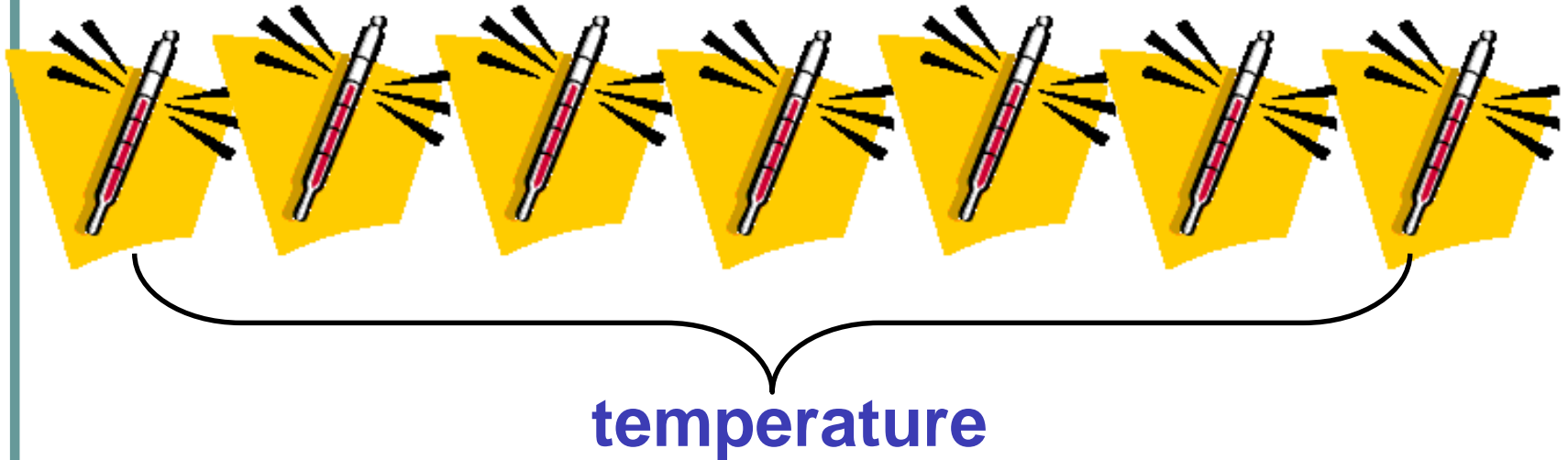
# Arrays: Lecture Review

## TemperatureReadingApp.java

A program to enter and display **7 temperature readings** using **arrays**.

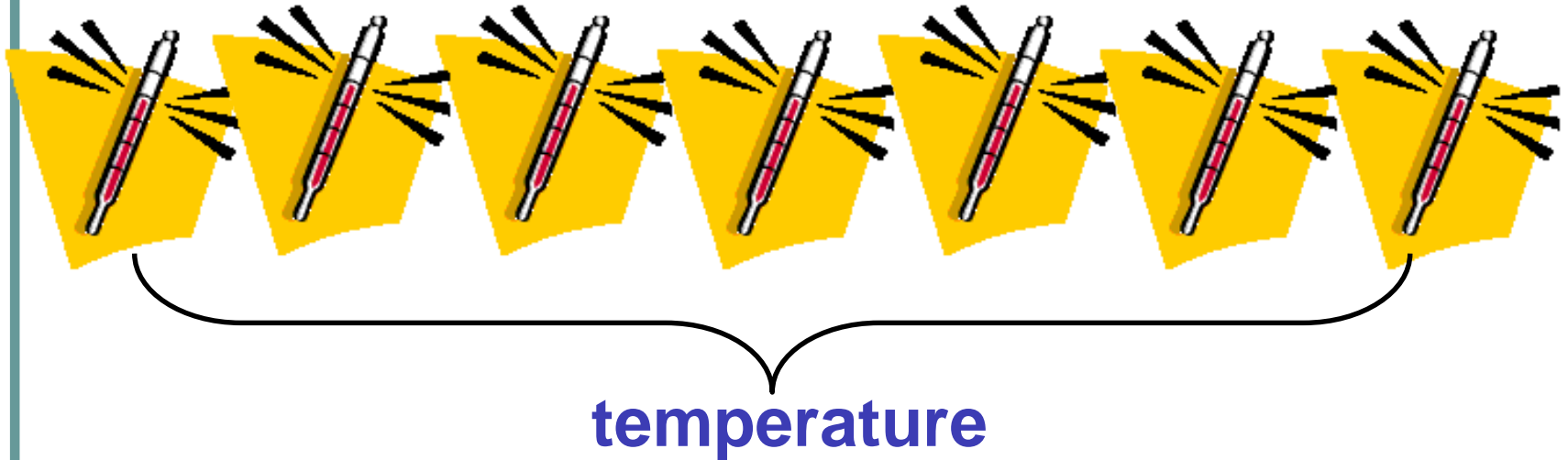


# Arrays: Lecture Review



```
double[ ] temperature ;  
temperature = new double [7];
```

# Arrays: Lecture Review



```
double[ ] temperature = new double [7];
```

# Arrays: Lecture Review

**temperature**

9	11.5	11	8.5	7	9	8.5
[0]	[1]	[2]	[3]	[4]	[5]	[6]

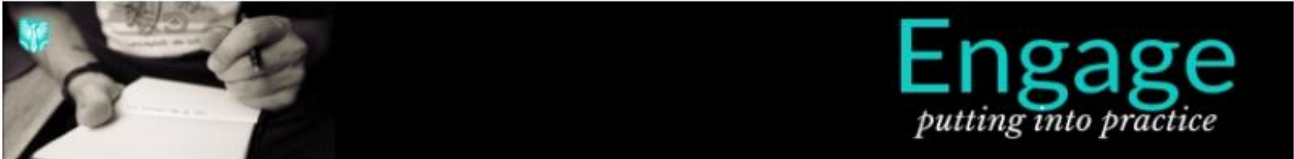
```
for ( int i = 0 ; i < temperature.length; i++)  
{  
    System.out.println( temperature[ i ] );  
}
```





# CD/CN4001: Topic 7 Lab



***Click on the Week 7 block of your Moodle Site***

# CD/CN4001: Topic 7 Lab

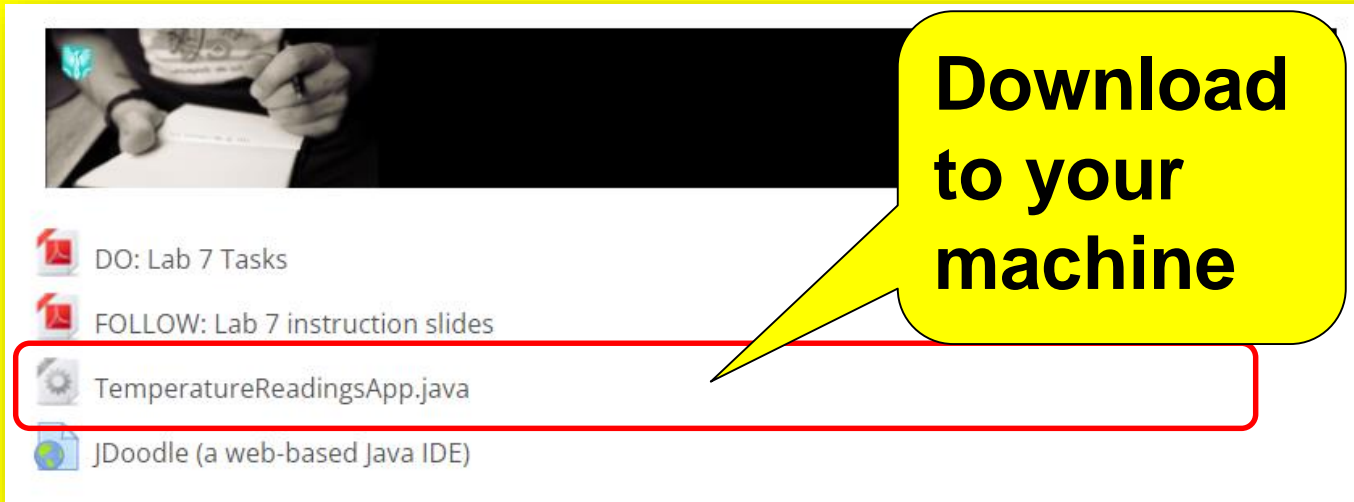


-  DO: Lab 7 Tasks
-  FOLLOW: Lab 7 instruction slides
-  TemperatureReadingsApp.java
-  JDoodle (a web-based Java IDE)

***Open the lab 7 tasks/instruction slides***



# CD/CN4001: Topic 7 Lab



**Download to your machine**

- DO: Lab 7 Tasks
- FOLLOW: Lab 7 instruction slides
- TemperatureReadingsApp.java**
- JDoodle (a web-based Java IDE)

***Open the lab 7 tasks/instruction slides***

# CD/CN4001: Topic 7 Lab



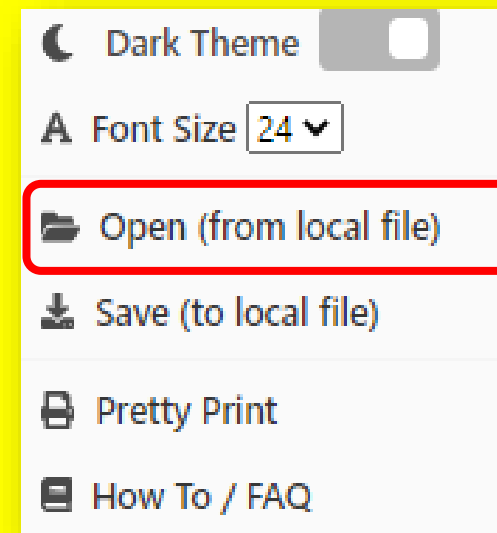
a) Select the three dots by the **Execute** button.



# CD/CN4001: Topic 7 Lab



- b) From the pop-up menu select **Open (from local file)** and browse to your **TemperatureReadings App.java** file on your machine to open that file in JDoodle



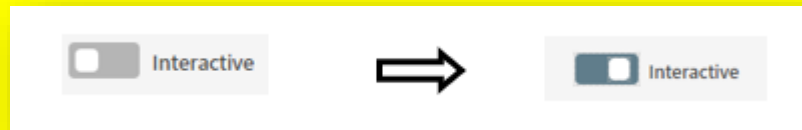
# CD/CN4001: Topic 7 Lab

```
/TemperatureReadingsApp.java
1 import java.util.*;
2
3 public class TemperatureReadingsApp
4 {
5     public static void main(String[] args)
6     {
7         double[] temperature = new double[7];
8         enterTemps(temperature);
9         displayTemps(temperature);
10    }
11
12    static void enterTemps(double[] temperatureIn)
13    {
14        Scanner keyboard = new Scanner(System.in);
15        for (int i = 0; i < temperatureIn.length; i++)
16        {
17            System.out.print("enter max temperature for day " + (i+1)+ ": ");
18            temperatureIn[i] = keyboard.nextDouble();
19        }
20    }
21
22    static void displayTemps(double[] temperatureIn)
23    {
24        System.out.println();
25        System.out.println("****TEMPERATURES ENTERED****");
26        for (int i = 0; i < temperatureIn.length; i++)
27        {
28            System.out.println("day " + (i+1)+ " " + temperatureIn[i]);
29        }
30    }
31 }
```

# CD/CN4001: Topic 7 Lab



- c) To allow for user input also the **Interactive slider** to the on position.



# CD/CN4001: Topic 7 Lab



```
//TemperatureReadingsApp.java
1 import java.util.*;
2
3 public class TemperatureReadingsApp
4 {
5     public static void main(String[] args)
6     {
7         double[] temperature = new double[7];
8         enterTemps(temperature);
9         displayTemps(temperature);
10    }
11
12    static void enterTemps(double[] temperatureIn)
13    {
14        Scanner keyboard = new Scanner(System.in);
15        for (int i = 0; i < temperatureIn.length; i++)
16        {
17            System.out.print("enter max temperature for day " + i + ": ");
18            temperatureIn[i] = keyboard.nextDouble();
19        }
20    }
21
22    static void displayTemps(double[] temperatureIn)
23    {
24        System.out.println();
25        System.out.println("***TEMPERATURES ENTERED***");
26        for (int i = 0; i < temperatureIn.length; i++)
27        {
28            System.out.println("day " + (i+1) + " " + temperatureIn[i]);
29        }
30    }
31 }
```

***We will modify  
this program  
this week***

# CD/CN4001: Topic 7 Lab

**a) Compile and run the  
TemperatureReadings  
program**



# CD/CN4001: Topic 7 Lab

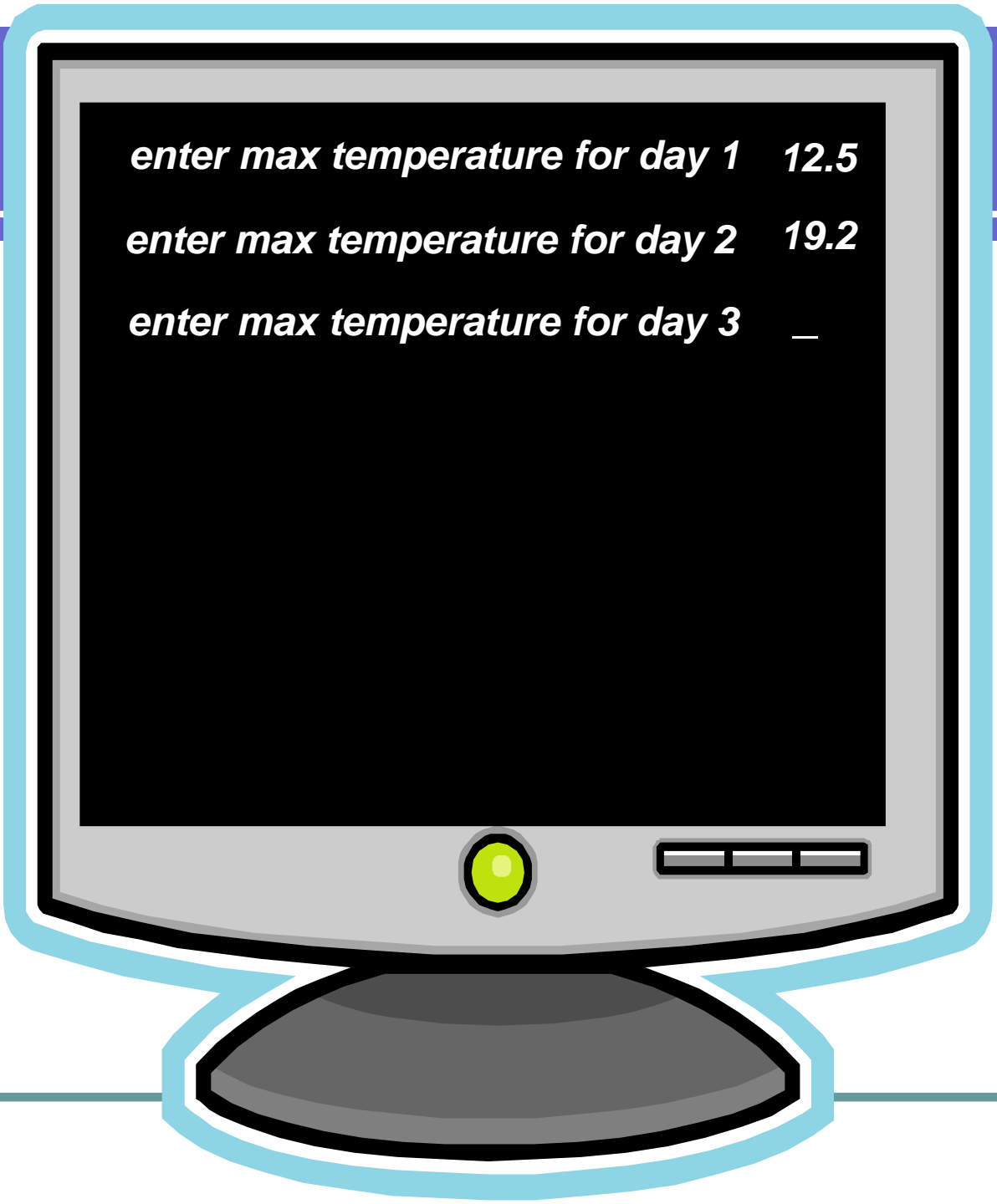
- b) Design and implement a method, **wasHot**, which **accepts the temperature array** and **displays** all days that recorded temperatures of **18 degrees or over**. Modify the **main** method so that this **wasHot** method is called after the **displayTemps** method.



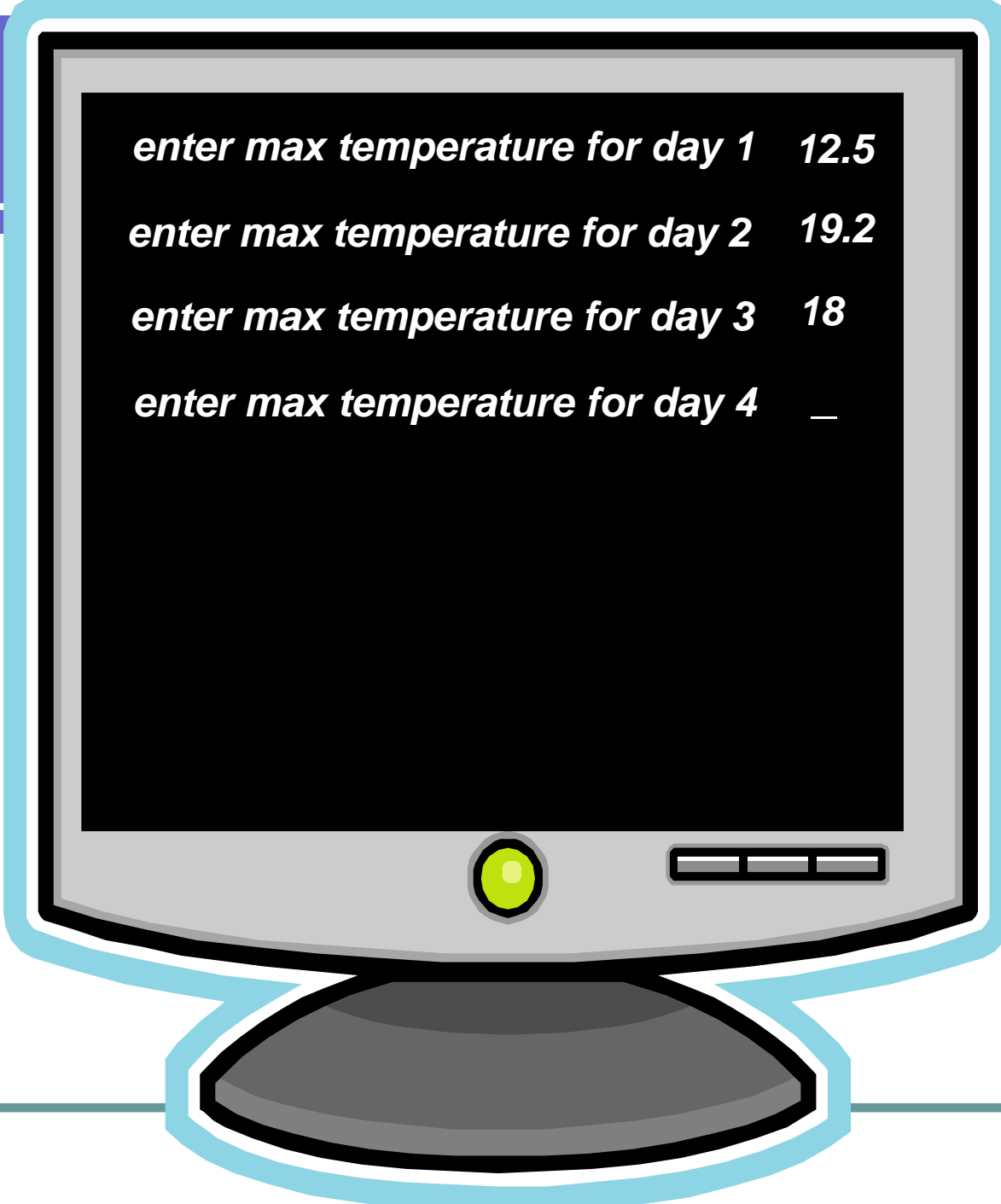
*enter max temperature for day 1 \_*

*enter max temperature for day 1 12.5*

*enter max temperature for day 2 \_*



```
enter max temperature for day 1 12.5  
enter max temperature for day 2 19.2  
enter max temperature for day 3 _
```



```
enter max temperature for day 1 12.5  
enter max temperature for day 2 19.2  
enter max temperature for day 3 18  
enter max temperature for day 4 _
```

A stylized illustration of a computer monitor with a grey bezel and a black screen. The screen displays five lines of text in a white, monospaced font. The monitor is set against a light blue background with a purple header bar at the top. A light blue line curves around the monitor, connecting to a purple tab on the right side of the header bar.

*enter max temperature for day 1* 12.5  
*enter max temperature for day 2* 19.2  
*enter max temperature for day 3* 18  
*enter max temperature for day 4* 23.5  
*enter max temperature for day 5* \_

A stylized illustration of a computer monitor with a grey bezel and a black screen. The screen displays a list of maximum temperatures for six days. The monitor is set against a light blue background with a purple header bar at the top. A blue line runs along the bottom of the screen, connecting to the footer area.

*enter max temperature for day 1* 12.5  
*enter max temperature for day 2* 19.2  
*enter max temperature for day 3* 18  
*enter max temperature for day 4* 23.5  
*enter max temperature for day 5* 24  
*enter max temperature for day 6* \_



*enter max temperature for day 1* 12.5  
*enter max temperature for day 2* 19.2  
*enter max temperature for day 3* 18  
*enter max temperature for day 4* 23.5  
*enter max temperature for day 5* 24  
*enter max temperature for day 6* 17.5  
*enter max temperature for day 7* \_

A stylized illustration of a computer monitor with a grey bezel and a black screen. The screen displays a list of seven entries, each consisting of a prompt and a numerical value. The monitor is set against a light blue background with a purple header bar at the top. A light blue line curves around the monitor, connecting to a purple tab on the right side of the header bar.

*enter max temperature for day 1* 12.5  
*enter max temperature for day 2* 19.2  
*enter max temperature for day 3* 18  
*enter max temperature for day 4* 23.5  
*enter max temperature for day 5* 24  
*enter max temperature for day 6* 17.5  
*enter max temperature for day 7* 21



**\*\*\*TEMPERATURES ENTERED\*\*\***

**day 1 12.5**

**day 2 19.2**

**day 3 18.0**

**day 4 23.5**

**day 5 24.0**

**day 6 17.5**

**day 7 21.0**

## ***HOT TEMPERATURES***

***19.2***

***18.0***

***23.5***

***24.0***

***21.0***

# CD/CN4001: Topic 7 Lab

- b) Design and implement a method, **wasHot**, which **accepts the temperature array** and **displays** all days that recorded temperatures of **18 degrees or over**. Modify the **main** method so that this **wasHot** method is called after the **displayTemps** method.

**YOU HAVE 20 MINUTES!!!**



# CD/CN4001: Topic 7 Lab

**TIME'S UP!!**

*enter max temperature for day 1* \_

*enter max temperature for day 1   12.5*

*enter max temperature for day 2   \_*

*enter max temperature for day 1    12.5*

*enter max temperature for day 2    19.2*

*enter max temperature for day 3    \_*

*enter max temperature for day 1    12.5*

*enter max temperature for day 2    19.2*

*enter max temperature for day 3    18*

*enter max temperature for day 4    \_*



A stylized illustration of a computer monitor with a grey bezel and a black screen. The screen displays five lines of text in a white, monospaced font. The monitor is set against a light blue background with a purple header bar at the top. A light blue line curves around the monitor, connecting to a purple tab on the right side of the header bar.

*enter max temperature for day 1* 12.5  
*enter max temperature for day 2* 19.2  
*enter max temperature for day 3* 18  
*enter max temperature for day 4* 23.5  
*enter max temperature for day 5* \_

A stylized illustration of a computer monitor with a grey bezel and a black screen. The screen displays a list of maximum temperatures for six days. The monitor is set against a light blue background with a purple header bar at the top. The text on the screen is as follows:

*enter max temperature for day 1* 12.5  
*enter max temperature for day 2* 19.2  
*enter max temperature for day 3* 18  
*enter max temperature for day 4* 23.5  
*enter max temperature for day 5* 24  
*enter max temperature for day 6* \_

A stylized illustration of a computer monitor with a grey bezel and a black screen. The screen displays a list of maximum temperatures for seven days. The monitor is set against a light blue background with a purple header bar at the top. The text on the screen is as follows:

*enter max temperature for day 1*    12.5  
*enter max temperature for day 2*    19.2  
*enter max temperature for day 3*    18  
*enter max temperature for day 4*    23.5  
*enter max temperature for day 5*    24  
*enter max temperature for day 6*    17.5  
*enter max temperature for day 7*    \_

A stylized illustration of a computer monitor with a grey bezel and a black screen. The screen displays a list of seven entries, each consisting of a prompt and a numerical value. The monitor is set against a light blue background with a purple header bar at the top. A thin blue line curves around the monitor, connecting to a purple tab on the right side of the header bar.

*enter max temperature for day 1* 12.5  
*enter max temperature for day 2* 19.2  
*enter max temperature for day 3* 18  
*enter max temperature for day 4* 23.5  
*enter max temperature for day 5* 24  
*enter max temperature for day 6* 17.5  
*enter max temperature for day 7* 21

**\*\*\*TEMPERATURES ENTERED\*\*\***

**day 1 12.5**

**day 2 19.2**

**day 3 18.0**

**day 4 23.5**

**day 5 24.0**

**day 6 17.5**

**day 7 21.0**

## ***HOT TEMPERATURES***

***19.2***

***18.0***

***23.5***

***24.0***

***21.0***

# CD/CN4001: Topic 7 Lab

- c) Design and implement another method, **convertToFahrenheit**, which accepts the original **temperature** array and converts each **Celsius** temperature to **Fahrenheit**. The formula for converting Celsius to Fahrenheit is given below:

$$\text{Fahrenheit} = (\text{Celsius} * 9 / 5) + 32$$

*enter max temperature for day 1* \_



*enter max temperature for day 1 12.5*

*enter max temperature for day 2 \_*

*enter max temperature for day 1    12.5*

*enter max temperature for day 2    19.2*

*enter max temperature for day 3    \_*

*enter max temperature for day 1    12.5*

*enter max temperature for day 2    19.2*

*enter max temperature for day 3    18*

*enter max temperature for day 4    \_*

A stylized illustration of a computer monitor with a grey bezel and a black screen. The screen displays five lines of text in a white, monospaced font. The monitor is mounted on a grey, oval-shaped base. The entire monitor is framed by a thick, light blue border. The background features a purple horizontal bar at the top and a light blue curved line on the right side.

*enter max temperature for day 1* 12.5  
*enter max temperature for day 2* 19.2  
*enter max temperature for day 3* 18  
*enter max temperature for day 4* 23.5  
*enter max temperature for day 5* \_

A stylized illustration of a computer monitor with a grey bezel and a black screen. The screen displays a list of maximum temperatures for six days. The monitor is set against a light blue background with a purple header bar at the top. The text on the screen is as follows:

*enter max temperature for day 1*    12.5  
*enter max temperature for day 2*    19.2  
*enter max temperature for day 3*    18  
*enter max temperature for day 4*    23.5  
*enter max temperature for day 5*    24  
*enter max temperature for day 6*    \_



*enter max temperature for day 1* 12.5  
*enter max temperature for day 2* 19.2  
*enter max temperature for day 3* 18  
*enter max temperature for day 4* 23.5  
*enter max temperature for day 5* 24  
*enter max temperature for day 6* 17.5  
*enter max temperature for day 7* \_

A stylized illustration of a computer monitor with a grey bezel and a black screen. The screen displays a list of seven entries, each consisting of a prompt and a numerical value. The monitor has a small yellow light in the center of the bezel and three small rectangular buttons on the right side. The entire monitor is set against a light blue background with a purple header bar at the top.

*enter max temperature for day 1* 12.5  
*enter max temperature for day 2* 19.2  
*enter max temperature for day 3* 18  
*enter max temperature for day 4* 23.5  
*enter max temperature for day 5* 24  
*enter max temperature for day 6* 17.5  
*enter max temperature for day 7* 21

**\*\*\*TEMPERATURES ENTERED\*\*\***

**day 1 12.5**

**day 2 19.2**

**day 3 18.0**

**day 4 23.5**

**day 5 24.0**

**day 6 17.5**

**day 7 21.0**



## ***HOT TEMPERATURES***

***19.2***

***18.0***

***23.5***

***24.0***

***21.0***

## *Temperatures in Farenheit*

**\*\*\*TEMPERATURES ENTERED\*\*\***

*day 1 54.5*

*day 2 66.56*

*day 3 64.4*

*day 4 74.3*

*day 5 75.2*

*day 6 63.5*

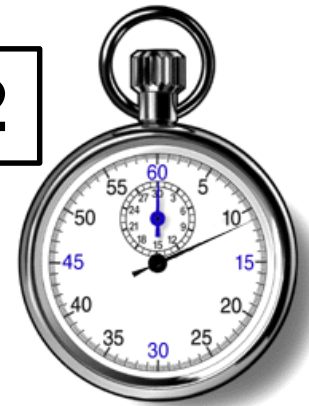
*day 7 69.8*

# CD/CN4001: Topic 7 Lab

- g) Design and implement another method, **convertToFahrenheit**, which accepts the original **temperature** array and converts each **Celsius** temperature to **Fahrenheit**. The formula for converting Celsius to Fahrenheit is given below:

$$\text{Fahrenheit} = (\text{Celsius} * 9 / 5) + 32$$

**YOU HAVE 20 MINUTES!!!**



# CD/CN4001: Topic 7 Lab

**TIME'S UP!!**

# CD/CN4001: Topic 7 Lab

The **convertToFarenheit** method should be called from **main** and then the **displayTemps** method should be called again in the **main** method to display the updated temperatures

**YOU HAVE 5 MINUTES!!!**



# CD/CN4001: Topic 7 Lab

**TIME'S UP!!**

*enter max temperature for day 1* \_

*enter max temperature for day 1 12.5*

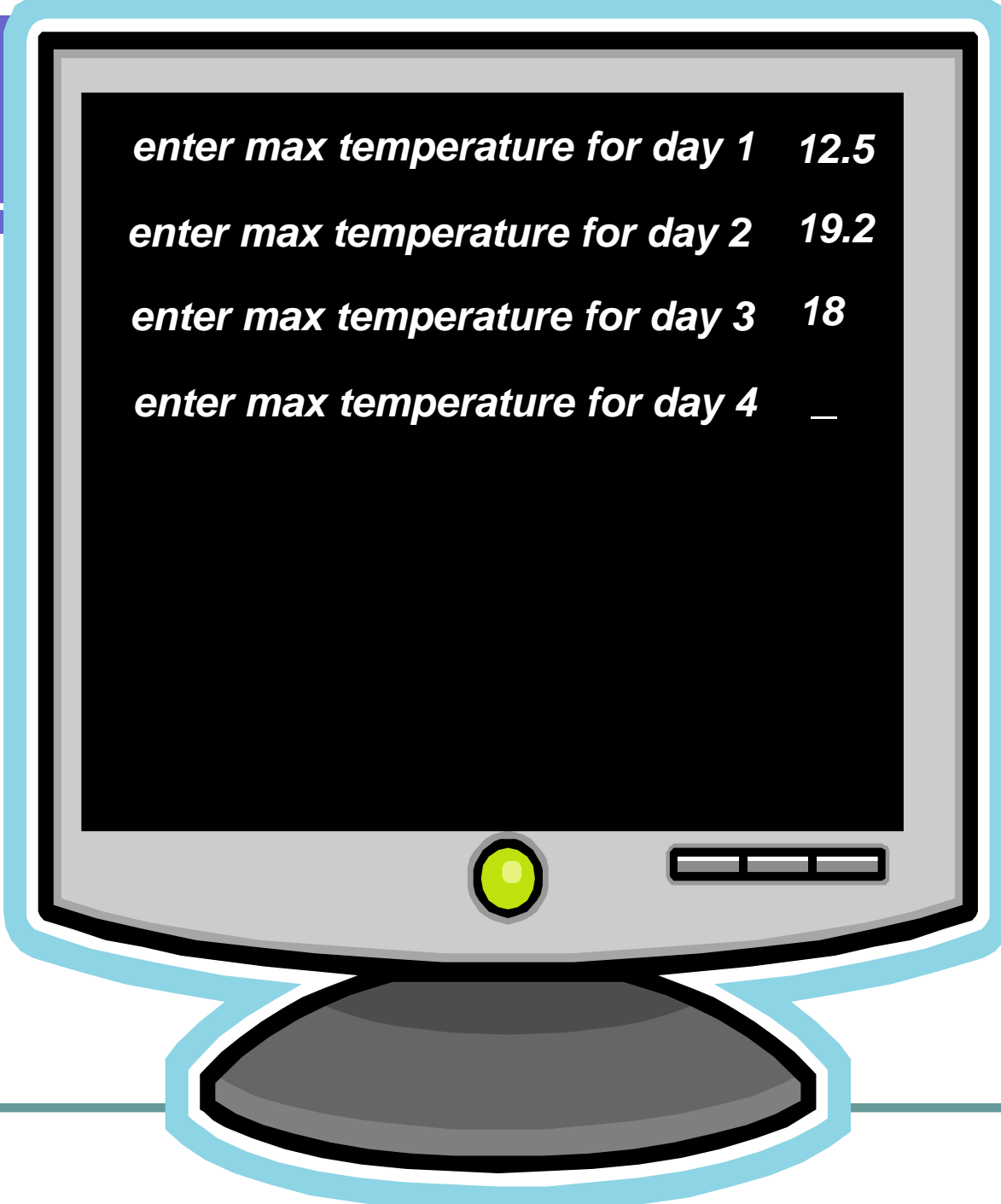
*enter max temperature for day 2 \_*



*enter max temperature for day 1    12.5*

*enter max temperature for day 2    19.2*

*enter max temperature for day 3    \_*



```
enter max temperature for day 1  12.5
enter max temperature for day 2  19.2
enter max temperature for day 3  18
enter max temperature for day 4  _
```

A stylized illustration of a computer monitor with a grey bezel and a black screen. The screen displays five lines of text in a white, monospaced font. The monitor is mounted on a grey, oval-shaped base. The entire monitor is framed by a light blue border. The background features a purple header bar at the top and a light blue curved line on the right side.

*enter max temperature for day 1* 12.5  
*enter max temperature for day 2* 19.2  
*enter max temperature for day 3* 18  
*enter max temperature for day 4* 23.5  
*enter max temperature for day 5* \_

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*enter max temperature for day 2*    19.2  
*enter max temperature for day 3*    18  
*enter max temperature for day 4*    23.5  
*enter max temperature for day 5*    24  
*enter max temperature for day 6*    \_



*enter max temperature for day 1* 12.5  
*enter max temperature for day 2* 19.2  
*enter max temperature for day 3* 18  
*enter max temperature for day 4* 23.5  
*enter max temperature for day 5* 24  
*enter max temperature for day 6* 17.5  
*enter max temperature for day 7* \_

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*enter max temperature for day 1* 12.5  
*enter max temperature for day 2* 19.2  
*enter max temperature for day 3* 18  
*enter max temperature for day 4* 23.5  
*enter max temperature for day 5* 24  
*enter max temperature for day 6* 17.5  
*enter max temperature for day 7* 21

**\*\*\*TEMPERATURES ENTERED\*\*\***

**day 1 12.5**

**day 2 19.2**

**day 3 18.0**

**day 4 23.5**

**day 5 24.0**

**day 6 17.5**

**day 7 21.0**

## ***HOT TEMPERATURES***

***19.2***

***18.0***

***23.5***

***24.0***

***21.0***



***Temperatures in Farenheit***

***\*\*\*TEMPERATURES ENTERED\*\*\****

***day 1 54.5***

***day 2 66.56***

***day 3 64.4***

***day 4 74.3***

***day 5 75.2***

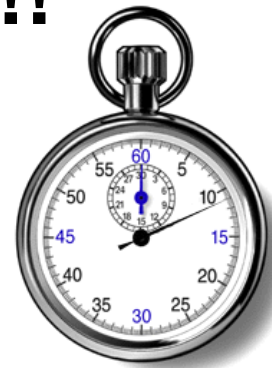
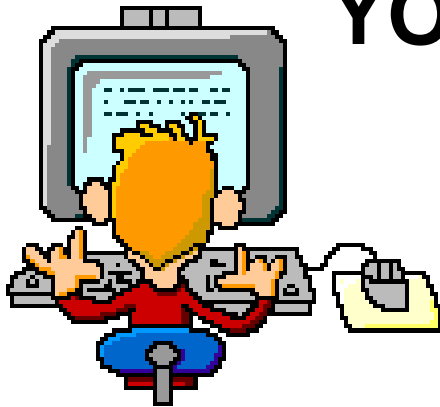
***day 6 63.5***

***day 7 69.8***

# CD/CN4001: Topic 7 Lab

e) Add some **Javadoc** comments at the top of this program

**YOU HAVE 5 MINUTES!!!**




# CD/CN4001: Topic 7 Lab

**TIME'S UP!!**

# CD/CN4001: Topic 7 Lab



 UPLOAD: Lab 7 Task (CN4001 students only)

 UPLOAD: Lab 7 Task (DTS students only)

 TACKLE: Extra challenges

**Upload** TemperatureReadingsApp.java  
file to **Moodle** via **the appropriate**  
**submission link.**

# CD/CN4001: Topic 7 Lab



Consolidate  
*wrapping up*



UPLOAD: Lab 7 Task (CN4001 students only)



UPLOAD: Lab 7 Task (DTS students only)



TACKLE: Extra challenges

**Spend the rest of the time in this practical working on the **extra challenges.****